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ALASKA
ENERGY AUTHORITY



Railbelt Large Hydro Evaluation

Preliminary Decision Document

November 23, 2010

Prepared By
Alaska Energy Authority

ALASKA ENERGY AUTHORITY

November 23, 2010

Executive Director's Statement:

The Alaska Energy Authority (AEA) has been appropriated $10 million in State funds to start planning and designing a large hydroelectric project. Our first goal has been to identify the project to pursue that would give the State the best chance of success to be built and meet the State's goal to produce 50% of Alaska's electrical energy from renewable resources by 2025. It has been generally understood that a multi-billion dollar hydroelectric project will require State participation and financial assistance.

In the Preliminary Decision Document AEA has focused its efforts on the Susitna River and Chakachamna hydroelectric projects. This document provides a risk analysis comparison of the two projects by summarizing the known information and risks of the two projects and identifies the Susitna Hydroelectric project as the recommended primary project for the State to pursue. The Chakachamna project is recommended to be studied as an alternative to Susitna. Alternative projects need to be evaluated as part of the FERC licensing process, unless or until it is determined that there is reason to reject it as an alternative. As an alternative project, AEA recommends allocating the minimum necessary State funds to study the Chakachamna project thereby using the maximum amount available to further advance the Susitna project.

AEA will hold public workshops in February to educate and receive input from the public on the Preliminary Decision Document and the recommended approach to meet the Alaska's 50% renewable energy goal by 2025. After December, please refer to our webpage, www.akenergyauthority.org for workshop schedule. In the meantime, I encourage interested parties to submit written comments to AEA by the any of the following methods:

Email: largehydro@aidea.org

Fax: 907-771-3044 Attn: Large Hydro Project

Address: Large Hydro Project
Alaska Energy Authority
813 West Northern Lights Blvd
Anchorage, AK 99503

AEA looks forward to your comments on the Preliminary Decision Document.

Sincerely,

ALASKA ENERGY AUTHORITY

Michael C. Harper
Acting Executive Director

Railbelt Large Hydro Evaluation

Preliminary Decision Document

November 23, 2010

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Terms and Acronyms

AEA	Alaska Energy Authority
ALP	Alternative License Process
APA	Alaska Power Authority
cfs	cubic feet per second
Chakachamna Project	Chakachamna Hydroelectric Project
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
GWhrs	Gigawatt hours
HB	House Bill
ILP	Integrated License Process
IRP	Integrated Resource Plan
KWhrs	Kilowatt hours
MW	Megawatt
NOI	Notice of Intent
NP	National Park
PAD	Preliminary Application Document
Railbelt	The region of Alaska served by the railroad, stretching from Seward to Fairbanks
RIRP	Regional Integrated Resource Plan
SNW	Seattle Northwest Securities
Susitna Project	Susitna Hydroelectric Project, Low Watana Non-expandable Alternative
TBM	tunnel boring machine
TLP	Traditional License Process

Executive Summary

There are two proposed major hydroelectric projects in the Alaska Railbelt Region: the Susitna Hydroelectric Project, Low Watana Non-expandable Alternative (Susitna Project) and the Chakachamna Hydroelectric Project (Chakachamna Project). The purpose of this document is to identify which of these is most likely to successfully meet the long term energy needs of the railbelt at reasonable cost. This preliminary evaluation also considers the possibility to permit a project in its presently proposed configuration and to be able to do so in a reasonable time frame.

The 2010 AEA Regional Integrated Resource Plan (RIRP) is a 50-year long range plan that identifies combinations of generations and transmission capital improvement projects in the railbelt region (Black and Veatch 2010). The RIRP documented the need for a large amount of new annual generation for the railbelt within the next 10 to 15 years. The type of generation constructed will be influenced by declining Cook Inlet natural gas production, legislative environment, financing, and ability to permit or license and construct a project in a timely manner.

The 2010 Alaska legislature passed House Bill (HB) 306 which declares a State energy policy. This bill directs the State to receive 50 percent of its electrical generation from renewable and alternative energy sources by 2025. The only way to achieve this goal is for a new large hydroelectric project to be built in the railbelt region. The project sites, one on the Susitna River at Watana and one at Lake Chakachamna, are shown on Figure 1-1. The energy generated by one of these two projects would provide roughly one fourth (Chakachamna) to roughly one half (Susitna) of the current electrical energy demand.

Alaska Energy Authority received funding from the Alaska Legislature in 2010 for the preliminary planning, design, permitting and field work for the Susitna and Chakachamna Projects, as well as Glacier Fork Hydroelectric Project and other hydroelectric projects along the Railbelt. Most of the funds were allocated to the Susitna and Chakachamna Projects. There are a variety of alternatives on the Susitna River as documented in the HDR Report (2009). The Susitna Project chosen for this comparison is the Low Watana Non-expandable alternative. It was chosen because it offers a combination of greater winter storage capacity while still maintaining a low overall cost and low cost of power generated.

Permitting and licensing of a large hydroelectric project is regulated by the Federal Energy Regulatory Commission (FERC) and is a lengthy, complex and costly process. For this reason, the two projects must be evaluated at an early stage to determine if either has a fault that would prevent it from being licensed and constructed. As substantial research has already been done on each project, this document summarizes existing information on the projects, and uses this information for evaluation and comparison. Additional detailed information is available in the referenced documents. By using existing information to choose a primary project, resources can be concentrated on its development, with the goal of satisfying future railbelt energy demand and compliance with the legislative intent that the State receives 50 percent of its electric generation from renewable and alternative energy sources by 2025.

The ultimate goal of developing a project is to provide a cost-effective and long-term energy source to the railbelt region. Therefore, the cost, potential environmental impact, engineering issues and energy production potential of both projects were evaluated. This evaluation highlights key elements of each project that affect the cost of resulting energy, timeliness of energy contribution, and long term environmental and the projects' socioeconomic operational effects.

The results of this comparison show that the Susitna Project should be the Alaska's primary hydroelectric project; the Chakachamna Project should be considered as an alternative. Although the design, permitting and construction of the Susitna Project would cost approximately 50 percent more than it would for the Chakachamna Project the Susitna Project would produce more than twice the annual amount of energy as the Chakachamna Project. In addition, risk of cost overruns with the Chakachamna Project would be much greater than with the Susitna Project because of the extensive underground work required and its location in steep terrain.

The environmental impact of the Chakachamna Project would also be greater because it would require a cross-basin water transfer in a river system with salmon migration. Significant salmon runs travel to and through Lake Chakachamna. To allow enough environmental flow to protect fisheries, energy from the Project would have to be substantially reduced.

Additional conclusions that can be drawn from the comparison of the two projects include:

- As indicated above, in terms of energy production, the Susitna Project would produce more than two times the amount of the Chakachamna Project. The Susitna Project would have the added advantage of sufficient storage for significant energy production in the winter.

- The licensing, permitting and construction process for the Chakachamna Project would take roughly 3.5 years longer than for the Susitna Project because of the complex environmental studies required for the cross basin transfer and the time for the tunnel construction.

- The State would need to contribute substantial equity and be the licensee for either project. The ability to finance the projects is equal in either case.

- There are relatively less long term operational uncertainties for the Susitna Project.

- Both projects have some seismic risk; however the dams and powerhouses could be designed to withstand major seismic events as long as a fault does not pass through the structure. The Chakachamna Project has a relatively greater risk of damage to the power tunnel or fish passageway during a seismic event or volcanic eruption.

- The Susitna Project would be a larger construction project and have greater impacts on electrical rates than the Chakachamna Project along the railbelt and Statewide, in the form of lower rates in the long term.

- The Susitna Project would allow the State to achieve the State Energy policy goal of 50 percent renewable by 2025. The Chakachamna Project would not accomplish this goal by itself.

Overall, the Susitna Project would have a relatively lower cost of energy, fewer likely environmental effects, could start sooner, a reduced licensing/permitting schedule, less construction and long term operational risk, and greater positive impacts on the Alaskan economy than the Chakachamna Project.

A year of field studies at Lake Chakachamna would not be sufficient to determine an definitive environmental flow, would not predict project energy outcomes, or substantially change the economic factors that make the Susitna Project more desirable. Thus, Chakachamna Project field work should not proceed in 2011. Instead it may be prudent to perform some additional studies to confirm conceptual size optimization and cost.

Much of the information in this document came from reports prepared by HDR (HDR 2010), R&M Consultants/Hatch Associates Consultants (R&M Consultants/Hatch Associates Consultants 2010), and Seattle-Northwest Securities Corporation (SNW 2010). In addition, R&M Consultants/Hatch Associates provided Operational Uncertainty evaluation in Chapter 9. The referenced documents should be read for the full assumptions. Referenced documents and other important documents regarding these projects are available on the Alaska Energy Authority's Railbelt Large Hydro webpage.

Chapter 1

Project Descriptions

Each of the potential projects is described in the following section.

1.1 Susitna River Hydroelectric Project (Low Watana Non-expandable Alternative)

A two dam scheme was developed for the Susitna River Hydroelectric Project initially by the Corps of Engineers in the late 1970's for which a feasibility study was completed by Acres American Inc. for the Alaska Power Authority (APA) in 1982 (Acres 1982) and a license application was filed with FERC. An amended license was prepared in 1985 (Harza Ebasco 1985) and the project was cancelled in early 1986. Extensive site work including surveying, deep rock drilling as well as soil drilling and sampling was conducted at the Watana site. In addition environmental studies including fish and wildlife studies were conducted throughout the basin and included instream flow studies in the side channel sloughs downstream of Portage Creek.

In the two dam scheme developed in the Acres feasibility study (Acres 1982) the upper dam was at Watana (Figure 1-1) and was to be an 885 foot high earthfill embankment with a 1040 MW underground powerhouse. It was to be constructed first. The amended license (Harza Ebasco 1985) proposed to develop the project in three stages instead of two with an expandable 700 foot high embankment at Watana as the first phase with an installed capacity of less than 500 MW.

A number of hydroelectric generation alternatives were studied recently on the Susitna River (HDR 2009), of which the Low Watana Non-Expandable Alternative is the selected Susitna Project discussed in this document. The Low Watana Alternative, a 700 foot high dam with a 600 MW powerhouse was chosen because the best combination of winter storage, less environmental impact and low overall cost in addition to meeting the 50 percent renewable goal by 2025. The expandable version of a dam at this location was not chosen because it is more expensive initially relative to power output and the ultimate raised dam would have more environmental impacts related to terrestrial habitat as well as other technical challenges. The location of the Susitna Project as chosen for this review is the same location as the Watana dam in the two dam scheme as proposed in the 1980's (Acres 1982, Harza Ebasco 1985).

The Susitna Project would be located approximately half-way between Anchorage and Fairbanks. It would create a dam on the Susitna River at river mile 184 above the mouth of the Susitna River. The dam would be located within a steep sided river valley approximately 15 miles upstream of Devil's Canyon. The 700 foot high dam would have a 557 foot difference between tail water and maximum pond elevation, with a maximum pond level of 2014 feet. The reservoir would be 39 miles long and a maximum of 2 miles wide. Installed capacity would be 600 MW with the average annual generation determined to be 2600 GWhrs (HDR 2009). A final decision has not been made on the type of dam or the type of powerhouse (underground or surface) that would be used. The location of the Project is shown in Figure 1-1.

1.2 Chakachamna Hydroelectric Project

The Chakachamna Project was studied in detail in the 1980's as reported in the Bechtel report (Bechtel 1983). The project developed in that report consisted of an intake under the lake, and a 12 mile tunnel to an underground powerhouse on the McArthur River. At that location, the best alternative had a small regulating dam on the Chakachatna River and was estimated to produce 1,300 GWhrs of electricity annually although the report indicated that the maximum power could be generated by eliminating environmental flows and producing 1664 GWhrs of electricity annually with an installed capacity of 400MW. This latter alternative was identified to have adverse impacts on the fishery resources which use the Chakachatna River. Chapter 4 of this document; Preliminary Energy Estimate, further addresses the energy potential of the Chakachamna Project in light of environmental flows in the Chakachatna River.

The 1983 report (Bechtel 1983) also included an extensive environmental study which included environmental hydrology, aquatic biology, terrestrial vegetation and wildlife as well as human resources.

The Chakachamna Hydroelectric Project (Chakachamna Project) currently has a Preliminary Application before FERC (FERC No. 12660). In its Pre-Application Document (PAD) filed with FERC, the applicant, TDX Power described the Project to have 300 MW installed capacity and generate 1300 GWhrs hours of annual energy (TDX Power 2009).

The Chakachamna Project is located approximately 85 miles west of Anchorage at the south base of Mt. Spurr. Chakachamna Lake drains into the Chakachatna River, which flows downstream through a complicated system, ultimately flowing into Cook Inlet. That flow is partially joined to the McArthur River flow by way of the Noaukta Slough. The Chakachamna Project is essentially the same as the original scheme in the Bechtel study and involves diverting water from Chakachamna Lake through an 11 mile tunnel to an underground power plant near the McArthur River. The power plant would discharge its tailrace flow to the McArthur River and the flow would not rejoin the Chakachatna River until a point much further downstream, reducing flow in a portion of the Chakachatna River, and the Noaukta Slough and Middle River as well. The location of the Project is shown in Figure 1-1. The Project and vicinity are shown in Figure 1-2. The current scheme does not have a dam on the Chakachatna River as it exits the lake.

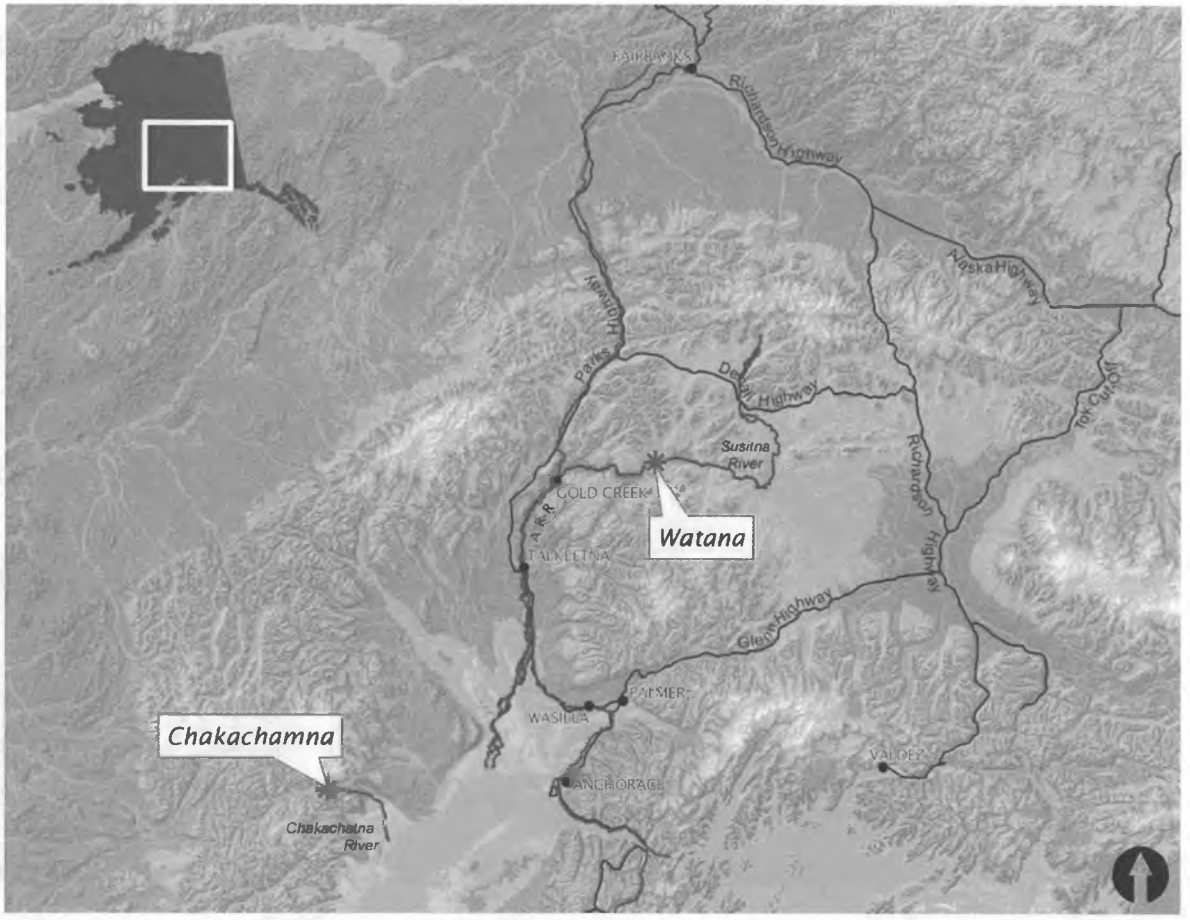


Figure 1-1 **Locations of the Susitna Project (Low Watana Alternative) and the Chakachamna Project**

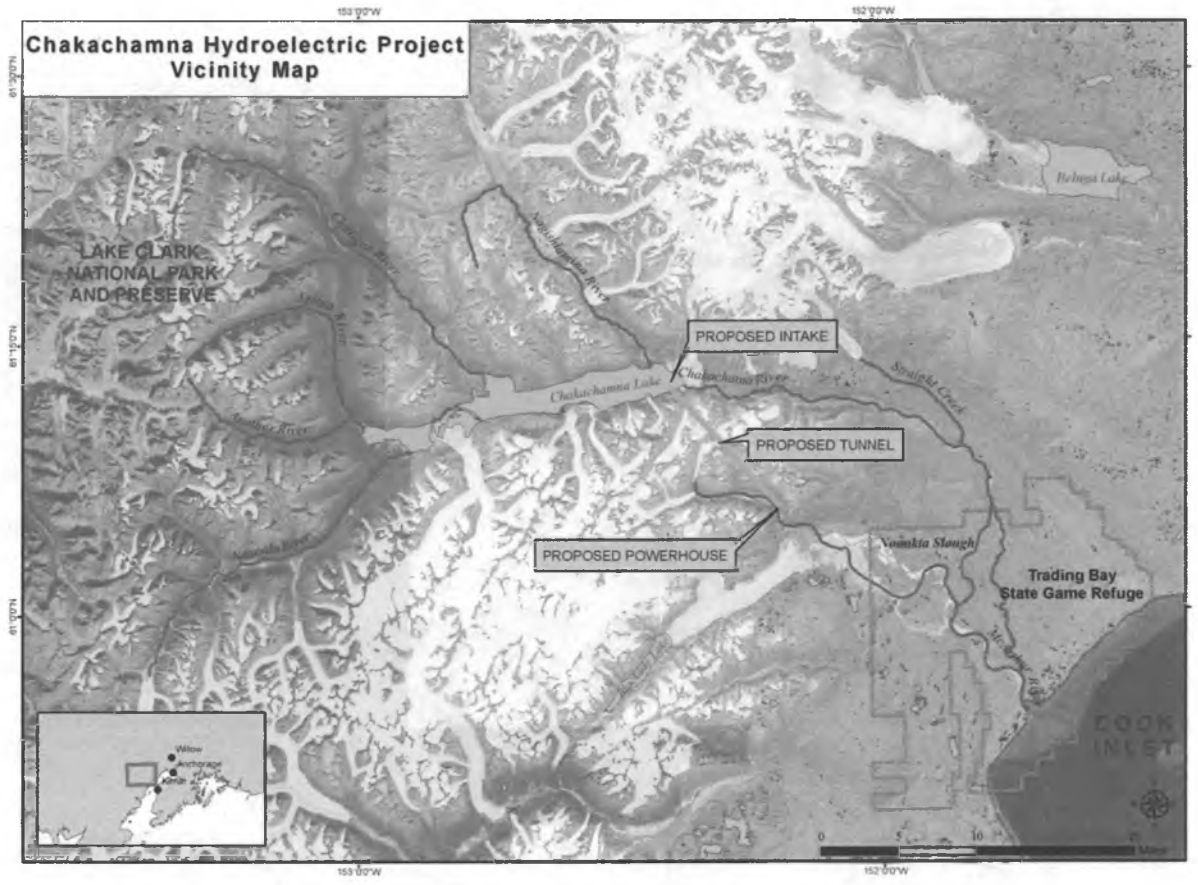


Figure 1-2 Vicinity of the Chakachamna Project

Chapter 2

Engineering Issues

Engineering issues associated with each potential project are discussed in the following section.

2.1 Access

2.1.1 Susitna Project

The Susitna Project could be accessed both from the Denali Highway by a new road and from Gold Creek (existing railroad bridge over the Susitna River) by a new rail line. Access via two modes of transportation provides the Project with advantages; the most significant of which is that the road could be built quickly, allowing early on site construction work. The rail link would allow materials from outside the State to be transported directly to the site by rail without having to off load to trucks.

2.1.2 Chakachamna Project

The Chakachamna site requires access from tidewater to the lake, the tunnel adits, and the McArthur River powerhouse location. Construction of a large dock to handle heavy equipment at Tyonek would be necessary. Access routes needed for construction and operation would be challenging. The construction access road could not cross the Trading Bay Game Refuge, and would therefore require crossing the braided Chakachatna River delta and wetland, as well as traversing high on steep mountain slopes to access the area near the lake

2.1.3 Access Comparison

Both projects would require roads and/or railroad to be constructed to handle very large and heavy equipment. Constructing access into both projects is likely to require two years. The advantages of access to the Susitna Project are that a major bridge is not required and that the routes cross less steep terrain compared to the Chakachamna Project. The bridge (or two) over the Chakachatna River will be large, expensive structure(s) with capacity to handle the heavy equipment. It is questionable whether a road built to handle heavy equipment could be constructed to the fish passageway location. If a road could not be constructed to handle a tunnel boring machine, drill and blast construction of the fish passageway would be required.

2.2 Transmission

2.2.1 Susitna Project

The Susitna Project would connect to the north-south intertie near Gold Creek. The cost of that transmission from the Susitna power plant to the intertie is included in the Susitna Project cost

estimate. A conceptual study of the transmission needs in the railbelt if the Susitna Project was constructed was completed by EPS (EPS 2009). Upgrades to the existing intertie and substations would be required to transmit energy to Anchorage and Fairbanks.

2.2.2 Chakachamna Project

The Chakachamna Project transmission costs were estimated in today's dollars based on the original 1980's scheme. The cost of the transmission from the power plant to the Beluga Power plant was included in the cost estimate. It is believed a triple circuit would be required for the segment of the powerplant to Beluga, as well as additional changes in the railbelt transmission system. If the Chakachamna Project was constructed, transmission upgrades from Beluga plant to the intertie and an upgrade of the intertie upgraded would likely be necessary.

2.2.3 Transmission Comparison

Transmission line construction beyond the two projects will be needed. Because the Susitna Project will be located centrally between Anchorage and Fairbanks, it will require less total length of new line construction, but because of the larger power output will require more actual circuits. Chakachamna Project will likely require some new line construction from Beluga to Anchorage and changes if energy is to be transmitted north to Fairbanks. Overall there is not a significant difference between the two projects due to transmission needs.

2.3 Geologic Hazards

2.3.1 Susitna Project

The design earthquake for the Susitna Project would likely be a based on consideration of a Denali fault event somewhere in the range of magnitude 8.0, a local crustal earthquake and a subduction zone earthquake with a magnitude of roughly 8.5. The original Project design considered all of these earthquakes in the design. Excellent recent data exist on the Magnitude 7.9, 2002 Denali fault earthquake. A review of the earthquake design requirements for a Susitna Project was made by R&M Consultants (R&M 2009).

Subsurface conditions at the Susitna Project site are well known due to considerable rock drilling in the 1980's at the site. At the time, it was considered feasible to construct both diversion tunnels, power tunnels and an underground powerhouse.

There have been recent earthfill dams designed for large earthquakes, the most significant being the Seven Oaks Dam in Orange County, California, which is designed for a magnitude 8 earthquake from a distance of 1.2 miles away.

2.3.2 Chakachamna Project

The design earthquake for the Chakachamna Project would likely be from the Castle Mountain fault, which is approximately 6 miles from the power plant location. Proximity to the fault would likely mean that smaller connecting faults would be encountered during tunneling, which

could cause delays and increased cost during construction. Subsurface geologic conditions along the tunnel alignment are not known. The frequency of any significant faulting and associated zones of fractured rock are not known, and could affect tunnel construction.

The Chakachamna Project also has other geologic hazards due to its proximity to Mount Spurr and Barrier Glacier. The most recent eruption at Mount Spurr was in 1992. If the volcano were to erupt again, ash fall and mud flows have the potential to block or partially block the powertunnel intake, fish passageway, or natural outflow of the lake. Facilities would need to be located or designed to minimize risk from an eruption. Also, at Lake Chakachamna, Barrier Glacier, which partially dams the lake, is a geologic risk. The glacier does not appear to be currently moving, is covered with debris, and has an ice core. A partial release of the lake occurred in 1971 when the outlet was eroded. The lake level dropped 10 to 15 feet. Facilities would need to be designed to accommodate a change in the glacier, which could cause the lake level to go up or down and substantially affect Project energy production and fish passage.

2.3.3 Geologic Hazards Comparison

Overall geologic hazards are somewhat greater at the Chakachamna site due to the close proximity of the castle Mountain fault and Mount Spurr.

2.4 Estimates of Probable Project Development Costs

A comparison of cost estimates for development of both project are provided in the following Section.

2.4.1 Susitna Project

2.4.1.1 Cost Estimate History

In 1982 to 1983, a detailed cost estimate to develop the complete Watana/Devil Canyon project was prepared. This estimate was revised in1985 to 1986, and again in March 2009. The latest estimate, prepared in November, 2009, is for a Low Watana Non-Expandable alternative. The estimate for this project in 2008 dollars is $4.5 billion as detailed in Table 2-1 below.

Table 2-1 Susitna, Low Watana Project Cost Summary

FERC Line #	Line Item Name	Low Watana (2008 Dollars Millions)
71A	Engineering, Environment, and Regulatory (7%)	$ 236
330	Land and Land Rights	$ 121
331	Power Plant Structure Improvements	$ 115
332.1-.4	Reservoir, Dams and Tunnels	$ 1,538
332.5-.9	Waterways	$ 590

Table 2-1 Susitna, Low Watana Project Cost Summary

FERC Line #	Line Item Name	Low Watana (2008 Dollars Millions)
333	Waterwheels, Turbines and Generators	$ 297
334	Accessory Electrical Equipment	$ 41
335	Misc Power Plant Equipment	$ 21
336	Roads, Rails and Air Facilities	$ 232
350-390	Transmission Features	$ 224
399	Other Tangible Property	$ 16
63	Main Construction Camp	$ 180
71B	Construction Management, 4%	$ 135
Total Subtotal		**$ 3,746**
Total Contingency		**$ 749**
Total (Millions of Dollars, rounded)		**$ 4,500**

2.4.2 Chakachamna Project

2.4.2.1 Cost Estimate History

In 1982, a detailed cost estimate was prepared for developing the Chakachamna Project. In 2008 and 2009, re-evaluations of this original estimate were made to take into account potential new alternative arrangements. In 2010, the detailed 1982 was updated with unit prices modified to be consistent with the estimated costs for the Susitna Project. The estimate for the Chakachamna Project in 2008 dollars is $2.9 billion, as detailed in Table 2-2 below.

Table 2-2 Chakachamna Project Cost Summary Table

FERC Line #	Line Item Name	Chakachamna (2008 Dollars Millions)
71A	Engineering, Environment, and Regulatory (7%)	$ 151
330	Land and Land Rights	$ 75
331	Power Plant Structure Improvements	$ 105
332.1-.4	Reservoir, Dams and Tunnels	$ 1,147
332.5-.9	Waterways	$ 123
333	Waterwheels, Turbines and Generators	$ 181
334	Accessory Electrical Equipment	$ 20

Table 2-2 Chakachamna Project Cost Summary Table

FERC Line #	Line Item Name	Chakachamna (2008 Dollars Millions)
335	Misc Power Plant Equipment	$ 15
336	Roads, Rails and Air Facilities	$ 172
350-390	Transmission Features	$ 232
399	Other Tangible Property	$ 0
63	Main Construction Camp	$ 90
71B	Construction Management, 4%	$ 86
Total Subtotal		**$ 2,400**
Total Contingency		**$ 480**
Total (Millions of Dollars, rounded)		**$ 2,880**

2.4.3 Cost Comparison

Although capital cost is greater for the Susitna Project, the evaluation in Chapter 9 will show that the cost to repay the financing of the project relative to energy production will be lower for the Susitna Project. Since the financing cost is a major portion of the energy cost, and since operation and maintenance and utility cost will be roughly equal regardless of the power source, overall, the Susitna Project cost per unit of energy will be relatively lower.

Detailed Susitna costs can be found at Susitna Hydroelectric Project Alternatives Design Report 2009 located on the AEA Railbelt Large Hydro webpage.

Detailed Chakachamna costs can be found at Susitna and Chakachamna – Preliminary Decision Document 2010 located on the AEA Railbelt Large Hydro webpage.

Chapter 3

Environmental Issues

Development of a hydroelectric project would face a variety of issues over the design lifetime. The design lifetime for a modern hydroelectric facility is anticipated to be greater than 100 years. The following discussion is not all inclusive but highlights the likely major areas of concern regarding both projects. Botanical and cultural resource issues are not discussed in this document since they have not been fully explored and tend to have less overall impact on whether a project is licensed and constructed.

3.1 Fisheries

3.1.1 Susitna Project

Fish resources have the highest potential to be impacted by the project. Most of the potential impacts would occur in the reservoir and the middle Susitna River downstream of the reservoir. There would be impacts due to changes in water quality, thermal regime, suspended sediment load, reservoir draw-down fluctuations, impoundment zone inundation, flow regime, and fish habitat. Not all impacts to fish populations would be negative. For example, an increase in winter water temperatures could lead to the enhancement of overwintering habitat and thus greater fish survival; however, the cooler spring water temperatures could slow fish growth.

The majority of the salmon production occurs in tributaries outside the area of anticipated effects. Devil Canyon acts as an effective passage barrier to upstream migration of salmon. Radio telemetry studies of Susitna drainage conducted by ADF&G (Yanusz et. al., 2007) observed no sockeye salmon moving above Portage Creek near the entrance to Devils Canyon. A few (less than 100) adult Chinook salmon have been observed above the Devil Canyon dam site (FERC Amend Nov 1985). Electrofishing surveys conducted by ADF&G in 2003 (Johnson, 2010) documented Chinook salmon rearing in Kosina Creek and the Oshetna River, both located above the Watana Dam site.

In the Watana impoundment zone, approximately 40 river miles of the Susitna River would be inundated and transformed into reservoir habitat. An additional 15 miles of four named tributary streams (including Kosina Creek) and numerous smaller unnamed tributaries and eight small lakes would be inundated. There are nine species of fish occurring in the proposed impoundment zones: Arctic grayling would lose approximately nine miles of spawning habitat and would not likely populate the impoundment zone (ENTRIX 1985). River habitat would be transformed into lake/reservoir habitat that may be occupied by a different array of fish species. Lake drawn down may limit spawning of species dependent upon these areas for reproduction. Table 3-1 shows the possible fisheries impact of the Susitna Project.

3.1.2 Chakachamna Project

Chakachamna Project has fish issues of concern to resource agencies. Since this document is a summary, only the three that most affect project economics and licensing ability will be discussed.

3.1.2.1 Lake Level Fluctuations

Chakachamna Lake and the surrounding tributaries support abundant salmon and freshwater fisheries resources. Five significant tributaries and numerous minor drainages empty from the surrounding mountains into Kenibuna and Chakachamna Lakes. Of these, the Chilligan and Igitna Rivers provide significant sockeye salmon spawning habitat. The lake tributary streams also provide habitat for Dolly Varden.

Studies in 1982 showed significant numbers of adult sockeye salmon milling along the north shore of Chakachamna Lake and spawning was suspected but not confirmed. Chakachamna Lake also provides habitat for resident lake trout, Dolly Varden, and round whitefish. Life histories of lake trout, Dolly Varden, and whitefish have not been investigated in Chakachamna Lake.

Under the proposed operational structure (base case), the lake level would fluctuate approximately 60 feet from the normal maximum pool elevation of 1,142 feet to the normal minimum pool elevation of 1,082 feet. If sockeye salmon spawn along lake shoals, it is likely that their spawning timing would coincide with the maximum pool elevation. The resulting eggs might subsequently be exposed and killed when the lake level drops to the minimum pool elevations in March or April. Similarly, lake trout spawning areas may be affected by the winter lake drop in lake level.

An additional impact relating to lake level drop is the potential for down-cutting of the channel between Kenibuna and Chakachamna Lakes and the fluvial fans of lake tributaries such as the Chilligan River. If down cutting occurs and as a result effects the level of Kenibuna lake (within Lake Clark National Park) then project can not be licensed by FERC. Down cutting may also effect fish passage into the tributaries particularly during periods of low lake level.

3.1.2.2 Reduced Flows into the Chakachatna River

The proposed operation of the Chakachamna Hydroelectric Project involves diverting a portion of the natural flow out of Lake Chakachamna to the powerhouse located in the McArthur River valley. In the base case, the average flow in the Chakachatna River will be reduced by approximately 50 to 80 percent from June through November.

The Chakachatna River provides a migration corridor, spawning habitat, and rearing habitat for salmon. The lower Chakachatna River splits into three branches: Middle River, which flows southeast to Cook Inlet, the Chakachatna River, which flows south and joins the McArthur River near its mouth, and a third braided section called Noaukta Slough which joins the middle part of the McArthur River. Hydrologic ties to the Chakachatna and McArthur rivers appear important in supporting the lower elevation wetlands north of Noaukta Slough and in the Trading Bay State

Game Refuge. Reduced river flow may cause floodplains, wetlands, and riparian habitats to dry. Drying of these wetland would effect fish populations in the Trading Bay State Game Refuge.

3.1.2.3 False Attraction

Transfer of water from Chakachamna Lake to the upper McArthur River may cause false attraction of adult salmon to the powerhouse tailrace during their spawning migration. The tailrace is proposed to be located approximately 15 miles up the McArthur River from the Noaukta Slough (Chakachatna River) confluence. The mixture of Chakachamna Lake water from the tailrace may confuse salmon migration and could prevent or delay the movement of salmon to spawning areas in Chakachamna Lake and its tributaries.

Critical months for salmon passage into and out of the lake occur between May and September, when a majority of the lake's discharge will be diverted to the upper McArthur River. Adult salmon return to their natal spawning areas by using olfactory cues (chemical "smells"). For Lake Chakachamna sockeye salmon, these cues are imprinted at the smolt stage when juvenile salmon migrate from spawning and rearing areas in the lake out the Chakachatna River to salt water. Because the majority of the Lake Chakachamna water is being discharged from the powerhouse into the McArthur River a substantial number of the adult salmon may be falsely attracted to the powerhouse in the McArthur River.

3.1 Wildlife Impacts

3.1.1 Susitna Project

There are currently no known listed endangered species in the project area. The most significant effect on wildlife would be on the species that live in the spruce forested valley walls. Impacts on each species would be different based on species abundance and use of the habitat; however, major threats common to most species have been identified. Downstream of the Watana reservoir there may be an increase in preferred moose browse, thus increasing the moose population (Harza Ebasco 1985b). The Susitna Project development would impact mink and otter in the middle river by increasing the winter turbidities which would reduce the value of the mainstem as feeding habitat. Open water in the winter would have a positive effect on mink and otter (Harza Ebasco 1985b). Other impacts to animals downstream of the reservoir would be negligible (Harza Ebasco 1985b).

A summary of the potential environmental impacts of the Susitna Project is provided in Table 3.1 below.

Table 3-1 Potential Environmental Impacts of the Low Watana Hydroelectric Project on the Susitna River

Impacts	Issues
Reservoir - Impacts	
River Habitat & Fisheries Impacts	Approximately 40 river miles of the main stem of the Susitna River and 15 miles of tributary streams will be converted from riverine to reservoir environment. Arctic grayling are the most abundant fish species in the impound zone and will have the greatest

	impacts with the loss of approximately nine miles of spawning habitat. A significant portion of lower Kosina Creek used by rearing Chinook salmon will be lost to inundation.
Fish passage	Fish passage may be blocked for a small number of Chinook salmon that travel above the site.
Drawdown impacts	The annual drawdown and refilling of the reservoir will affect an estimated 10 miles of river that will alternate between river and reservoir habitat.
Terrestrial Impacts	An estimated 20,000 acres of habitat will be flooded. Reservoir may alter traditional migration routes.
Downstream Impacts	
Flow change impacts to fish	Lower summer flows may reduce access to side channel fish habitats and reduce the amount of rearing habitat for salmonids. Increased winter time flows may provide more rearing habitat benefiting overwinter survival. Dampening of flows may alter streambed movement and affect side channel habitats.
Temperature impacts to fish	Lower than natural water temperatures in spring/early summer may cause a delay in the onset of favorable summer rearing conditions for salmonids. Warmer than normal fall water temperatures may extend the summer rearing period later into fall. Overwinter survival for salmonids may be benefited by warmer water temperatures and a delay in ice formation. Higher main stem discharges in winter may maintain higher rates of warm groundwater upwelling in side sloughs affecting incubation of salmon eggs.

3.1.2 Chakachamna Project

Wildlife impacts from the Chakachamna Project have not been studied in detail. Reduction of salmon traveling to Lake Chakachamna tributaries would reduce the food source for bears and eagle in Lake Clark National Park. Drying of Trading Bay State Game Refuge would potentially alter wildlife habitat effecting birds and mammals in the refuge.

Increased flow down the McArthur River may cause some increased flooding and wetlands south of Trading Bay State Game Refugee. The net effect of the changes in food source and habitat over a large area (Lake Clark NP, Trading Bay, and McArthur River) has not been studied.

3.2 Environmental Flow

3.2.1 Susitna Project

Environmental flow requirements are met by water being used for energy production passing through the generating units and then being released into the natural stream channel. The effect of environmental flows is to change the timing of the energy production but not necessarily the average annual amount of generation.

A preferred environmental flow regime in the 1980's was developed to have high late summer flows for maintenance of rearing habitat for Chinook salmon juveniles. However, peak summer flows would be reduced and winter flows (within limits) would be increased to generate more power. A comparison of the 1980 selected environmental flow and of the existing Susitna River flows are shown in Figure 3-1 below.

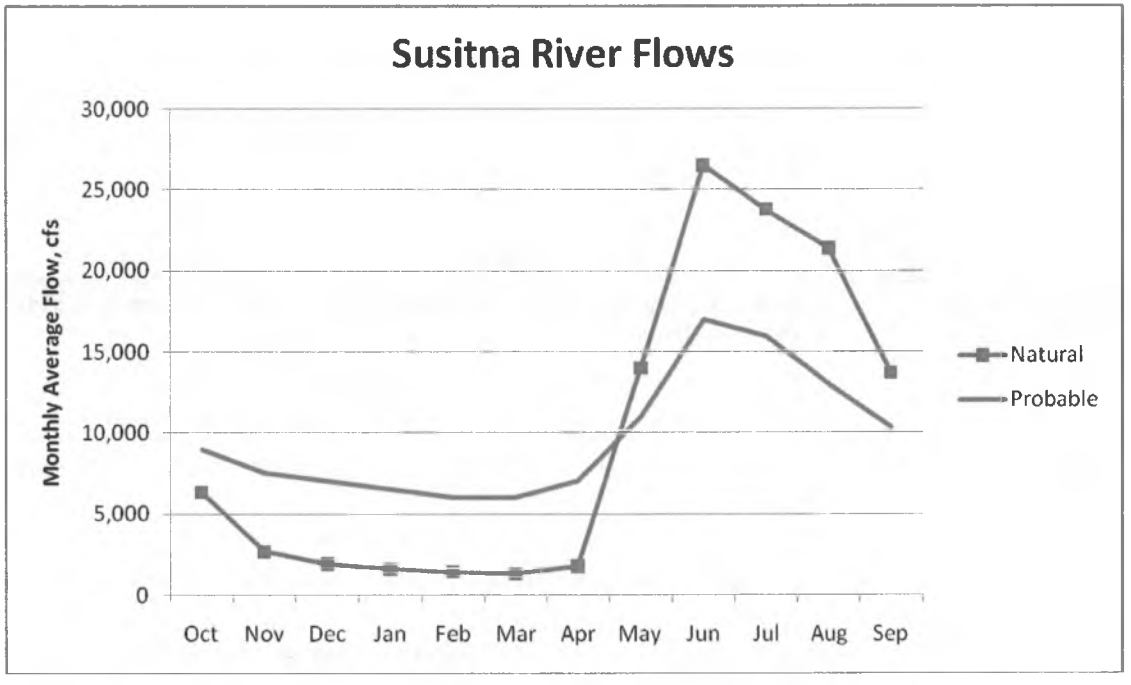


Figure 3-1. Susitna River monthly mean flow at Gold Creek.

3.2.2 Chakachamna Project

The preliminary environmental flow recommendations suggested for the Chakachatna River in the PAD are based on the Montana Method (Tennant 1972) as presented in the Bechtel report on the project in 1983. The Bechtel report assumed environmental flows during the months of April to September of 1094 cfs or lake inflow, whichever was less. During the months of October through March, the minimum environmental flow was assumed to be 365 cfs or lake inflow, whichever was less. These amounts of discharge are rated as "fair to degrading" flows in the Montana Method. This method was developed for and has primarily been used on rivers in the lower 48 states, which show little similarity to the glacially driven and highly seasonal flows of the Chakachatna River. Winter time flows using this method drop below historic average monthly flows, potentially resulting in freeze-out of spawning beds located outside the main river or in side channel areas. Summertime flows provided may not be sufficient to attract adult spawners confused by the discharges into the McArthur drainage or to provide for upstream passage through the canyon area located below Chakachamna Lake. Additionally, this environmental flow method does not take into consideration the groundwater hydrology feeding wetlands of the Trading Bay Game Refuge.

While it is outside of the scope of this document to complete the environmental flow analysis needed to adequately address all of the environmental issues in the Chakachamna watershed, Table 3-2 below provides an estimate of environmental flows that may be more likely to be viewed favorably by permitting agencies. It should be noted, however, that these flows have not been reviewed or endorsed by any permitting agencies. Determination of environmental flows for the project will ultimately be the result of a detailed analysis of instream flow data by conducted by a multiagency review team over a multi year time period.

Table 3-2 Estimate of Probable Environmental Flows

Month	Historic Natural Flow (cfs)	Base Case Flow (cfs)	Minimum Probable Flow (cfs)	Notes
October	2468	402	1,250	50% of mean monthly flow: provides water to Noaukta Slough to attract adult coho spawners and protect historic side channel spawning habitats.
November	1206	365	600	50% of mean monthly flow: provides water to Noaukta Slough to attract adult coho spawners and protect historic side channel spawning habitats.
December	813	363	600	75% of mean monthly flow: protects incubation in Chakachatna/Noaukta Slough spawning beds.
January	613	365	500	100% of mean monthly flow: protects incubation in Chakachatna/Noaukta Slough spawning beds.
February	505	357	500	100% of mean monthly flow: protects incubation in Chakachatna/Noaukta Slough spawning beds.
March	445	358	500	100% of mean monthly flow to protect incubation in Chakachatna/Noaukta Slough spawning beds.
April	441	582	500	100% of mean monthly flow: protects incubation in Chakachatna/Noaukta Slough spawning beds.
May	1042	1,094	750	75% of mean monthly flow: protects juvenile rearing in Chakachatna/Noaukta Slough areas and provides for outmigration of smolts from lake.
June	5,875	1,094	2,000	33% of mean monthly flow: provides water for outmigration of smolts from lake and feeds groundwater to Trading Bay Refuge wetlands.
July	11,944	1,421	4,000	33% of mean monthly flow: provides water to attract spawning adults to Chakachatna/Noaukta as opposed to McArthur, provides adequate flow for adult passage through canyon below lake outlet, and feeds groundwater to Trading Bay Refuge wetlands.
August	11,996	5,599	4,000	33% of mean monthly flow: provides water to attract spawning adults to Chakachatna/Noaukta as opposed to McArthur, provides adequate flow for adult passage through canyon below lake outlet, and feeds groundwater to Trading Bay Refuge wetlands.
September	6,042	2,164	2,000	33% of mean monthly flow: provides water to attract spawning adults to Chakachatna/Noaukta as opposed to McArthur, provides adequate flow for adult passage through canyon below lake outlet, and feeds groundwater to Trading Bay Refuge wetlands.

3.2.3 Environmental Flow Analysis

To evaluate the effect of increased minimum environmental flow requirements in the Chakachatna River and/or the effect of lake level fluctuations, two alternatives to the base case were also evaluated. Environmental issues surrounding project operations generally revolve around three main issues: 1) habitat affected by flows in the bypass reach; 2) upstream and downstream fish passage; and 3) habitat affected by lake level fluctuations. The alternatives to the Base case evaluated were:

- **Alternative #1 – Base case with probable environmental flow.** Alternative 1 is the same as the base case except that:
  - Environmental flow requirements are revised as described in Table 3-2 above.
  - The lake level fluctuations are not restricted.
- **Alternative #2 – Base case with probable environmental flow & minimization of lake fluctuation**. Alternative 2 is the same as the base case except that:
  - Environmental flow requirements are revised as described in Table 3-2 above.
  - The maximum lake level fluctuation would be 15 feet below the weir outlet.

A comparison of potential environmental impacts resulting from each alternative are presented in Table 3-3.

Table 3-3 Comparison of Potential Environmental Impacts Resulting from Chakachamna Lake Hydro Alternatives

Issue	Base Case	Alternative 1	Alternative 2
Lake Level Fluctuation			
Impacts to shoal spawning areas for sockeye salmon and lake trout	Significant impacts to incubating eggs due to draw down	Significant impacts	Least significant case but impacts may still occur
Access to inlet streams (Chilligan and Igitna) for sockeye spawners	Not likely to be impacted	Could be impacted due to drawn down	Not likely to be impacted
Adult salmon passage into lake	Minor to moderate, passage via natural outlet 87% of time	Significant, dependent upon using fish tunnel 91% of the time	Minor to moderate passage via natural outlet 87% of time
Smolt outmigration from lake	Unknown, smolts 100% dependent on fish passage tunnel	Unknown, smolts 100% dependent on fish passage tunnel	Unknown, smolts 100% dependent on fish passage tunnel
Chakachatna / McArthur Issues			
False attraction of Chakachamna sockey spawners to the McArthur powerhouse	Likely to occur	Least likely case but may still occur	Least likely case but may still occur
Noauktna Slough and Chakachatna side channel spawning and rearing habitats	Moderate impacts possible from winter freeze-out	Lower impacts than Base Case	Lower impacts than Base Case
Trading Bay Wildlife Refuge			
Groundwater fed wetland habitats	Moderate impacts	Lower impacts than Base Case	Lower impacts than Base Case

Under the Base Case and Alternative 1 the lake level would fluctuate approximately 60 feet from the normal maximum pool elevation of 1,142 feet to the normal minimum pool elevation of 1,082 feet. Spawning of adult salmon and Lake Trout may be effected and down cutting to tributaries may occur.

Lake level affects adult salmon passage into the lake in Alternative 1, where the natural outlet is not available to spawning adults 91 percent of the time. In this alternative, fish will be dependant upon using the two mile long fish passage tunnel. There is uncertainty whether fish will be willing to use the tunnel. In all cases the fish passage tunnel will be required for smolt outmigration.

In Alternative 2, the lake level is minimized to 15 feet below the outlet. While this amount of drawdown may exceed natural lake level fluctuation, it is the scenario offering the least impact to lake habitats.

For Chakachamna, limiting lake fluctuation (Alternative 2) to minimize the affect on upstream spawning will decrease the amount of runoff that can be captured, thereby decreasing the average annual generation. Figure 3-2 shows the post-project lake elevation by month for the base case and the two alternatives.

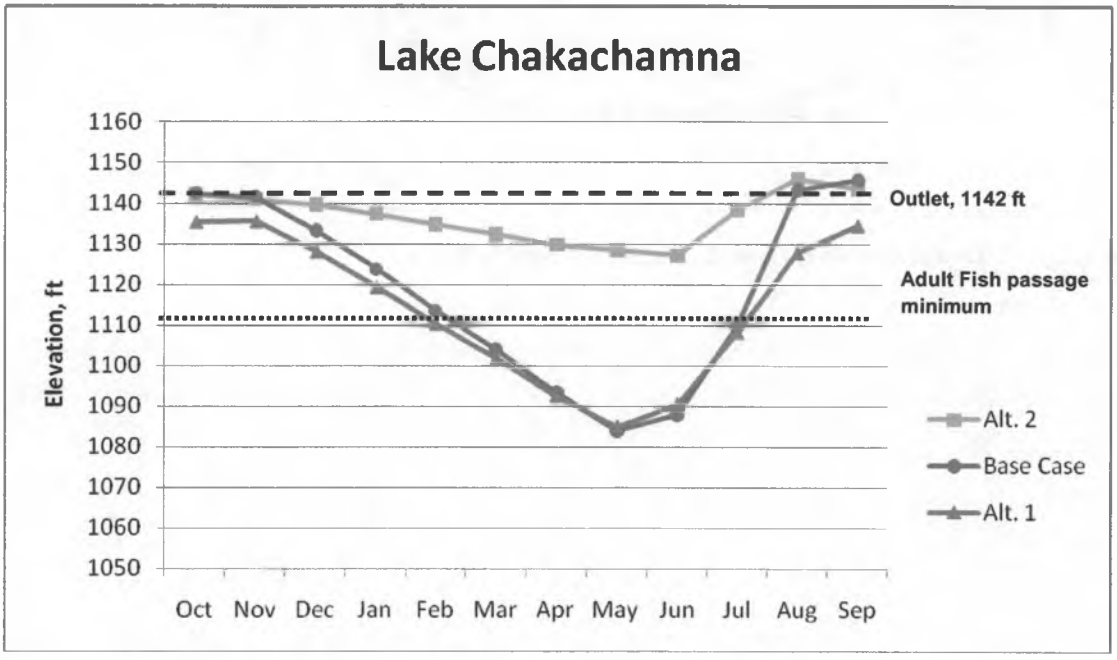


Figure 3-2 Chakachamna Lake Elevation by Month

Flows in the Chakachatna River during Project operation will be comprised of environmental flow releases and spill as shown in Figure 3-3. Since the powerhouse discharges return to the McArthur River, the net flows in the Chakachatna River are reduced in all cases.

Detailed Chakachamna environmental discussion can be found at Susitna and Chakachamna – Preliminary Decision Document, Environmental-Energy-Cost November 12, 2010 located on the AEA Railbelt Large Hydro webpage.

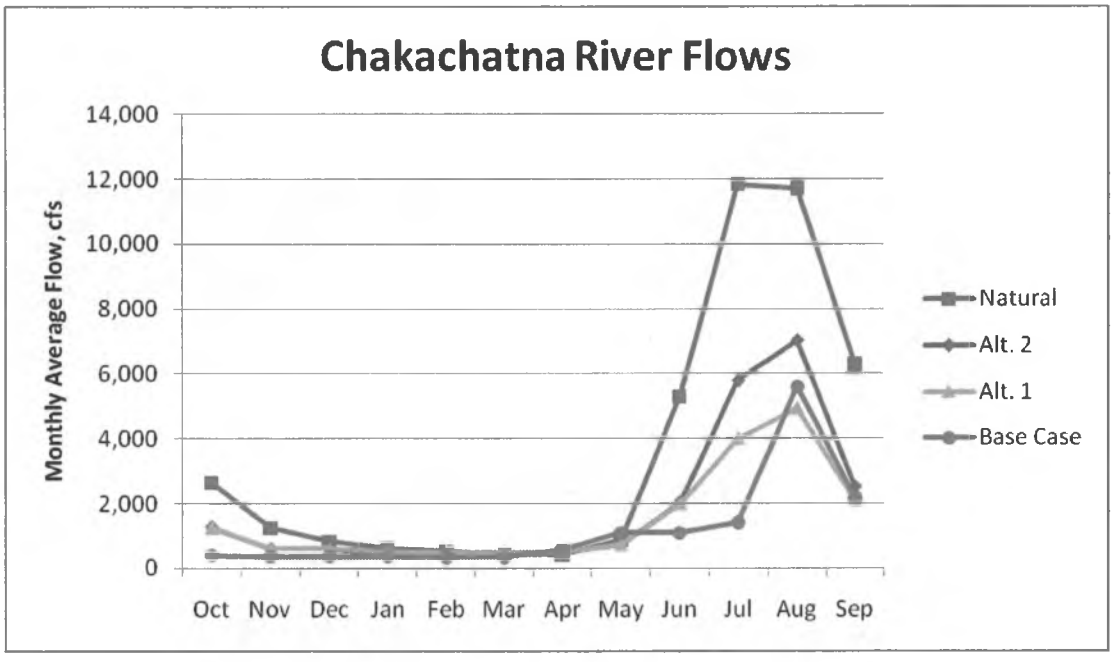


Figure 3-3 **Chakachatna River Flows (Downstream of Lake) by Month**

Chapter 4

Preliminary Energy Estimate

4.1 Evaluation of Average Annual Energy and Firm Winter Capacity

The amount of energy that can be produced from hydroelectric projects is a function of the amount of available water and, in the case of storage projects, how the available water can be regulated (systematically released). In addition to the average annual energy, the firm capacity attainable during winter months is of particular importance. For hydroelectric projects, the firm capacity is almost always lower than the installed generation capacity for a project. For the purposes of this study work, firm capacity is defined as:

"The amount of power the project can generate on a continuous basis from November 1 through April 30 with 98 percent reliability."

It should be noted that this is only one manner of regulation. The water can be regulated in a variety of different means in order to achieve other objectives, such as peaking, spinning reserve, or backup capacity. Major assumptions used to develop the estimates average annual energy and winter plant capacity are presented below.

4.1.1 Susitna Model Assumptions and Data Sources

This potential project consists of the construction of a large storage reservoir on the Susitna River at the Watana site with a 700-foot-high dam and a four-unit powerhouse with a total installed capacity of 600 MW. This "Low Watana non-expandable" alternative is described in detail in *Susitna Hydroelectric Project, Conceptual Alternative Design Report (*HDR Alaska 2009b).

4.1.2 Chakachamna Model Assumptions and Data Sources

This potential project consists of the inter basin transfer of water from a lake tap near the outlet of Chakachamna Lake through an approximately 10.8-mile-long tunnel to an underground powerhouse that would discharge to the McArthur River. The powerhouse would have a total generating capacity of 300 MW. The Base case (as proposed) and two alternatives were evaluated. Alternatives, described in Section 3.1.3, show how alternative operational constraints on the project would affect project energy. These alternatives are as follows:

- **Base Case** for analysis was the project as described in the PAD (TDX Power 2009). This project used environmental flow recommendations for the Chakachatna River based on the Montana Method (Tennant 1972).

- **Alternative #1 – Base Case with Probable Environmental Flow.** Alternative 1 is the same as the Base Case except that higher environmental flows are required.

- **Alternative #2 – Base Case with Probable Environmental Flow & Minimization of Lake Fluctuation.** Alternative 2 is the same as the Base Case except that higher environmental flows are required and lake level drop would be limited.

4.2 Results

Firm capacities and average annual energy estimates are presented in Table 4-1.

Table 4-1 Firm Capacity and Average Annual Energy Estimates

Alternative	98% Winter Capacity (MW)	Average Annual Energy Production (GWhrs)
Susitna	245	2,600
Chakachamna, Base Case	170	1,300
Chakachamna, Alternative 1	140	1,100
Chakachamna , Alternative 2	30	860

The energy distribution by month for each of the above alternatives is shown in Figure 4-1 below.

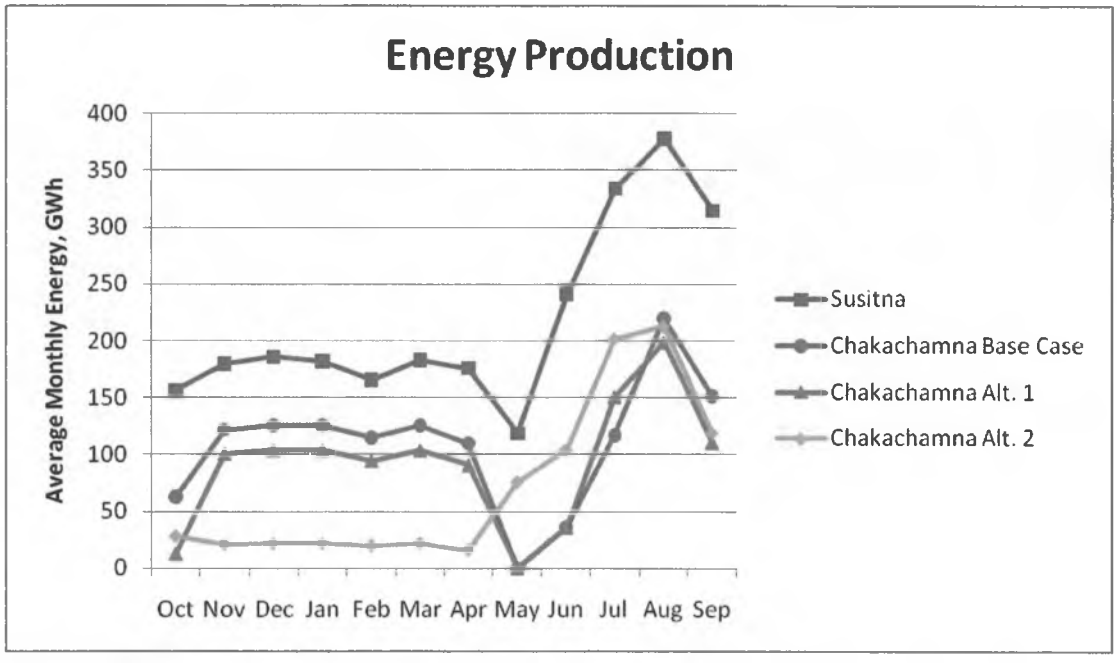


Figure 4-1 Energy Distribution by Month

As can be seen by these results, the firm winter capacity and average annual energy production estimates can vary significantly based upon the assumed environmental constraints placed upon the project. For the Chakachamna Project, increased environmental flow requirements (Alternatives 1 and 2) reduce the amount of water that is available for generation, thereby

lowering the annual energy. Reduced use of reservoir storage greatly limits the amount of energy that can be produced during the winter months (Alternative 2).

Detailed Chakachamna environmental discussion can be found at Susitna and Chakachamna – Preliminary Decision Document, Environmental-Energy-Cost November 12, 2010 located on the AEA Railbelt Large Hydro webpage.

For the Susitna Project, environmental flow requirements are met by water passing through the generating units and then being released into the natural stream channel. The effect of changed environmental flows is to change the timing of the energy production but not necessarily the average annual amount of generation.

Chapter 5 Permitting

5.1 Overview – Regulatory Processes

While pursuant to the Federal Power Act (FPA), the Federal Energy Regulatory Commission (FERC) has exclusive authority to issue licenses for most non-federal hydropower projects, there are several federal and state agencies that are authorized under several federal statutes to submit mandatory and recommended terms and conditions to be included in a FERC-issued license.

- **FERC's licensing process options** – Applicants may propose to use one of three options: the Integrated (ILP), Alternative (ALP), or Traditional (TLP). The default is the ILP, unless FERC approves use of either the ALP or TLP.
- **Pre-filing consultation** – extensive pre-filing meetings and exchange of information required.
- **Federal Energy Regulatory Commission – Application for License** required; Draft submitted for review & comments; Final filed.
- **Federal and State resource agencies consultation & terms & conditions** – File mandatory & recommended terms and conditions; most become License Articles and require compliance.
- **Numerous other State & Federal approvals & permits are required** – Applicants are required to provide evidence of consultation with agencies in an Application for License, and provide copies of permits and/or approvals.

Please also see R&M Consultants/Hatch Associates Consultants report (2010) for a detailed presentation of the various agencies and their authorities who would shape the content of any issued license.

5.2 Regulatory Issues – Chakachamna Project

TDX received its first Preliminary Permit on November 14, 2006. The purpose of a Preliminary Permit is to reserve priority to conduct studies for a period of three years, and if the effort results in filing an Application for License. A successive (second) permit was issued on February 25, 2010. This permit expires on January 31, 2013. FERC noted in issuing the permit that "a successive permit can warrant a greater standard of Commission oversight." "If the permittee fails to make significant progress toward developing a license application, the permit may be subject to cancellation."

On July 17, 2009, TDX filed its Notice of Intent to File an Application for License (NOI), Request to Use a Traditional Licensing Process (TLP), and Pre-Application Document (PAD). By letter dated July 27, 2009, FERC requested that they consider which licensing process it wishes to use and to refile its request noting that there would not be a need to refile the PAD. TDX met with FERC on August 5, 2009 to discuss the proceeding. On September 21, 2009, TDX requested to rescind its PAD. TDX stated that "this Project may be best served by an Integrated Licensing Process (ILP). TDX stated its intent to implement a field season in 2010 and to hold a study plan review and workshop in February 2010. TDX has a website for the Project and there is no evidence that work is proceeding as noted in their September 21, 2009, correspondence to the FERC. Nor has any further information been filed with the Commission. Under TDX's current development schedule, a third FERC Permit would be necessary.

5.2.1 Licensing Schedule

Once the pre-filing process restarts the schedule could be:

- Prepare and File Final Application for License – 4.5 years
- FERC Processing and License Issuance – 2.5 years

5.3 Regulatory Issues – Susitna / Low Watana Project

At present, there is no FERC Preliminary Permit in effect. While a FERC Permit is not required, it would be prudent for an entity representing the State to secure priority to study the Project. As discussed above, the Alaska Power Authority (APA), now known as AEA prepared and filed an application for license in February 1983. That application was withdrawn and APA revised the Project schedule to realize benefits identified with a three, as opposed to two-year construction schedule in 1985. In 1986, APA abandoned pursuit of a FERC license for numerous reasons, including financial feasibility.

In 2008, AEA began an update of the project, including preparation of the Railbelt IRP to evaluate the ability of the Susitna Project, and other resources, to meet long term demand in the Railbelt Region.

5.3.1 Licensing Schedule

Table 5-1 shows a Licensing, Engineering and Construction Schedule Comparison for the two projects. For the Susitna Project, based on information available at this time, the FERC schedule could be:

- Prepare and File Final Application for License – 3.5 years
- FERC Processing and License Issuance – 2 years

5.4 Total Project Development Timeline

Table 5-1 provides a Development Schedule Comparison for the two projects. Based on information available at this time, the comparative total schedule from start of the FERC process, in the case of the Chakachamna a restart of their pre-filing process, could be:

Table 5-1 Development Schedule Comparison

Major Task	Chakachamna	Susitna Low Watana
FERC Pre-filing Process	4.5 years	3.5 years
FERC Processing – DC	2.5 years	2.0 years
FERC Processing - Portland	2.0 years	1.0 years
Construction through Start up	5.5 years	4.5 years
TOTALS	**14.5 YEARS**	**11 YEARS**

Detailed Susitna and Chakachamna Licensing and permitting information is found at Susitna-Low Watana & Chakachamna Projects, Large Hydro Evaluation of Two Projects, Preliminary Decision Document, Environmental & Regulatory Issues November 14, 2010 located on the AEA Railbelt Large Hydro webpage.

Chapter 6

Development Schedule

The following tables (Table 6-1 and Table 6-2) show the major tasks associated with hydro project development, and the estimated preliminary schedule for completion for the Chakachamna Project compared to the estimated preliminary schedule for completion for the Susitna Project. Special considerations and assumptions for each are listed below.

Table 6-1 Considerations / Assumptions

Chakachamna Project	Susitna Project
▪ TBM est. 14-16 months to order and deliver to site ▪ 4.5 year pre-filing process assumes studies underway in 2011 (one year behind schedule in TDX PAD, 2009) ▪ 2.5 years for FERC Processing and License Issuance, and 5.5 year construction schedule based on PAD (Appendix 2-1) ▪ FERC-PRO processing and some procurement must be accomplished before field work can begin ▪ Longer construction schedule due to significant underground work, with higher risk profile and greater uncertainty ▪ Project "access" to require 2 yrs to construct ▪ Chakachamna has higher risk that the schedule to Project Startup will extend beyond 14.5 years.	▪ Significant, extensive and valid environmental studies performed in 1980's to be updated and used to develop FERC documents ▪ Significant geotechnical investigations performed previously ▪ FERC-PRO processing and some procurement must be accomplished before field work can begin ▪ More surface features and work carries more schedule certainty, less risk ▪ Project "access" to require 2 yrs to construct ▪ Engineering schedule based on "Low Watana Non-Expandable Development" (HDR, 2009) ▪ Susitna has lower risk that the schedule to Project Startup will extend beyond 11 years.

Table 6-2 Licensing, Engineering, and Construction Schedule Comparison

	Regulatory / Environmental Major Tasks			Engineering / Construction Major Tasks		
		Chakachamna	**Susitna**		**Chakachamna**	**Susitna**
Pre-License Issuance	Preliminary Permit Scoping Draft Application Final Application	4.5 yrs	3.5 yrs	Feasibility Engineering Design Specifications, Drawings & Bid Documents		
	FERC Processing (DHAC) License Order Issued	2.5 yrs	2 yrs			
Post-License Issuance	License & Permits Compliance			FERC Processing (Portland Regional Office) Procurement	2 yrs	1 yr
				Construction Testing & Commissioning Project Startup	5.5 yrs	4.5 yrs
Reg/Env Estimated Schedule		**7 yrs**	**5.5 yrs**	**Eng/Const Estimated Schedule**	**7.5 yrs**	**5.5 yrs**
				ESTIMATED TOTAL TO STARTUP	**14-15 years**	**11 years**

Chapter 7

Financial

Based on project risk for investors, the two projects, Susitna and Chakachamna, are similar. Project financing for either project, where the costs of the project is paid for solely by the sale of power produced from the project, is assumed to be unavailable. Without State participation these project are unlikely to proceed. State participation of whatever form it takes place will enable these projects to occur and lower the cost of the energy to ratepayers.

Large projects have financing that is structured on some amount of government participation. Government participation is normally required because of the following risks generally associated with large hydroelectric projects make project financing unattainable:

- **Timeline**: Project may take 10-20 years prior to first power sales. Private investors do not like to spend substantial funds for an extended time when the payoff is a long time or may not occur.
- **Licensing and Permitting Risk**: Significant funds can be spent only for the project to have long delays in licensing and in operation constraints placed on project.
- **Construction Risk**: Estimating the cost of a project many years out has risk of the prices changing for materials and labor. In addition, the demand for a product can change.

The "Bradley Model" has been discussed as a way that a new large hydroelectric facility can be financed for construction with State assistance. Licensed and constructed in the 1980's and early 1990's it is Alaska's largest hydroelectric project. Bradley Lake Hydroelectric Project (Bradley Project) is located southeast of Homer, Alaska and is a 125-foot high concrete faced rock filled gravity dam. The project has 126MW of installed capacity and produces approximately 9 percent of the railbelt's annual energy. The state paid for licensing and much of the cost of the project. Approximately 50 percent of the project's licensing and construction cost was paid by the State. The railbelt utilities purchase all the power for the projects and pay all the costs of the project (bond financing, Operations and maintenance). Once the debt service is retired then the utilities will continue to pay the State the same amount as the debt service.

Detailed information on State participation and Bradley financing is available at Hydroelectric Project Risk Analysis & the Bradley Lake Funding Model Summary Report, November 15, 2010 located on AEA's website at the Railbelt Large Hydro webpage.

Chapter 8

Cost of Power

The cost of power from the Susitna and Chakachamna Projects is addressed in this chapter. A simple calculation of the cost of power, which assumes 50 percent State equity in either project, a financing rate of 6 percent, and annual energy from sections above results in the generation costs shown in Table 8-1 below.

Table 8-1 Cost of Power Comparison

Project	Finance Amount (50%)	Rate	Term (years)	Annual Energy (GWhrs)	Cost per kWhr
Susitna	2,250,000,000	6%	30	2600	$0.063
Chakachamna Alt 1	1,440,000,000	6%	30	1100	$0.09
Chakachamna Alt 2	1,440,000,000	6%	30	860	$0.12

This simple table gives an idea of how the two projects compare in the cost of power. Interest during construction is excluded from this comparison.

The estimated construction cost of Chakachamna Alternative 1 would need to decrease by 30 percent to have a comparable cost of power with the Susitna Project. Or, assuming no changes in the cost the energy of the Chakachamna Project, annual energy would need to be 1600 GWhrs. This could only be achieved by having zero environmental flow.

An alternative way of analyzing cost comparisons is to estimate State contributions needed if generation costs are held at $0.06 kWhr. From this perspective, the State required contribution would be $2.35 B for the Susitna Project (2,600 GWhrs) and $1.96 B for the Chakachamna Project (1100 GWhrs) or $2.17 B (860 GWhrs). Assuming state participation would be based on providing $.06 cost per kWh, the Susitna project would cost 20% more than Chakachamna project Alternative 1; however, it will provide approximately 136% more energy and compared to Alternative 2, an 8% greater cost with 200% more energy.

Chapter 9

Operational Uncertainty

Table 9-1 presents a summary of the comparative operational uncertainties associated with developing the Chakachamna and Susitna Projects.

Table 9-1 Operational Uncertainties Issue Comparison

Issue and likelihood of occurrence within next 100 years	Chakachamna Project	Susitna Project
	Issue Notes/Requirements	**Issue Notes/Requirements**
Earthquake Risk		
Immediate damage due to fault movement Studies show 700-year return period for significant earthquakes (magnitude 6 to 7), last such earthquake approximately 650 years ago.	Castle Mountain fault, approximately 11 miles from the lake, magnitude 7+, displacements of up to 6 ft, only 4500 ft from powerhouse site. Infrastructure near the fault include; powerhouse and bridge over Chakachatna River. Power tunnel intersects numerous smaller faults. Seismic event may cause localized collapse in the fault zone if not lined. Lack of information about whether movement could occur on any of these smaller faults.	Castle Mountain Fault located 65 miles from powerhouse, intake, lake, magnitude 7+, Denali Fault located 45 miles , magnitude 8.0, Inter-plate subduction zone located 40 miles, magnitude 9.2 Dam could experience high seismic loads (known seismic zone, EQ design case should consider loading)
Secondary effects	Landslide and avalanche potential into lake and onto access road.	Potential landslides and avalanches along access roads.
Hydrological Risk		
Generation	USGS record at site 11 years of data, correlation with 4 streams. Understanding of the hydrology There is potential during events such as floods or glacial activity for down cutting of the glacial moraine at the end of the lake which could reduce head and storage in the project Smaller basin will cause greater deviations from average hydrological flow and energy generation. Drought (Not sure if needed, see above) Tunnel roughness may increase with time due to wear which will reduce generation.	USGS record at site 54 years of data on Susitna River. Understanding of the hydrology vis a vis climate change effects.
Climate Change		
Glacier recession	Increase in flows as the glaciers melt (>100 yrs), followed by reduced and more "flashy" flows at the project.	Increase flow for a period with glacier recession (>100 yrs) followed by decreased flow.
Volcanism		

Table 9-1 Operational Uncertainties Issue Comparison

Issue and likelihood of occurrence within next 100 years	Chakachamna Project	Susitna Project
	Issue Notes/Requirements	**Issue Notes/Requirements**
Effects on Project Facilities and Features	Mt Spurr is located immediately adjacent to the project, Redoubt volcano is approx. 50 miles to the west. Explosive eruption at Mt. Redoubt 2009 Previous eruption on Mt. Spurr was a side blowout. Debris flows similar to those that occurred in 1953 and 1992 eruptions of Crater Peak could dam Chakachatna River. The debris dams might erode progressively or may burst abruptly. Lava flows could dam the Chakachatna River and raise Chakachamna Lake. Large floods would be produced by surging and melting of glacial ice during an eruption. Glacier movement (melting at base) is probable. Ice flow on Barrier Glacier may surge, dam the lake, raise water level and erode through, typically below the glacier in material. Access road may become blocked or destroyed by mud or erosion (high flows in river from melting glacier or glacial dam breakout). Effects on river bridges from debris flow Ash effects on transmission Poison gas cloud could affect the powerhouse (unlikely with distance & powerhouse location) Communications may be disrupted by volcano.	Mt Wrangell is located to the more than a hundred miles to the East and is closer to Watana. Mt Wrangell is in a non-eruptive active state at present but with history of 9 reported possible eruptions since 1760, most recently 1930; steaming at present. Ash could reach the Watana project and transmission lines depending on wind conditions. Pyroclastic flows are unlikely to affect Watana due to distance and intervening terrain.
Tunnelling and Foundation Conditions		
Dam	Small structure on rock foundation. Material of the natural dam, believed to be moraine, could contain significant quantities of ice, lahar material, or volcanic ash that could affect the permanence of the natural dam.	Geotechnical exploration indicates favorable foundation conditions on bedrock. Foundation (permafrost). Melting permafrost in the rock could lead to increased permeability of foundation that may require additional grouting associated with project site.

Table 9-1 Operational Uncertainties Issue Comparison

Issue and likelihood of occurrence within next 100 years	Chakachamna Project	Susitna Project
	Issue Notes/Requirements	Issue Notes/Requirements
		River diversion tunnels. Large spillway.
Power tunnel(s)	Extensive underground construction will be expensive to shut down for inspection and repair if necessary. Very hard rock along tunnel alignment – more than 35,000 psi, which is extremely hard and could present difficulty for a tunnel boring machine resulting in slow progress.	Competent rock conditions for dam and tunnel construction, studies date to 1982. Very short power tunnel(s) – 1.0 mile max, and shallow and surface power tunnel, therefore less risk of delay in construction. Limited number of geotechnical fault zones to pass through, due to location and short length of tunnels, provided "Fingerbuster" and "Fin" zones are avoided.
Glacier Activity		
Dam and Intake	Unpredictability regarding the interaction of glaciers with the volcanic activity, including possible melting at the base of the ice that would cause glacial pulses or surges. An advance of Barrier Glacier at the Chakachamna Lake outlet, initiated by heat from below the ice, could dam the outlet and raise the lake level. When the ice nose decayed, a large volume of water would be released that could erode the lake outlet and lower the lake below its present level. There is potential during events such as floods, glacial activity for down cutting of the glacial moraine at the end of the lake which could reduce head and storage in the project. Lowering the lake would reduce the submergence of the power inlet below what is acceptable. Breakout in 1971 one of Alaska's largest recorded floods.	N/A
Powerhouse	Blockade Glacier has been identified as a source of outburst floods on McArthur River	N/A
Surging Glaciers	Four glaciers in the Chakachamna study area have been identified as surging glaciers. They include Pothole Glacier and Harpoon Glacier in the Nagishlamina River Valley and Capps Glacier on the eastern slope of Mt Spurr.	N/A

Table 9-1 Operational Uncertainties Issue Comparison

Issue and likelihood of occurrence within next 100 years	Chakachamna Project	Susitna Project
	Issue Notes/Requirements	**Issue Notes/Requirements**
Outburst Glaciers	Glacier damming of the Nagishlamina Valley by a surging glacier may result in outburst conditions at the outlet from Chakachamna Lake. A sudden influx of water into Chakachamna Lake could produce significant changes including lowering of the lake outlet.	N/A
Other		
Intake	Lake tap would need fish screens Volcano eruption may affect power tunnel intake.	N/A
Access Road	Landslide, avalanche danger part of the route.	Avalanche danger over a portion of the route.
Transmission Line	42 miles of new transmission line to Beluga Sub Station. Submarine cable across Cook Inlet subject to marine environment risks such as currents, scour, dragging anchors.	58 miles of new transmission line.
Operation & Maintenance		
Operations & Maintenance	Long tunnel intersecting numerous faults susceptible to rock-falls over time and maintenance requirements Rock entrained in tunnel flow could damage turbines Long tunnel has higher risk of collapse, blockage Long tunnel will require planned outages for inspection and maintenance over life of project, higher risk of interruption.	Multiple short tunnels allows for more regular inspection and maintenance without prolonged outages and impact to operations
Load Stability		
Powerhouse location with respect to load centers	Off the end of the railbelt load center, not easy to stabilize (brown-out/black-out).	Location between Anchorage and Fairbanks means project is closer to center of load, easier to stabilize grid using reactive potential.
Hydrological Risk - Water Shortage		
Drought	Small catchment mainly fed by meltwater from glaciers, which make this site more susceptible to water shortages and less dependable as a source of energy.	Catchment is less susceptible to drought.

Chapter 10

Summary and Conclusions

This document compared two large hydroelectric projects to determine which would better meet the needs of the railbelt population and the State of Alaska now and into the future. The following table shows a comparison summary of the two projects.

Table 10-1 Comparison Summary

Criteria	Susitna (Low Watana) Project	Chakachamna Project
Engineering (Cost)	$4.5B	$2.9
Environmental	Same basin, modified flows, little to no salmon present.	Cross basin drainage, substantial concern regarding fisheries and Trading Bay State Game Refuge.
Energy	2,600 GWhrs annual average. About 50% of existing railbelt annual electrical energy. Meets and exceeds State energy policy without other projects.	Most likely to be less than 1,100 GWhrs annual average. About 20% of existing railbelt annual electrical energy. Does not provide substantial winter power.
Start-up Date	Approximately 11 years	Approximately 15 years
Licensing/Permitting	Substantial site knowledge likely to reduce licensing/permitting delays.	Significant unknowns on environment, geology, and hydrology likely to slow process
Finance	Requires State financial support	Requires State financial support
Cost of Energy	Simple calculation using cost & energy numbers above, 50% State equity, and 6% interest yields $0.06 /khr	Simple calculation using cost & energy numbers above, 50% State equity, and 6% interest yields $0.09-0.12 /khr
Operational Uncertainty	Less long term operational risk from seismic. Central location helps to stabilize grid.	Greater long term operational risk from seismic events, volcano eruption, & glacial changes. Energy more variable on an annual basis. Harder to stabilize.
Notes	River system has potential to expand generation by going upstream, downstream, or raise dam height. Transmission lines could connect to other areas of the State.	

The Susitna Project would produce more energy and at a lower cost per MW. Historically the flow has varied little year to year so that the amount of energy can be better estimated. Most of the Project is anticipated to be above ground so that geotechnical unknowns that influence construction cost risk are minimized. Produced energy during summer would be greater than desired so that flows would remain high for salmon downriver. However, the reservoir area would give the Project the ability to still generate substantial power during the winter critical months.

The Chakachamna Project would not be able to divert flow as was used for estimating energy in the early 1980's. The reduced flow would have substantial effects on the Trading Bay State Game Refuge down river and would cause false attraction to return adult salmon so that they are not able to find their way to the lake. In addition, the smolt salmon in the lake need substantial outlet flow to enable them to find the exit to the lake. Drawing down the lake during the winter would cause mortality of shallow spawners and may prevent salmon from ascending up the rivers at the head of the lake during early summer. If the Project is operated to provide significant environmental flows and restrict the lake drawdown then the cost of energy increases significantly and would produce minimal energy during the critical winter months. Because of the complex two drainage system hydrology and rich fisheries determining the environmental flow and conditions will require many years and millions of dollars. The substantial number of multi-year studies would delay the licensing and start-up date.

The Susitna Project is thought to be a licensable project without a fatal flaw. Geotechnical information indicates bedrock is suitable for construction. Environmental information indicates that impacts would be minimal. The Chakachamna Project has many fisheries concerns that will restrict the Project operation, increase the cost, and decrease the energy output of the Project. Some of the issues may not be able to be mitigated.

The Susitna Project provides a lower cost per unit of energy, the least environmental impact, a greater total amount of energy, and the anticipated startup date is sooner.

Based on the projects economics and impacts Susitna Project (Low Watana non-expandable alternative) should be the primary Project to pursue with Chakachamna Project as the alternative.

Chapter 11

Recommendations

We recommend that field studies and engineering evaluations be conducted on the Susitna Project preparing for a Final Decision Document scheduled to be released on November 15, 2011. In addition, we also recommend that a FERC license application be initiated on January 1, 2012 for the selected Project. In order for the process to move forward it is recommended that a Preliminary Permit be filed with FERC for the selected Project by December 31, 2011.

Specific studies to be completed in 2011 include:

- A complete review of the 1985 Susitna environmental study plan and the conduct of critical studies from that plan. Changes to the river system and the environment need to be documented.
- Field work to verify Susitna environmental conditions.
- A detailed cost estimate of the Chakachamna Project including changes to the Project introduced by environment constraints such as downstream flow releases (size optimization).
- A final determination of the type dam to be used at the Susitna site and the access plan and a revised cost estimate of the overall scheme.
- Detailed engineering studies on transmission needs, design drawings, and geotechnical review.

It is anticipated based on the schedule discussion in preceding Section 6.0 that the data gathered in the 2011 field season can be used for both the primary and alternative project. The FERC Preliminary Permit for the Susitna Project should be filed by December 2011.

Chapter 12

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ALASKA
ENERGY AUTHORITY



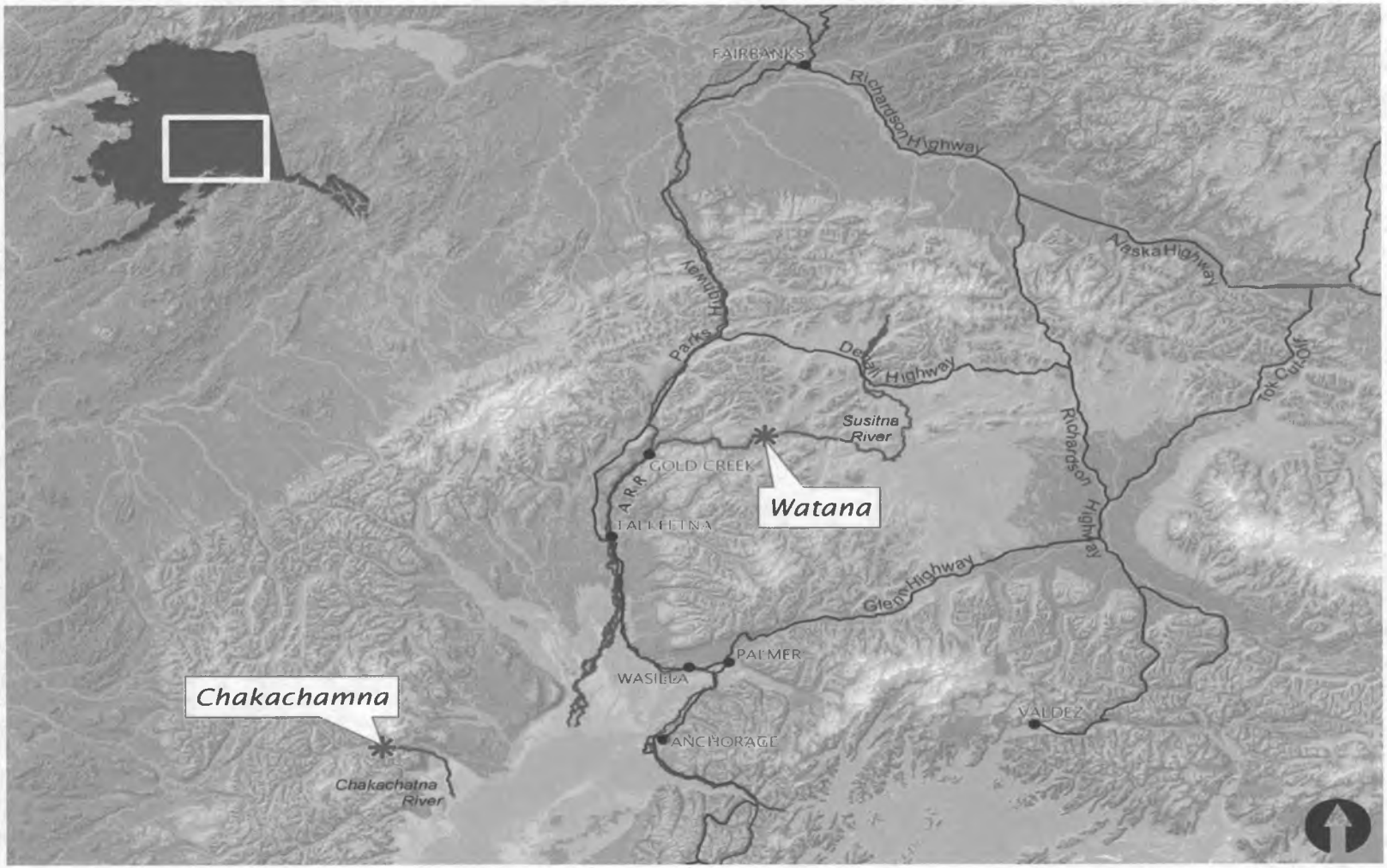
Railbelt Large Hydroelectric

Senate Resources Committee
& House Energy Committee

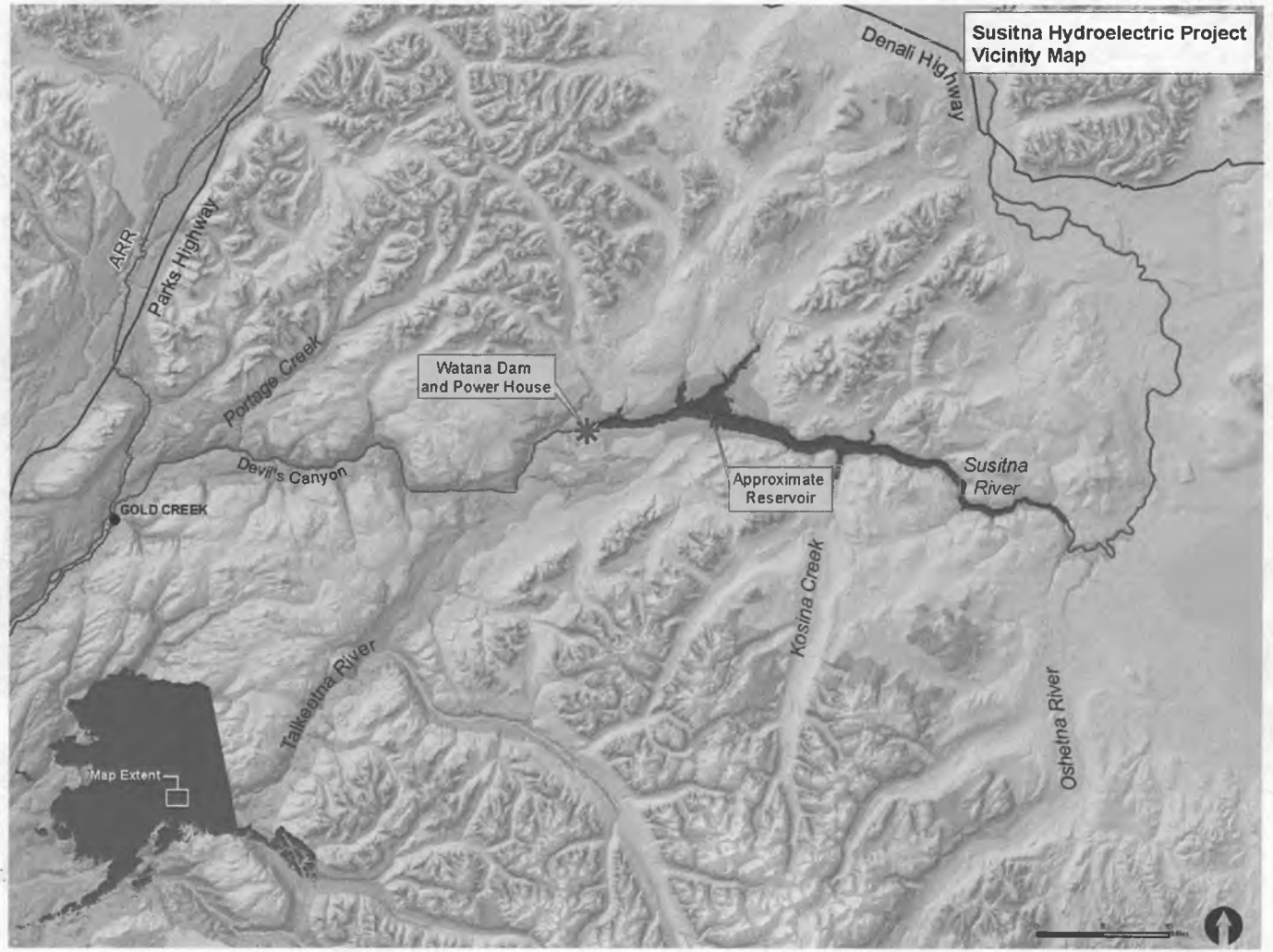
Prepared by Alaska Energy Authority 1 /25/2011

ALASKA ENERGY AUTHORITY

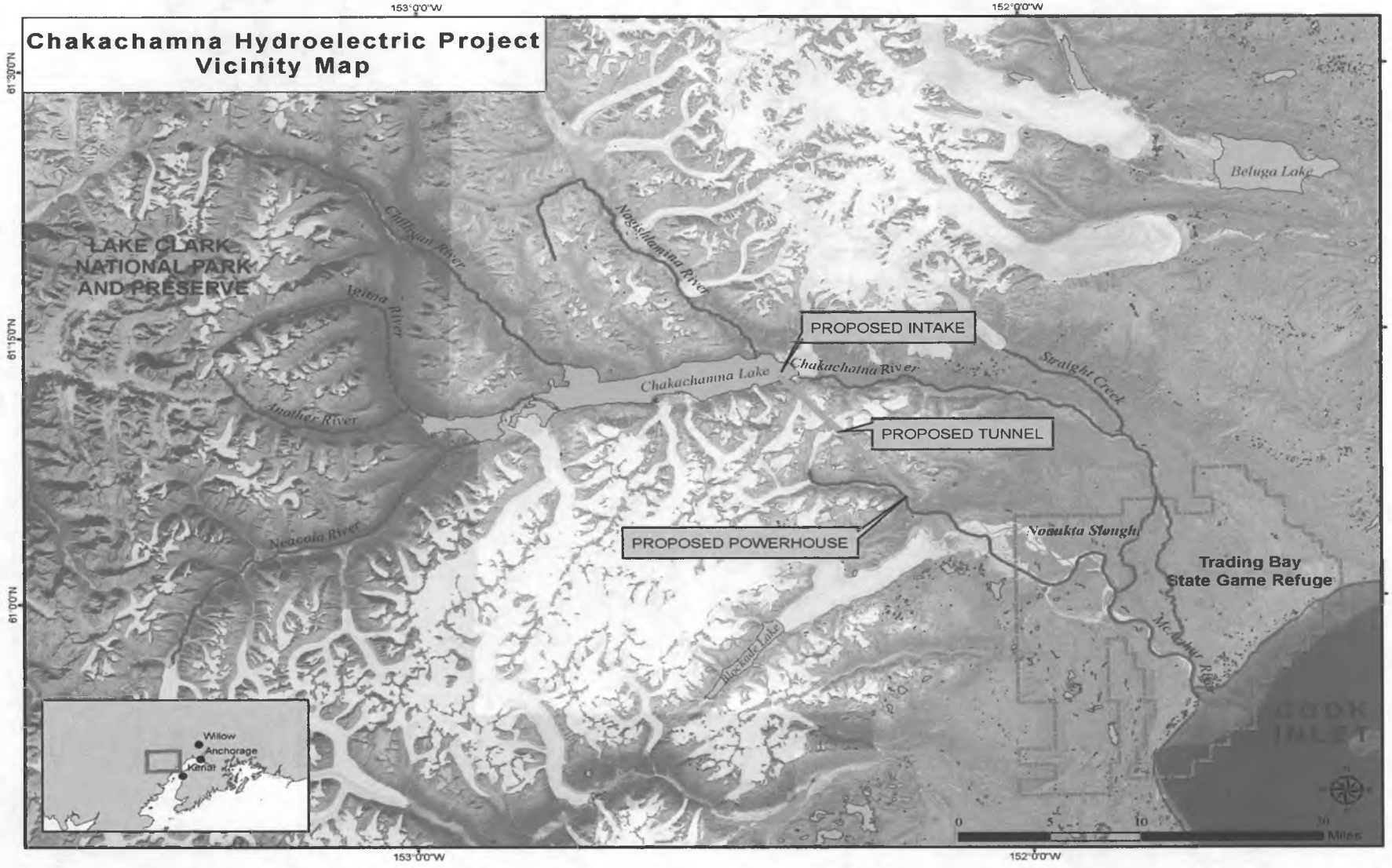
Railbelt Hydro Locations



WATANA VICINITY



CHAKACHAMNA VICINITY



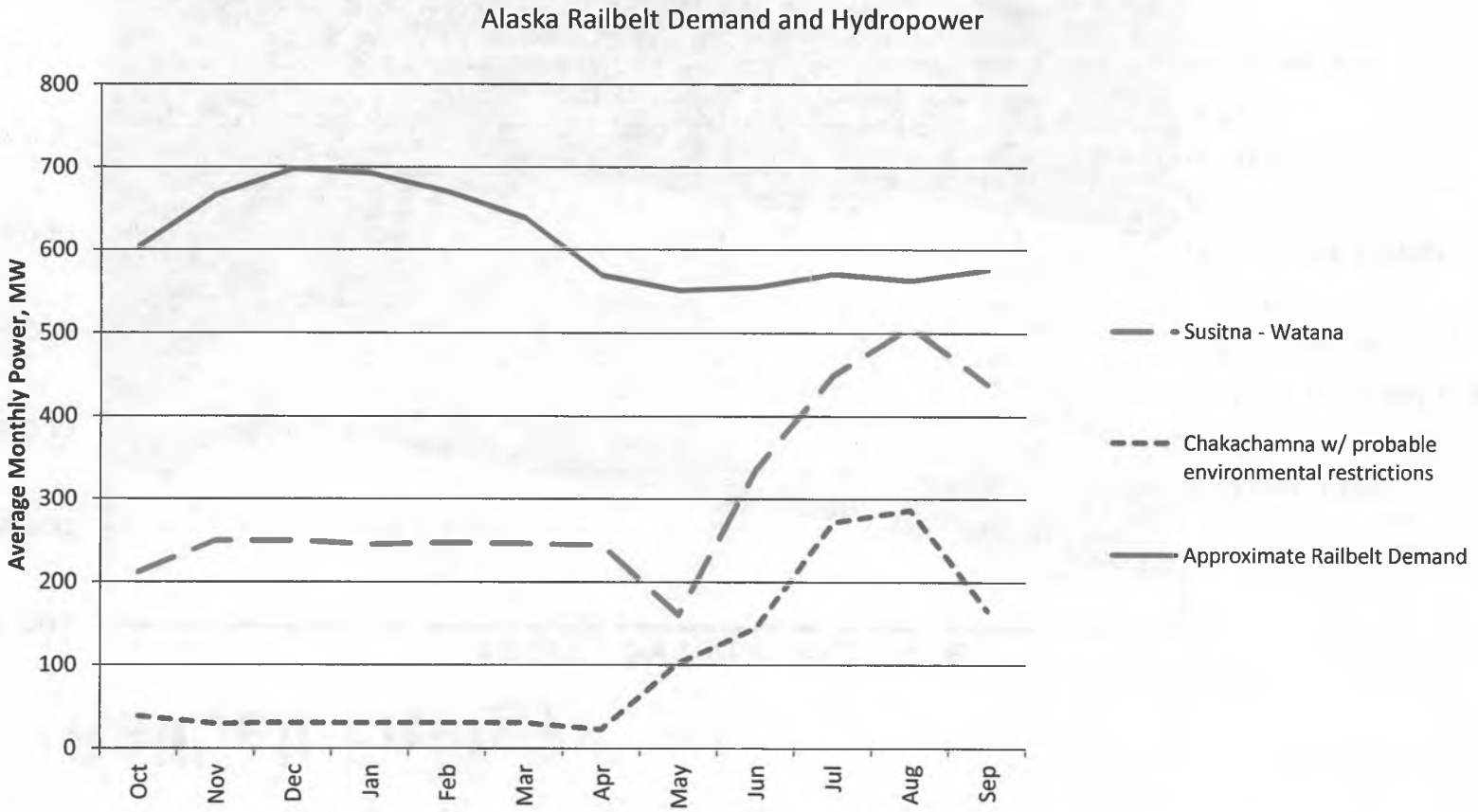
Environmental:

- Susitna
  - Reservoir 39 miles long & maximum of 2 miles wide
  - 30 miles above significant salmon
  - Some loss of wildlife habitat
  - Minimal fisheries impacts
- Chakachamna
  - Significant salmon populations travel through lake to National Park
  - Several species of fish use & spawn in lake (Lake Trout, Dolly Varden, White, Salmon suspected ..)
  - Diversion of water & change of habitat in State Game Refuge
  - Adult false attraction & outmigration concerns
  - May not be able to license under FERC

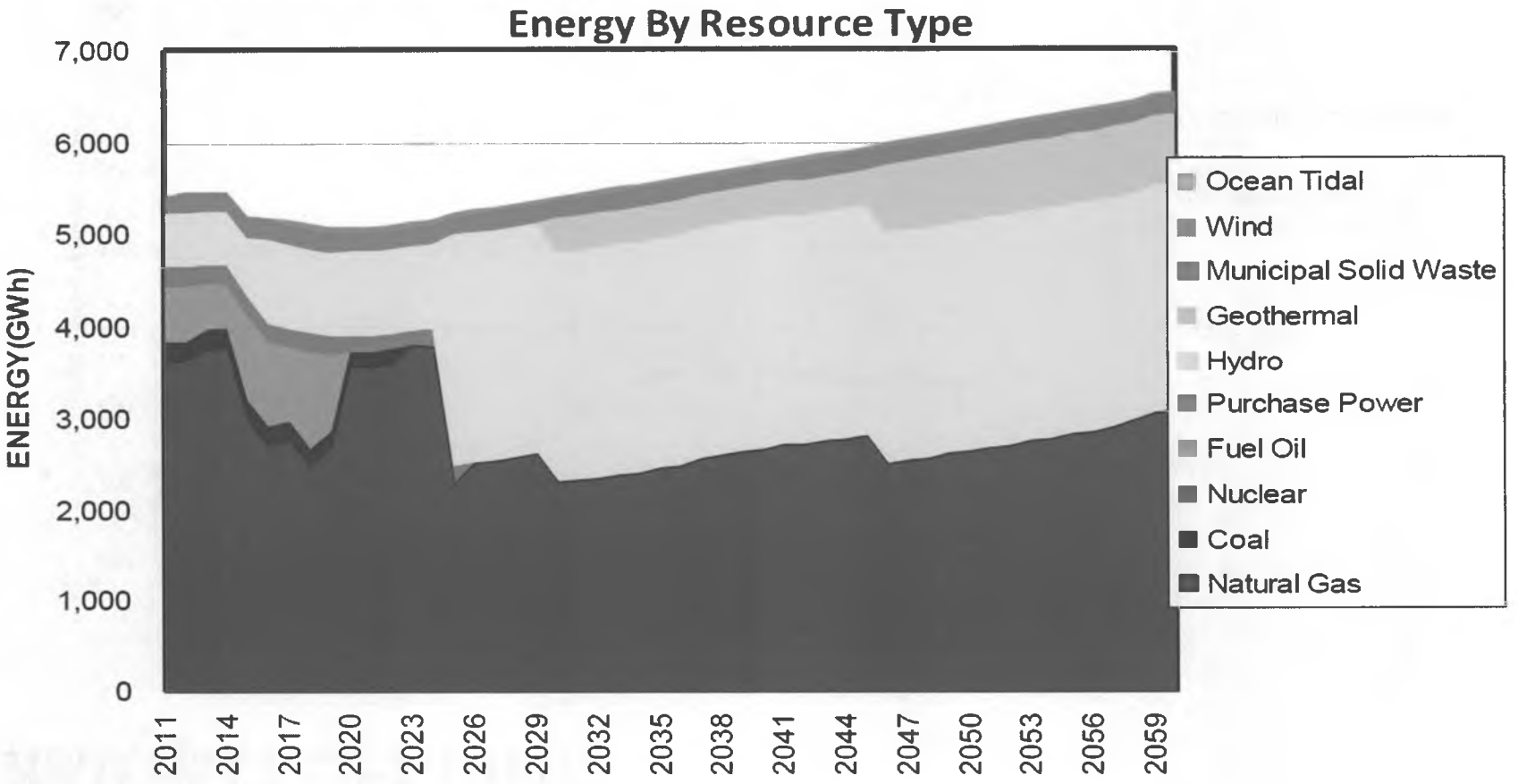
Energy:

- Susitna
  - Installed capacity 600 MW
  - Average energy 2600 GWhr/yr
  - About 50% of annual railbelt energy
- Chakachamna
  - Installed capacity ~300 MW
  - Average energy 860 – 1100 GWhr/yr
  - About 20% of annual railbelt energy

RAILBELT DEMAND



Railbelt Energy:



B&V RIRP
2009

Estimated Cost of Power:

	Estimated Cost of Power Comparison					
Project	Estimated Construction Cost	Finance Amount (50%)	Rate	Term (years)	Annual Energy (GWhrs)	Cost per kWhr
Susitna Embankment	$4.5B	$2,250M	6%	30	2600	$0.063
Susitna RCC	$3.6B	$1,440M	6%	30	2600	$0.05
Chakachamna	$2.9B	$1,440M	6%	30	860	$0.12

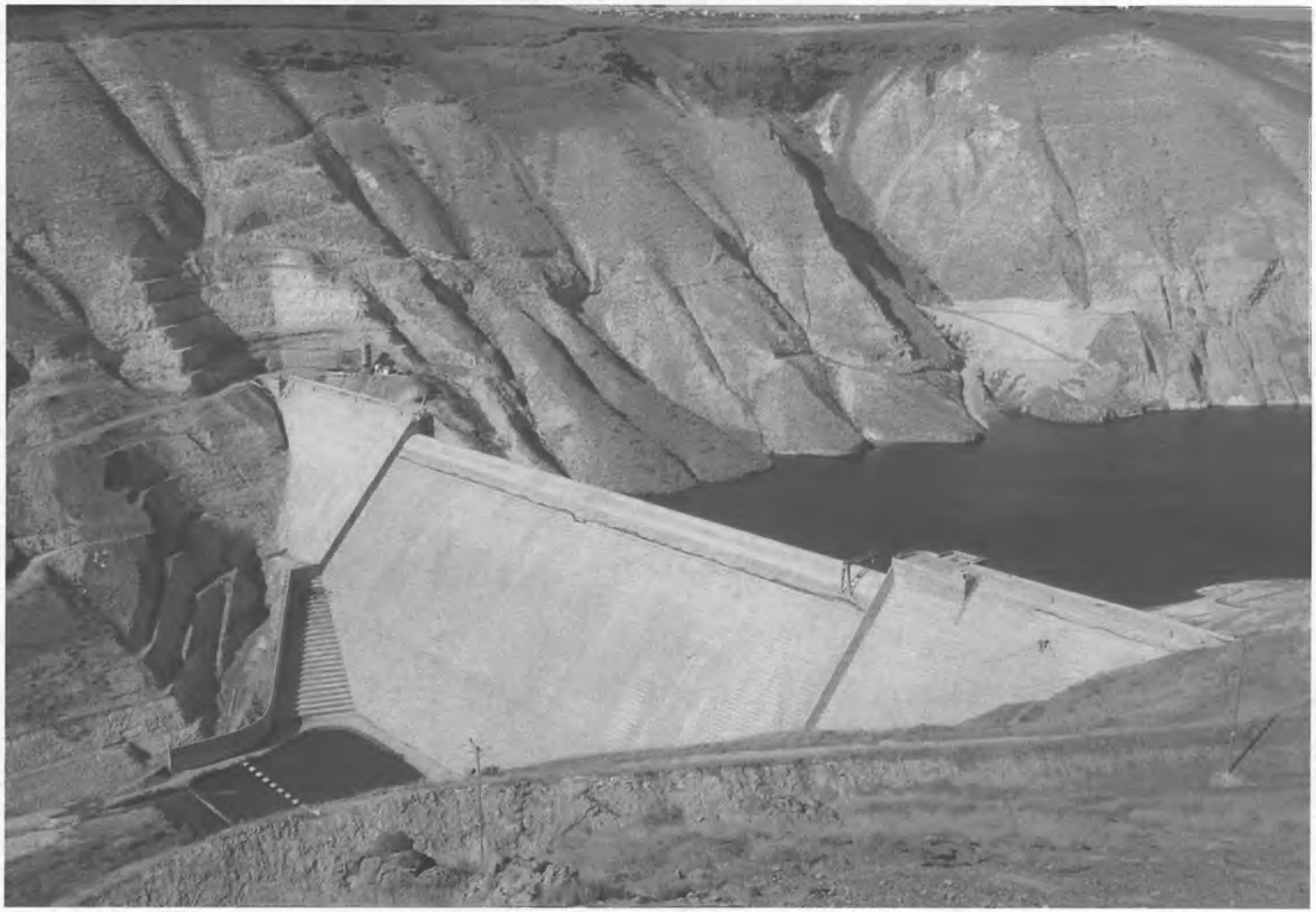
Estimated cost does not include O&M and utility distribution costs.

Bradley Lake Hydroelectric



Example of embankment dam

Al Wehdah (Jordan) Hydroelectric



Example of a Roller Compacted Concrete (RCC) dam

Susitna Timeline:

- Licensing
  - 3.5 years - Prepare and file Final Application for License
  - 3 years – FERC Processing and follow-up
- Construction
  - 4.5 years Construction

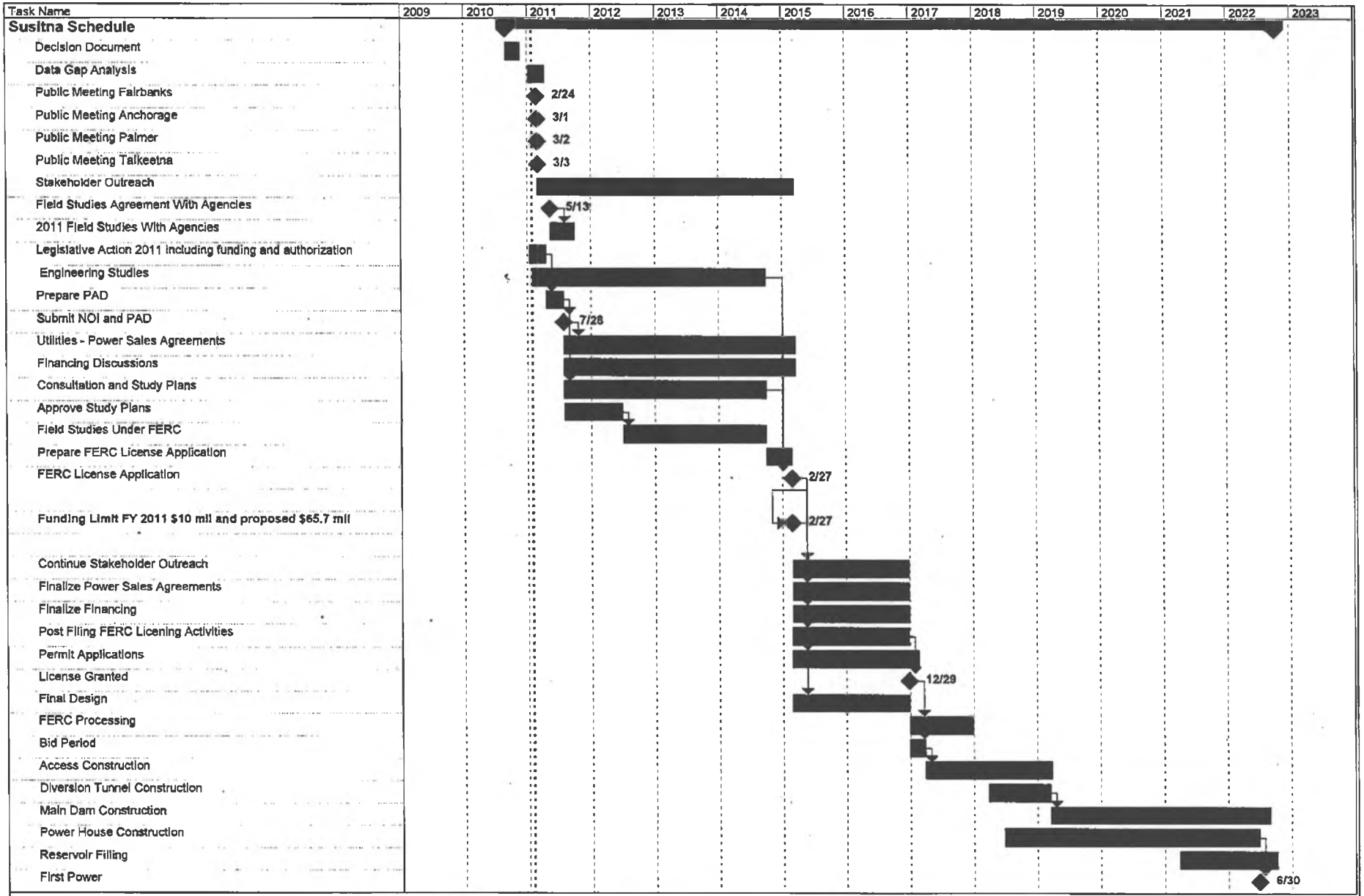
11 years until startup

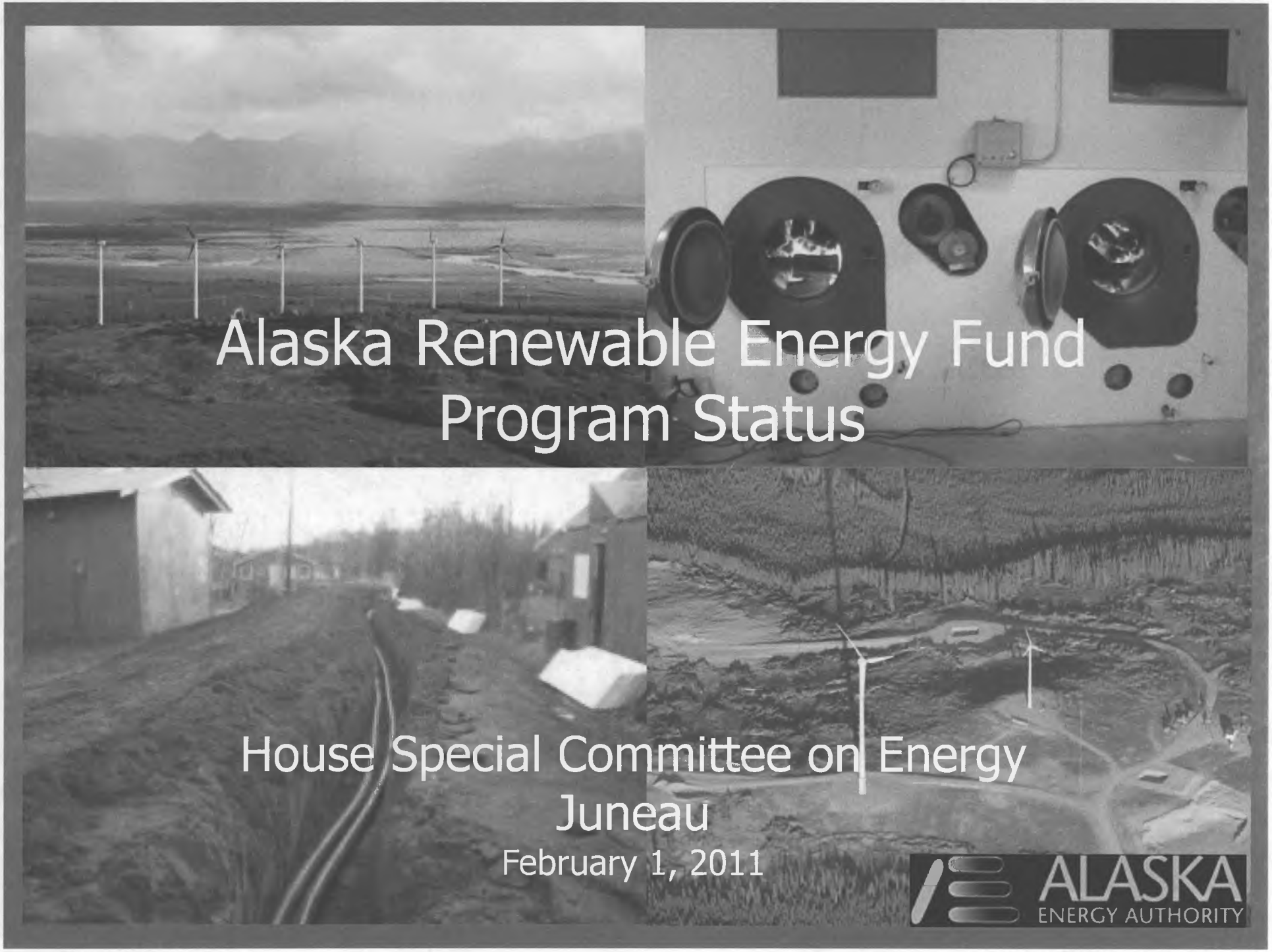
Susitna Next Steps:

- Tentative Public Meetings
  - Fairbanks - February 24
  - Talkeetna - February 28
  - Palmer - March 1
  - Anchorage – March 2
- Engineering & Environmental Studies
  - Mapping
  - Gap Analysis
  - Geotechnical
  - Working Groups
  - Land Owners
  - Access
  - FERC Preliminary Application Document
  - FERC Draft Study Plan
  - Evaluate dam and powerhouse type

Susitna Benefits

- Greater than 100 year life
- Expandable for future growth
- Predictable, secure, clean, low cost energy
- Provides dispatchable energy
- Investment in Alaska Infrastructure
- Alaskan jobs and funds stay in-state long term
- Hydro necessary to achieve States 50% renewable statewide energy policy
- State participation can make energy same cost as existing and lower in the long term.


Task Name
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Susitna Schedule
Decision Document
Data Gap Analysis
Public Meeting Fairbanks
Public Meeting Anchorage
Public Meeting Palmer
Public Meeting Talkeetna
Stakeholder Outreach
Field Studies Agreement With Agencies
2011 Field Studies With Agencies
Legislative Action 2011 including funding and authorization
Engineering Studies
Prepare PAD
Submit NOI and PAD
Utilities - Power Sales Agreements
Financing Discussions
Consultation and Study Plans
Approve Study Plans
Field Studies Under FERC
Prepare FERC License Application
FERC License Application
Funding Limit FY 2011 $10 mil and proposed $65.7 mil
Continue Stakeholder Outreach
Finalize Power Sales Agreements
Finalize Financing
Post Filing FERC Licening Activities
Permit Applications
License Granted
Final Design
FERC Processing
Bid Period
Access Construction
Diversion Tunnel Construction
Main Dam Construction
Power House Construction
Reservoir Filling
First Power
2/24
3/1
3/2
3/3
5/13
7/28
2/27
2/27
12/29
6/30
Project: Watana Schedule
Date: Mon 1/24/11
Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline
Prepared by: AEA and Cardno ENTRIX
Page 1



Alaska Renewable Energy Fund
Program Status

House Special Committee on Energy
Juneau
February 1, 2011

ALASKA
ENERGY AUTHORITY

Renewable Energy Fund
Grant Recommendation Program

- HB 152 passed in 2008
- Selection criteria:
  - Economic and technical feasibility
  - Energy cost per capita
  - Statewide balance
  - Matching funds
- Advisory committee helps develop methods
- $150 M appropriated in fy09-11
- AEA recommended up to $66 M for fy11

Review Process

Stage 1

- Applicant and project are eligible.
- Meets minimum tech and economic requirements.

Stage 2

- AEA staff assesses technical proposal, qualifications, schedule, project management, business plan, energy resource quality.
- DNR staff assesses permitting risk and resource availability.
- Under ISER oversight, independent economists assess life cycle economics.
- AEA recommends funding level.

Stage 3

- Proposals scored and ranked: Cost of energy (25%), Matching (20%), Stage 2 Feasibility (20%), Readiness (10%), Readiness (15%), Sustainability (5%), Local Support (5%).

Stage 4

- AEA adjusts Stage 3 ranking to provide statewide distribution of projects.
- Recommendations provided to Legislature.

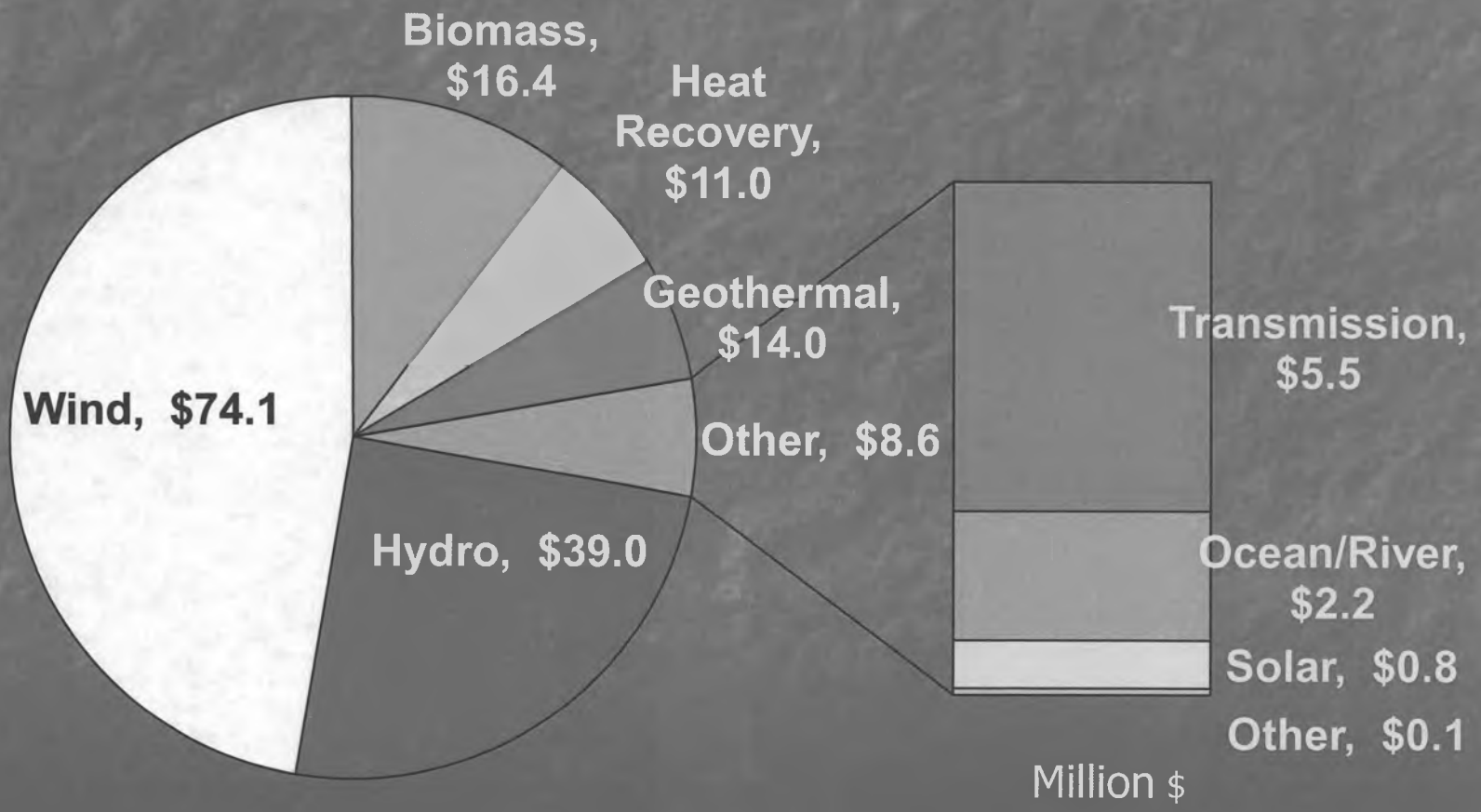
Project Oversight

- AEA technical staff works with grantee to establish milestones
- Grants are on reimbursable basis, but allow for advances
- For construction projects funds are not released until completion of
  - Final design & permitting
  - Project financing

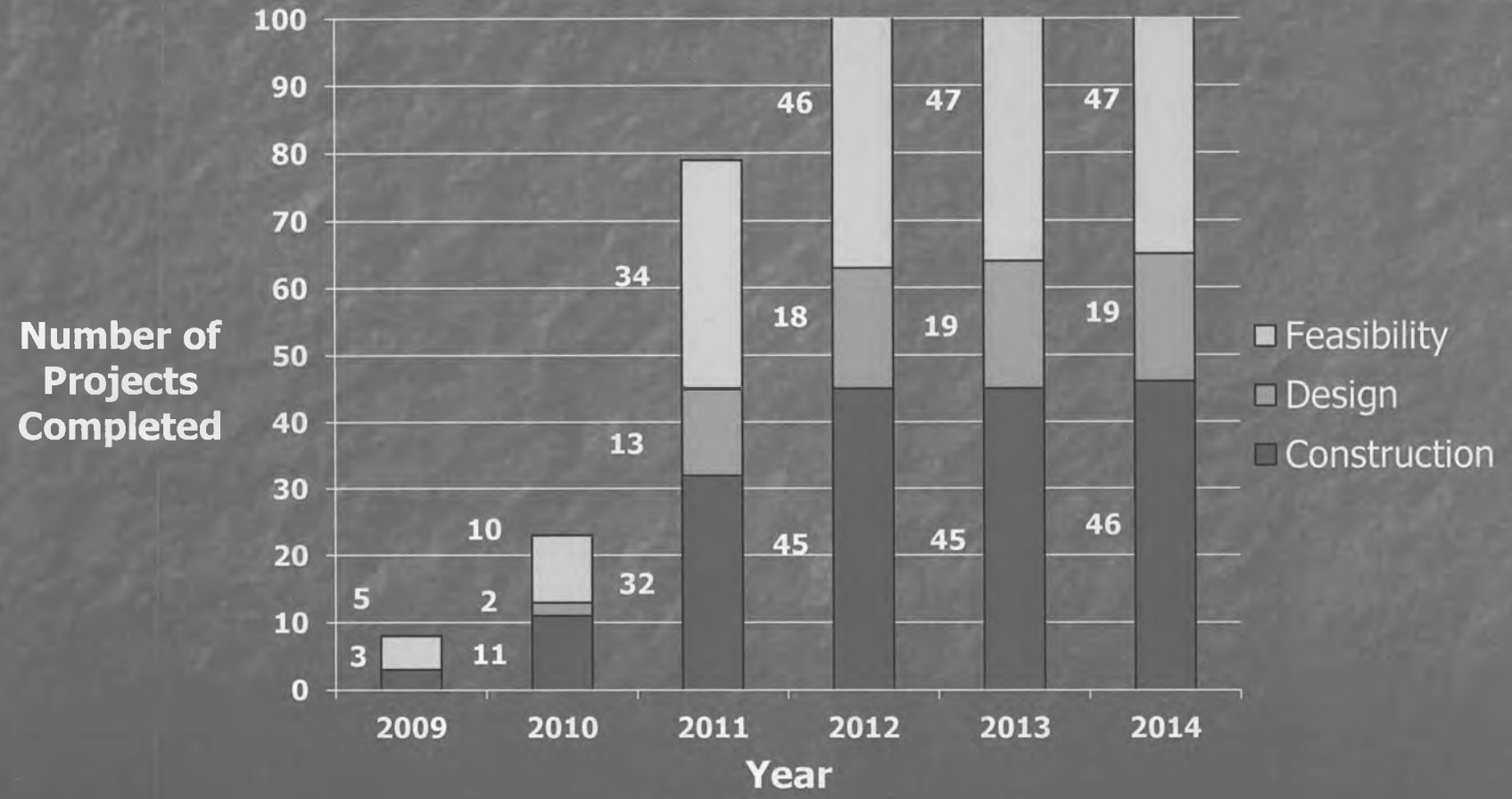
RE Fund Funding

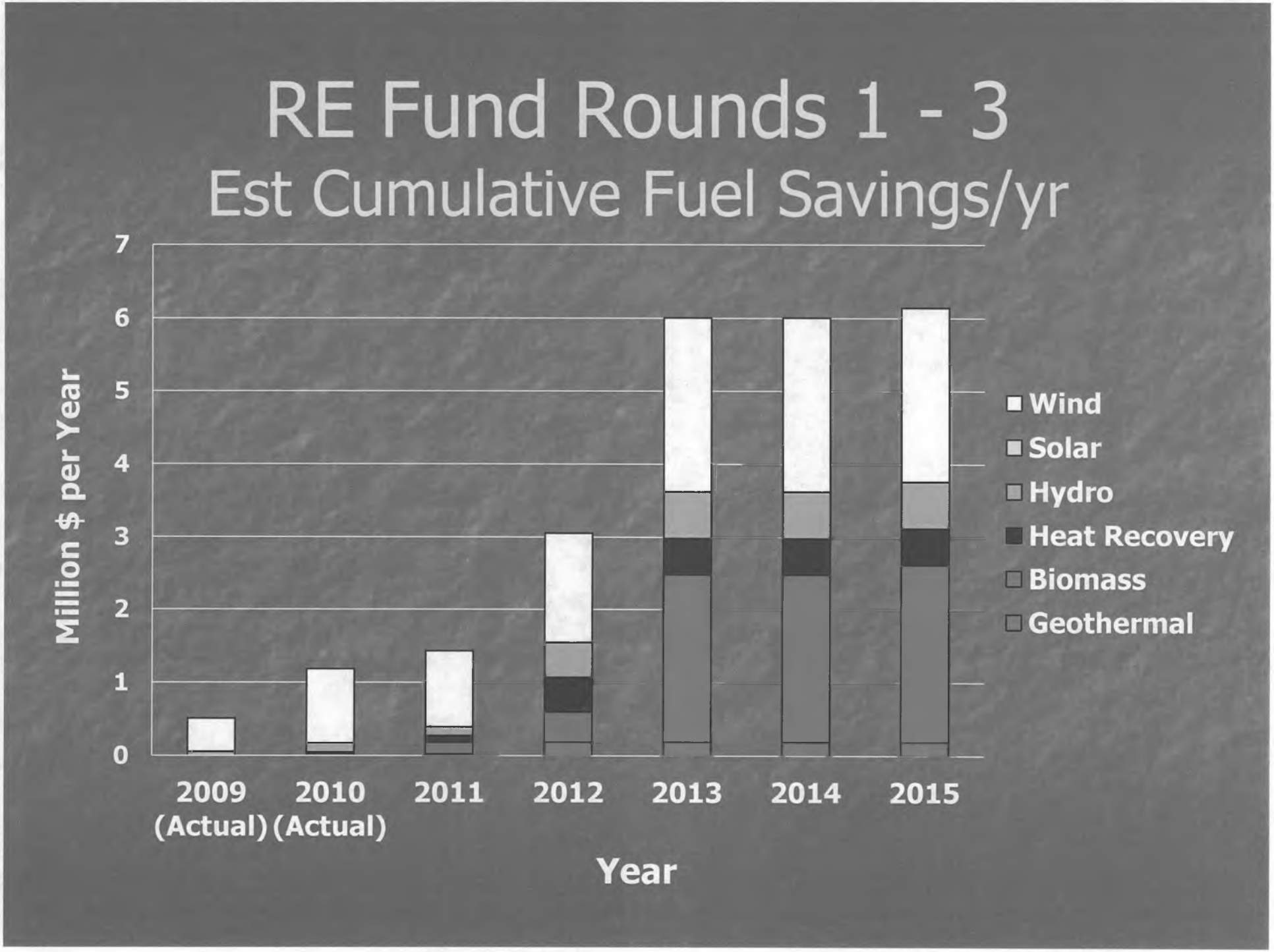
Rounds 1-3, plus earlier RFP

Total funding: $157M out of $971 M requested

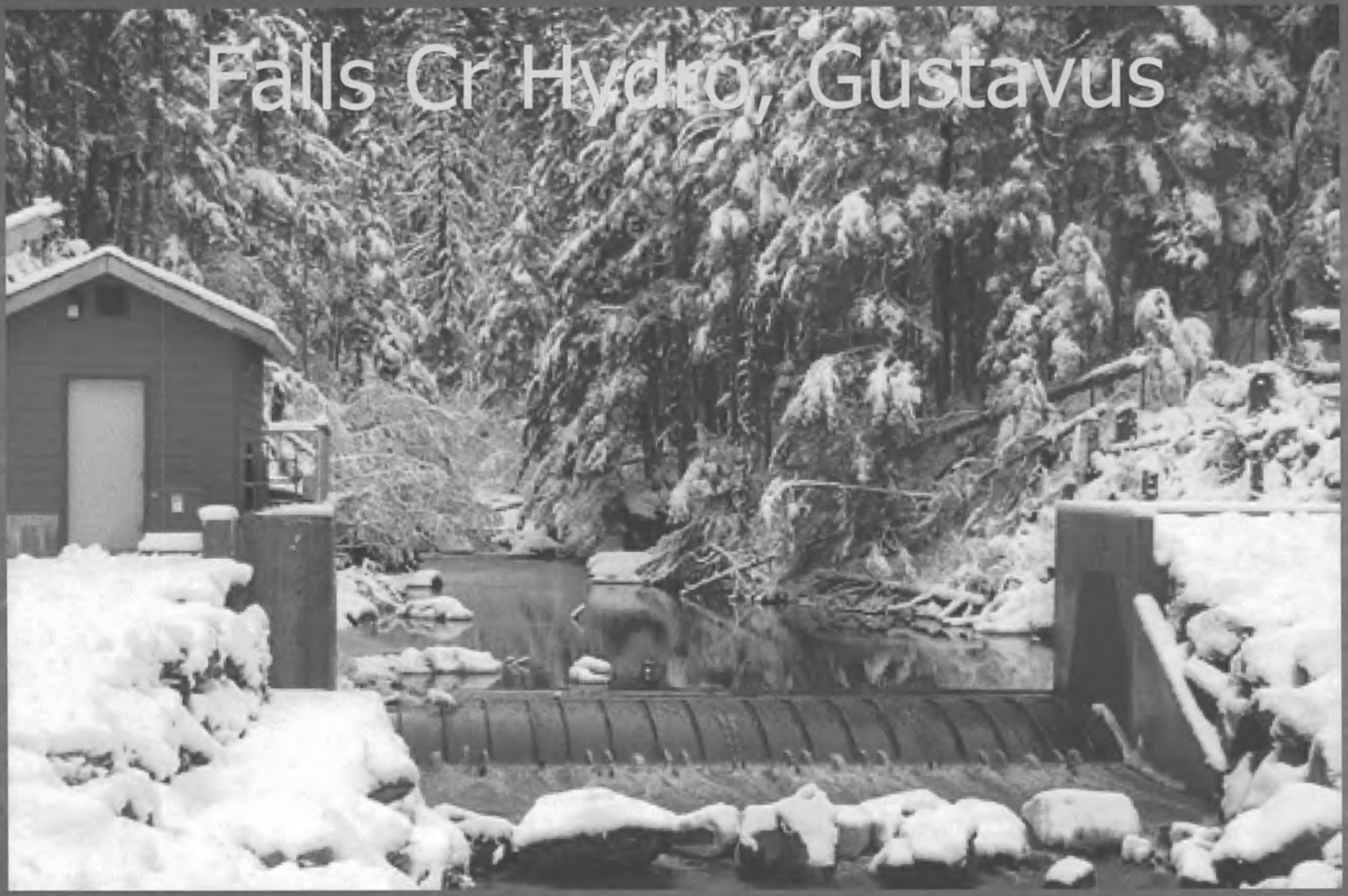


RE Fund Rounds 1-2
Scheduled Project Completion




RE Fund Rounds 1 - 3
Est Cumulative Fuel Savings/yr
Million $ per Year
0
1
2
3
4
5
6
7
2009 (Actual)
2010 (Actual)
2011
2012
2013
2014
2015
Year
Wind
Solar
Hydro
Heat Recovery
Biomass
Geothermal

Falls Cr Hydro, Gustavus



RE Fund Grant	$ 750,000	
Total Project Cost	$ 10,153,000	Capacity: 800 kW
Fuel Displaced (2010)	126,646 gal	

Pillar Mt Wind, Kodiak



RE Fund Grant	**$ 4,000,000**	
Total Project Cost	**$ 23,320,000**	**Capacity: 4.5 MW**
Fuel Displaced (2010)	**865,364 gal**	

Denali Solar Thermal





RE Fund Grant	$ 190,000
Total Project Cost	$ 190,000
Est Fuel Displaced/yr	5,700 gal
Actual (2010)	183 gal

Unalakleet Wind





RE Fund Grant	$ 4,000,000
Total Project Cost	$ 4,194,340
Est Fuel Displaced/yr	90,000 gal
Actual (2010)	47,088 gal

Capacity: 600 kW

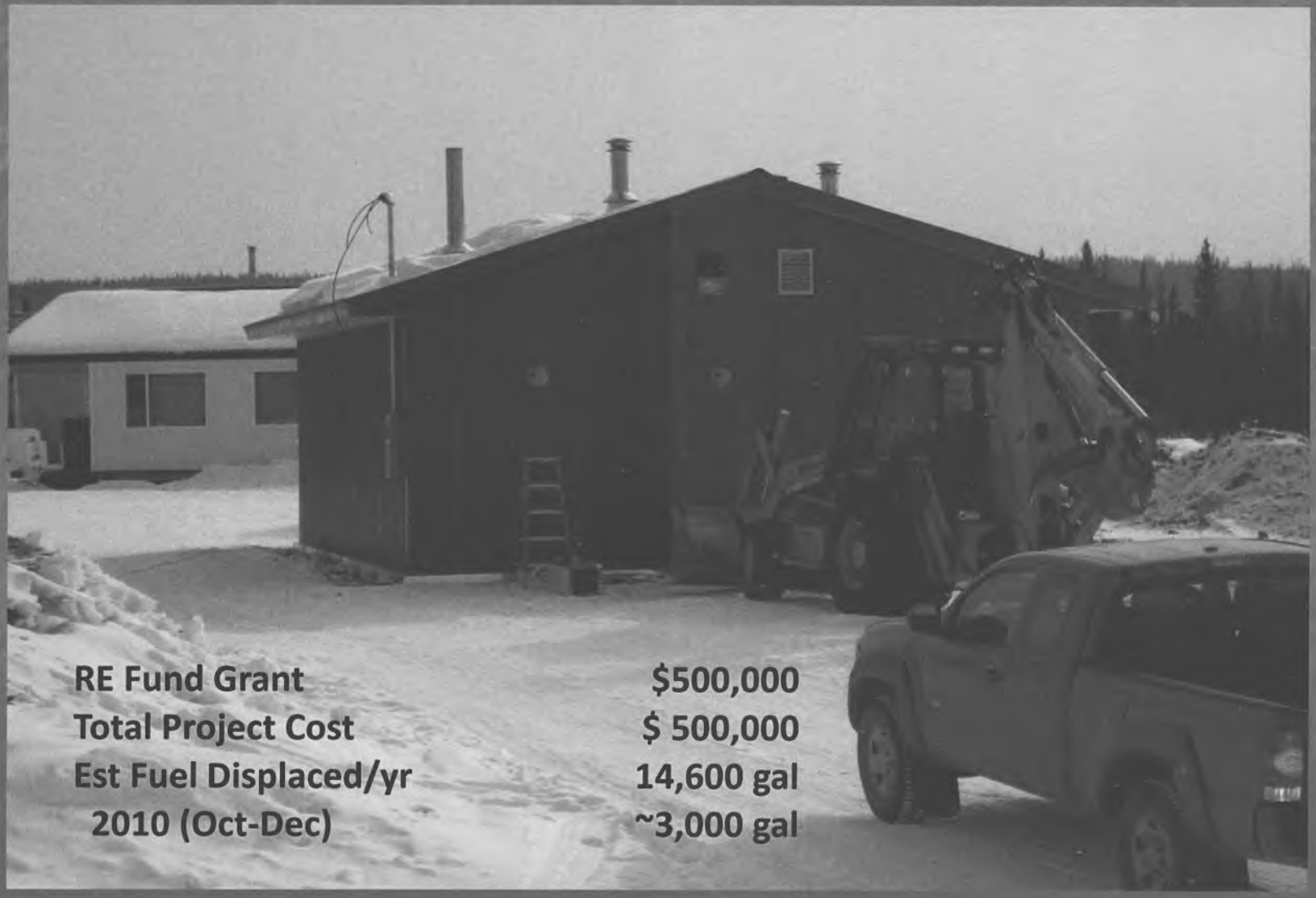
North Pole Heat Recovery





RE Fund Grant	$ 840,000
Total Project Cost	$ 1,050,000
Est Fuel Displaced/yr	99,000 gal
Actual (partial 2010)	11,690 gal

Gulkana Community Wood-Fired Boiler



RE Fund Grant	**$500,000**
Total Project Cost	**$ 500,000**
Est Fuel Displaced/yr	**14,600 gal**
2010 (Oct-Dec)	**~3,000 gal**

Tok School Wood-Fired Boiler







RE Fund Grant	$ 3,245,349
Total Project Cost	$ 3,805,349
Est Fuel Displaced/yr	50,400 gal
Actual (Oct-Dec)	~15,000 gal

Cordova Firewood Processor



RE Fund Grant	$ 147,720
Total Project Cost	$ 628,825
Est Fuel Displaced/yr	88,700 gal
Actual (Oct-Dec 2010)	~7,600 gal

Thanks.

Peter Crimp
Alaska Energy Authority
813 West Northern Lights Boulevard
Anchorage, Alaska 99503









Emerging Energy Technologies Progress Report

House Special Committee on Energy
Juneau
February 1, 2011







Objective:

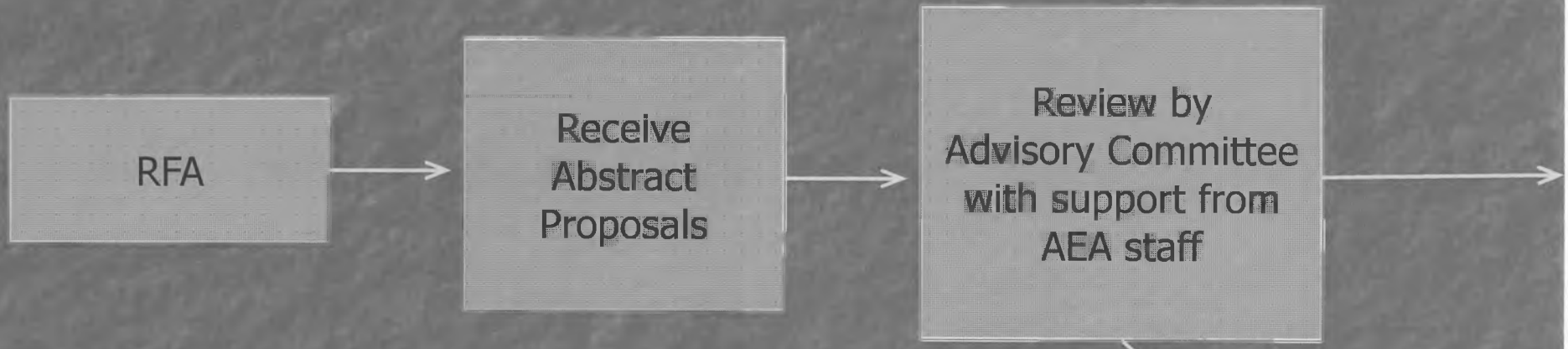
"…to promote the expansion of energy sources available to Alaskans…"

AS 42.45.385(a)

EETF Goals:

1. Clear and rigorous application & review process
2. Constructive technical & economic oversight of projects
3. Development of entities to continue deployment

Overview of Process



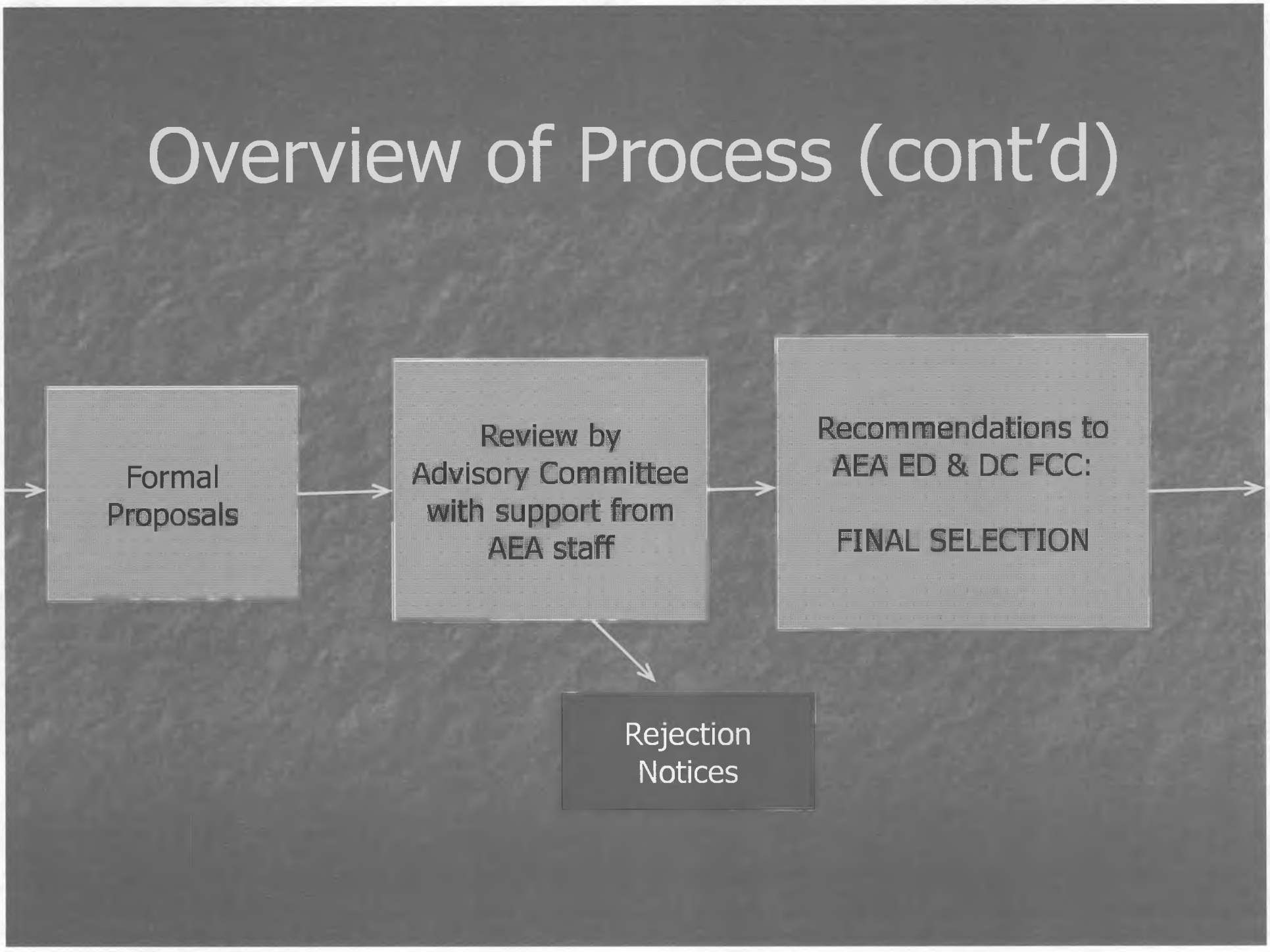
A) Use of Strategic Technology Evaluation Program (STEP)

1. Technical and Process Evaluation
2. Economic, Marketing, and Perception Evaluation
3. Regulatory/Policy Evaluation

B) Explicit Abstract and Formal Application Requirements

C) Prescribed Selection Criteria

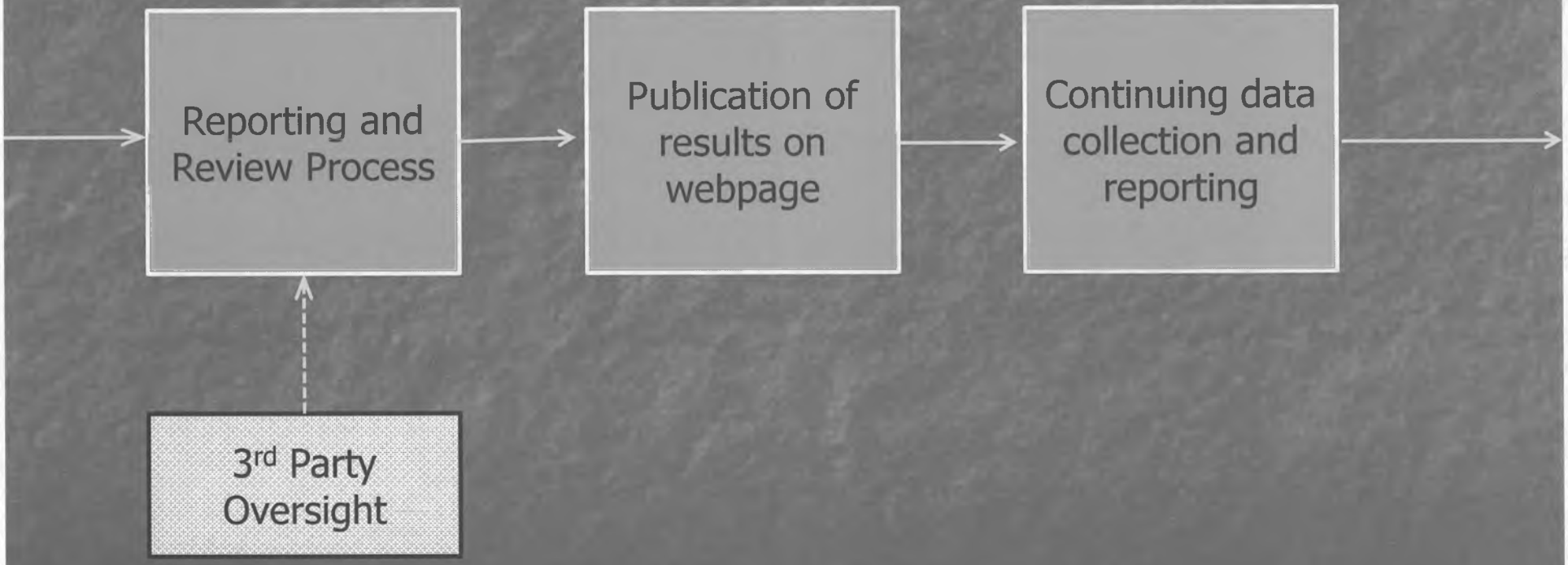
Overview of Process (cont'd)



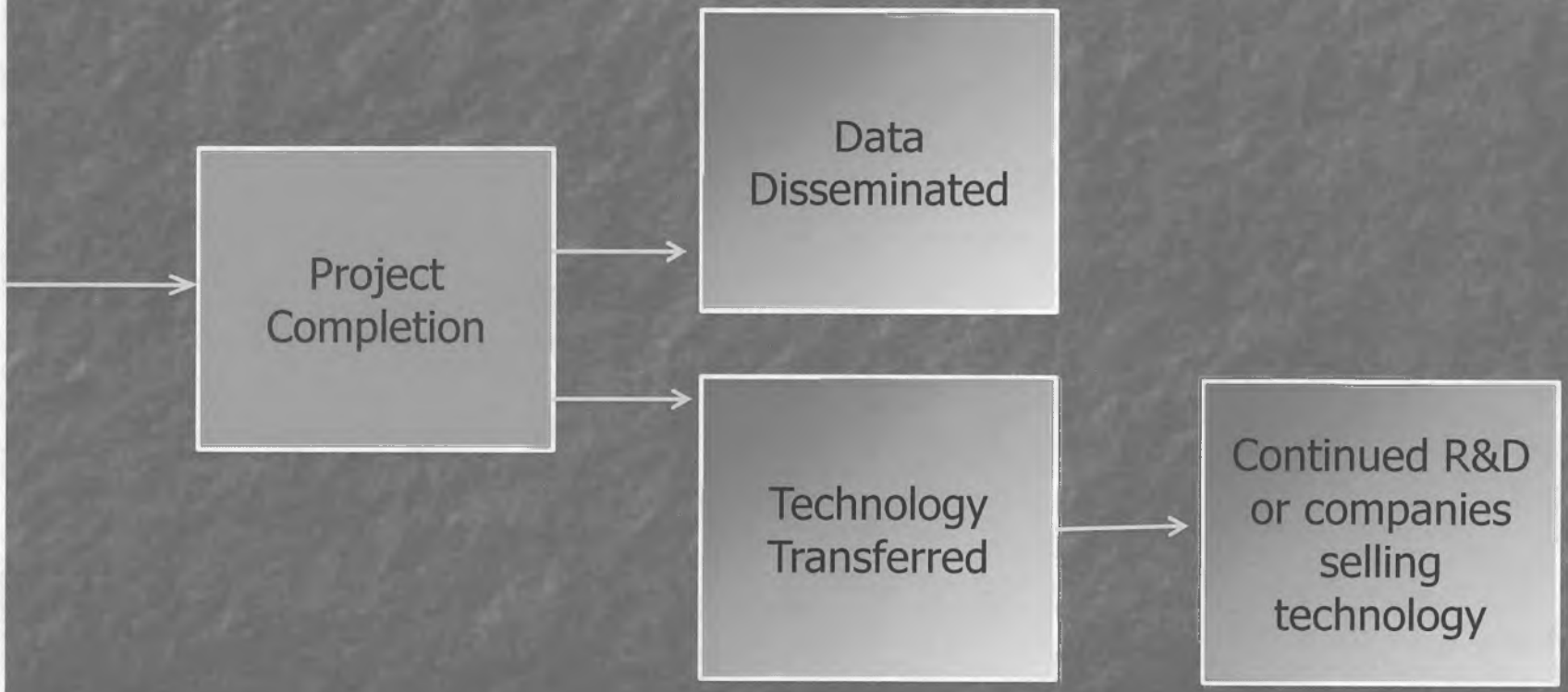
Overview of Process (cont'd)

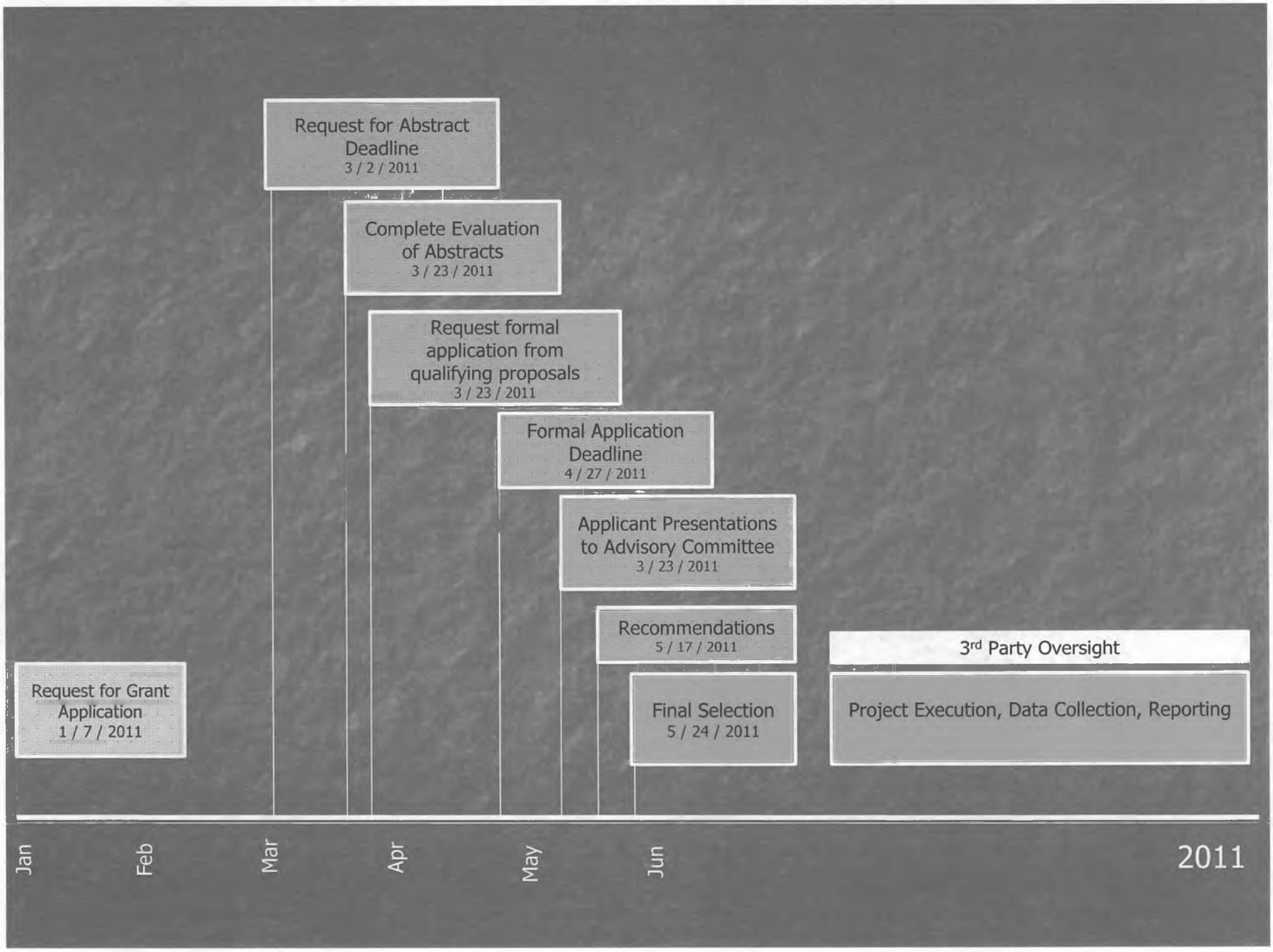


Overview of Process (cont'd)



Overview of Process (cont'd)




Request for Abstract Deadline
3 / 2 / 2011
Complete Evaluation of Abstracts
3 / 23 / 2011
Request formal application from qualifying proposals
3 / 23 / 2011
Formal Application Deadline
4 / 27 / 2011
Applicant Presentations to Advisory Committee
3 / 23 / 2011
Recommendations
5 / 17 / 2011
Final Selection
5 / 24 / 2011
Request for Grant Application
1 / 7 / 2011
3rd Party Oversight
Project Execution, Data Collection, Reporting
Jan
Feb
Mar
Apr
May
Jun
2011

Thank you

Barbara Triplett
Program Manager – EEFT, Geothermal, Hydrokinetics

Alaska Energy Authority

Energy Efficiency and Conservation Efforts at the Alaska Energy Authority

Sean Skaling
Program Manager
EE&C

Katie Conway
Asst. Program Manager
EE&C

Presentation to the House Energy Committee
February 3, 2011

ALASKA ENERGY AUTHORITY

Steps toward improving EE 15% by 2020

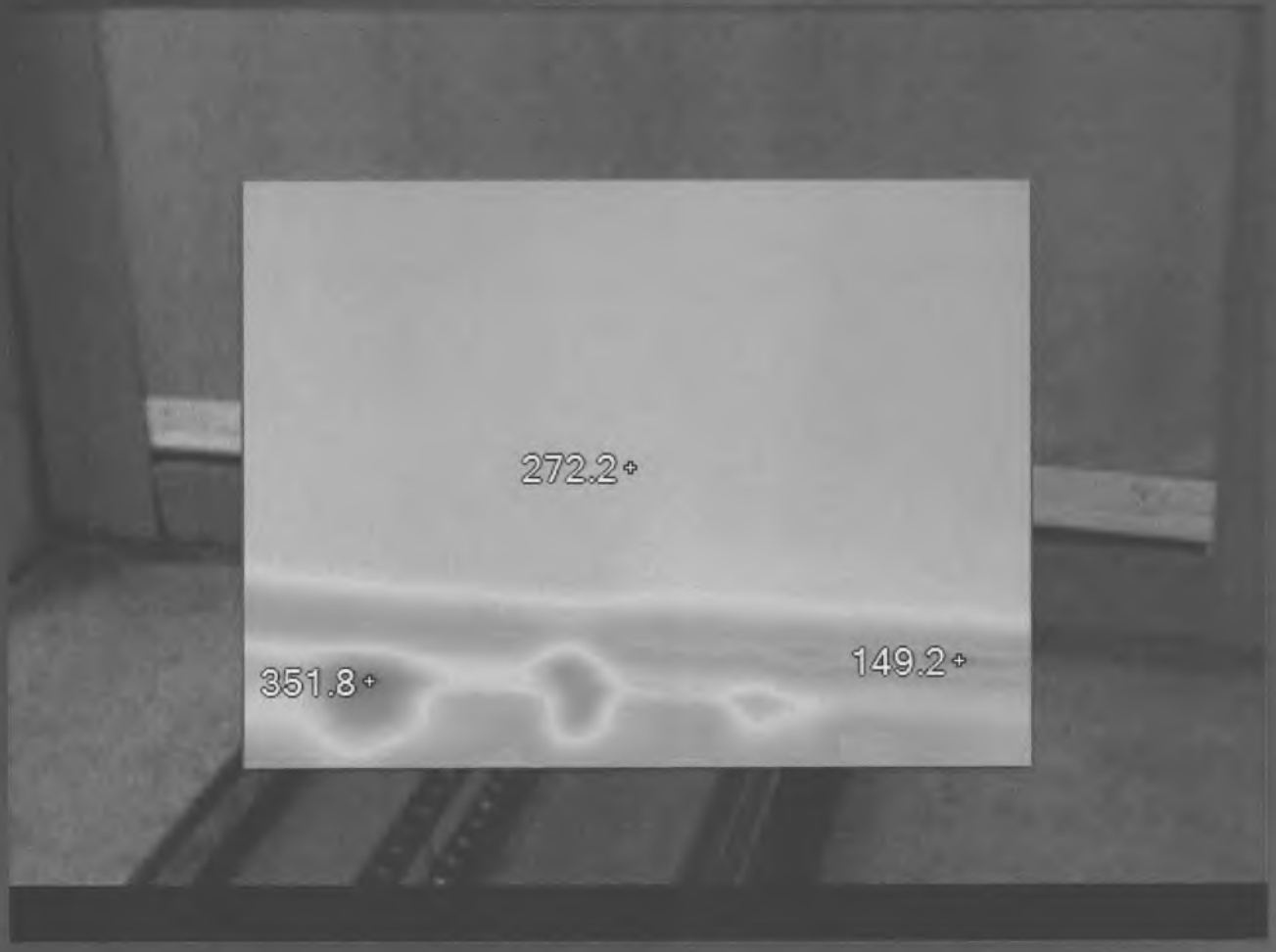
- Industrial audit pilot project
- EECWG/VEEP & Whole Village Retrofit
- Commercial energy audit program
- Energy Efficiency & Conservation Working Group (EECWG) and AEA's outreach initiative
- DOE grant projects

ALASKA ENERGY AUTHORITY

Industrial audit pilot project

- Seafood Processing Plants
- Building AK capacity: UAF Institute of Northern Engineering & UA Sea Grant Marine Advisory
- Cordova: 2 major processors assessed
- Processor “very pleased”
- Investing in EE & process efficiency

ALASKA ENERGY AUTHORITY



Thermal IR Images and Temperature Points for Cordova Processor Shrink Wrap Oven

Projected energy savings: $10,000 in two months!

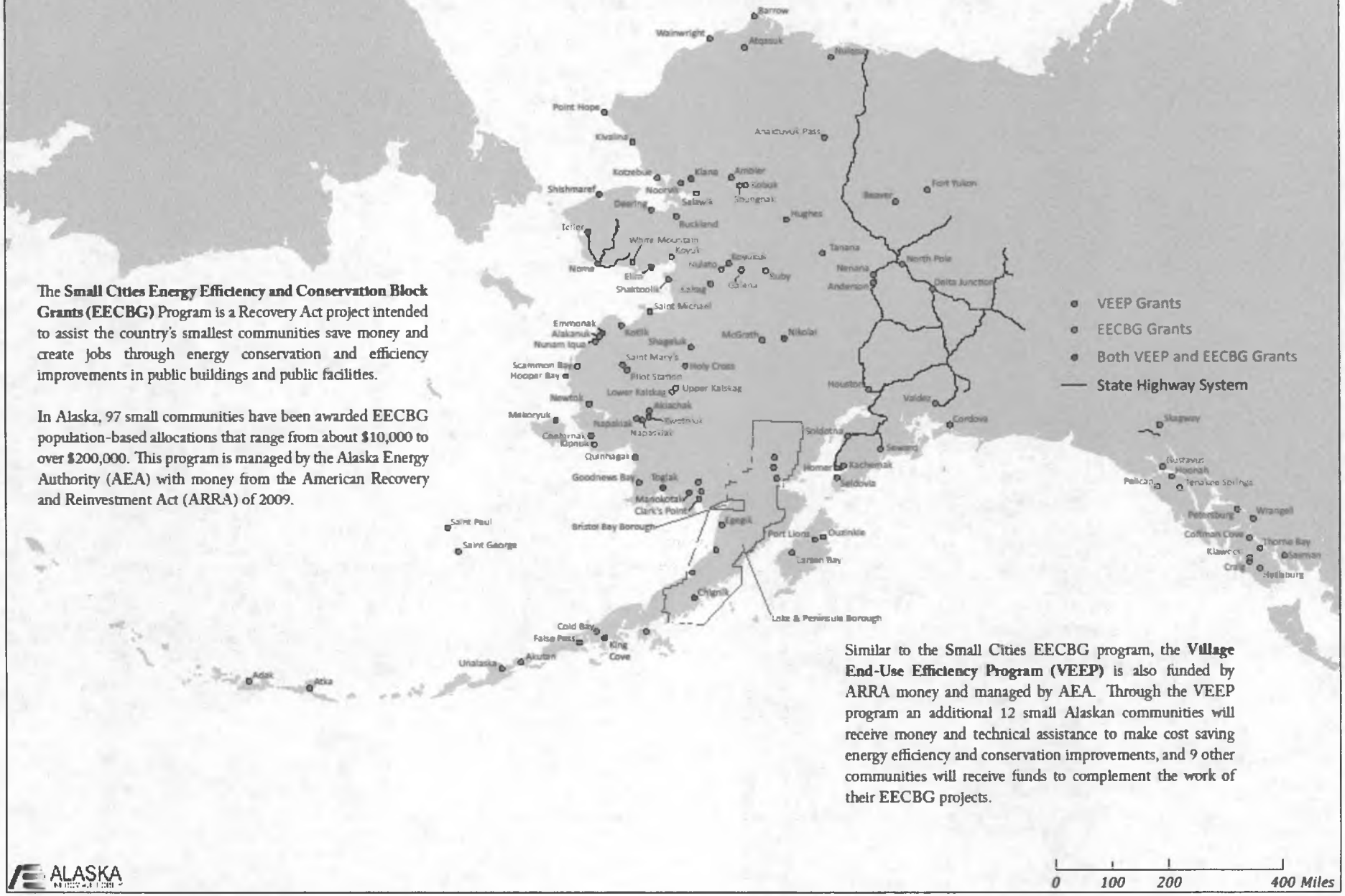
ALASKA ENERGY AUTHORITY

EECBG/VEEP/WVR

- ARRA funding for communities to improve efficiency of public facilities
- 97 EECBG Cities, 21 VEEP, 3 Whole Village Retrofit
- $8.5M ARRA, $0.6M State
- Technical assistance providers
- Average payback of 3 years
- Estimated community savings $3M/yr.
- 11 year average life = **$33M savings!**

ALASKA ENERGY AUTHORITY

Energy Efficiency and Conservation Recovery Act Funds at the Alaska Energy Authority 2010 - 2012



The **Small Cities Energy Efficiency and Conservation Block Grants (EECBG)** Program is a Recovery Act project intended to assist the country's smallest communities save money and create jobs through energy conservation and efficiency improvements in public buildings and public facilities.

In Alaska, 97 small communities have been awarded EECBG population-based allocations that range from about $10,000 to over $200,000. This program is managed by the Alaska Energy Authority (AEA) with money from the American Recovery and Reinvestment Act (ARRA) of 2009.

Similar to the Small Cities EECBG program, the **Village End-Use Efficiency Program (VEEP)** is also funded by ARRA money and managed by AEA. Through the VEEP program an additional 12 small Alaskan communities will receive money and technical assistance to make cost saving energy efficiency and conservation improvements, and 9 other communities will receive funds to complement the work of their EECBG projects.

ALASKA

Emmonak Washeteria





Boiler tune and new controls
Savings: 6,070 gal. diesel per year
Savings: $21,000 per year

ALASKA ENERGY AUTHORITY

Napaskiak LED Street Lights



- Replaced nearly all street lights
- Total Savings: 23,000 kWh/yr.
- Saves 1,770 gal. diesel/yr.

ALASKA ENERGY AUTHORITY

Commercial energy audit program

- Audits for commercial buildings
- Large energy-using sector
- ARRA funding for ~125 buildings
- 80+ applications received
- Large variation in energy use
- Significant need, significant potential energy and cost savings

ALASKA ENERGY AUTHORITY

EECWG and AEA's outreach initiative

- Coordinating statewide EE&C improvement efforts: efficiently becoming more energy efficient
- The Energy Efficiency and Conservation Working Group – a collaborative approach
- www.akenergyefficiency.org – consolidated information source for all audiences
- Energy Awareness Month – kicking off an integrated, sustained outreach initiative
- "Biggest State to Biggest Saver" – 15% by 2020 is just the beginning

ALASKA ENERGY AUTHORITY



ALASKA ENERGY AUTHORITY

"Biggest State to Biggest Saver" Projects

- Community based needs assessment & best practices inventory to improve effectiveness of outreach efforts
- Policy Report – revisiting and significantly expanding scope of 2008 Program and Policy Recommendations Report, update to legislature in April
- End Use Study – comprehensive statewide residential and non residential power and heat energy data collection effort
- Public data interface – linking EE&C successes with supply side energy mapping on www.akenergyinventory.org
- Phase 2: Summer/Fall 2012 – December 2013

ALASKA ENERGY AUTHORITY

Thank You.

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sskaling@aidea.org

Katie Conway
907-771-3078
kconway@aidea.org

ALASKA ENERGY AUTHORITY

2/08/11 Presentation by DOT & PF: Report on State of AK Vehicle Fleet CNG Pilot Prog., Recommendations and Cost; and Retrofitting of State Facilities

<TARGET><BILL></BILL><SUBJECT>2-08-11 Presentation by Department of Transportation and Public Facilities Report on State of Alaska Vehicle Fleet CNG Pilot Program, Recommendations and Cost; and Retrofitting of State Facilities</SUBJECT><COMM>HENE27</COMM></TARGET>

DOT&PF Retrofitting of State Facilities

AS 44.42.067 requires the DOT&PF to retrofit at least 25 percent of all State of Alaska public facilities over 10,000 square feet no later than January 1, 2020. The milestones to accomplishing this include:

- Implementing a standardized method to collect energy consumption and cost data for facilities and generating Energy Use Indexes (AS 37.07.040 (12)).
- Identifying and prioritizing the least energy efficient facilities.
- Determining project scopes for energy retrofit work in those facilities that will meet net cost savings within 15 years.
- Working with the state agencies to arrange funding for the determined energy retrofit projects.
- Contracting with Energy Services Companies to perform energy performance contracts.
- Executing the energy retrofit projects and verifying the energy savings.
- Continuous monitoring of state energy consumption to be compared to levels of past years.

The DOT&PF is currently gathering utility bills from the past two years for all state-owned buildings that are over 10,000 SF. Several agencies have provided the information and the DOT&PF is generating Energy Use Indexes in order to prioritize the buildings from least to most energy efficient. This will be an ongoing process and will utilize the information gathered from the implementation of the standardized methodology for state agencies to collect and store energy consumption and expense data.

DOT&PF and the Alaska Energy Authority have collaborated on this approach to prioritizing facilities. Additionally, because completing the work as cost effectively as possible is essential, when commencing energy efficiency retrofit projects, the DOT&PF intends to group projects by geographic locations to the extent possible. This will assist in expediting project completions, reducing project costs, and maximizing project resources. However, it may mean one group of facilities includes multiple departments and multiple funding sources and that energy retrofits to facilities are not completed in exact order of their baseline EUIs

Concurrently, the DOT&PF has issued an RFP for Energy Performance Contracting and is negotiating with three Energy Service Companies (ESCOs). The three contracts are anticipated to be awarded February 2011.

Initial funding for energy efficiency retrofit projects will come from grant funding through the American Recovery and Reinvestment Act (ARRA). A total $10M has been allocated to this effort for state buildings. Once those funds are committed, funding of the energy retrofit projects will be through the Alaska Energy Efficiency Revolving Loan Fund Program administered by the Alaska Housing Finance Corporation and other potential sources.

Prior to 2010, the DOT&PF had previously completed energy retrofit projects under two phases of energy performance contracting across multiple facilities. The first phase of energy performance contracting, completed in 2006, resulted in energy cost avoidance of $365,991 in its first year. The second phase, completed in 2009, resulted in $793,395 of cost avoidance in its first year.

In additional, agencies have long been completing energy efficiency retrofit projects through conventional contracting means in their facilities utilizing deferred maintenance funding.

Alaska Department of Transportation and Public Facilities
State of Alaska Vehicle Fleet Compressed Natural Gas Pilot Program Recommendations/Costs

Mercury Associates, Inc. concluded

- Compressed natural gas (CNG) is a feasible fuel for certain Alaskan fleets.
- Expansion of the program would be beneficial towards Alaska's sustainability efforts.

The pilot program as recommended would require an initial $5.3M from the legislature to accomplish

- Upgrading the 5 existing compressed natural gas stations within the municipal boundaries.
- Acquiring a fuel management system for State bulk fuel tanks to manage existing fuel use and future program savings.
- Conversion costs of new vehicles; 25 State light duty vehicles, 4 school buses for the Anchorage school district, 4 waste trucks and 2 transit buses for the Municipality of Anchorage.
- Contracting with or designation of an inter-government program coordinator to facilitate
    - Finding external financial support such as federal grants to move to the next phase
    - Working with Anchorage to acquire Clean Cities status.
    - Significant buy-in from the public and private sector for long term sustainability of the project.

Economic Advantages:

- Fuel cost per mile is lower. (savings approx $1.25 GGE)
- Ability to fuel onsite overnight with unattended filling, enhancing productivity.
- Price stability versus diesel and gasoline.
- Alternative fuel excise tax credit of $.50 per gallon extended through 2011 (including credits for tax exempt fleets.)
- Compressed natural gas has regained momentum in the vehicle market.
- Potential for increased engine life/vehicle life.

Economic Disadvantages:

- Vehicle cost premium, $16 -$24K increase per light duty vehicle.
- Fueling station cost premium.
- Limited number of public fueling stations.
- Additional gas storage required in Cook Inlet to meet peak winter natural gas demand.
- Secondary resale market for natural gas vehicles is lacking.
- Limited choices in the original equipment manufacturers equipment market.
- Upgrade costs for accommodation of natural gas vehicles in garages.

REPORT ON

State of Alaska Vehicle Fleet CNG Pilot Program Recommendations/Cost

FOR

State of Alaska

January 2011

MERCURY ASSOCIATES, INC.

MERCURY

MERCURY

January 28, 2011

Ms. Diana Rotkis
Fleet Manager
State of Alaska DOT&PF SEF
2200 East 42nd Avenue (RM #316)
Anchorage, AK 99508

Dear Ms. Rotkis:

Mercury Associates, Inc. is pleased to submit this final report on our feasibility study for the use of compressed natural gas (CNG) by the State of Alaska. We have included both phases of the project in this combined report.

We would like to express our appreciation to you, Senator Fred Dyson and his staff, as well as the many individuals including, in particular, Dan Sullivan, Mayor of Anchorage, who took the time to speak with us.

I can be reached at 562-596-5920 (office), 562-397-7262 (mobile) or jchristensen@mercury-assoc.com.

We appreciate being given the opportunity to assist the State of Alaska in this endeavor and look forward to working with you and others to implement some of the key action items we have recommended.

Very truly yours,

Janis Christensen

Janis Christensen, CAFM
Senior Manager

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EXECUTIVE SUMMARY

Study Scope and Methodology

The Alaska Sustainable Energy Act, Senate Bill 220, an energy policy bill passed in 2010, mandated Department of Transportation & Public Facilities (DOT&PF) Division of Statewide Equipment Fleet (SEF) to prepare a report on the feasibility of using compressed natural gas (CNG) to power vehicles in the State, including vehicles owned or operated by the State, and incorporating in that study, if warranted, a pilot program proposal for powering some vehicles owned or operated by the State with CNG. The legislation described fleet conversion as a possible short-term solution for rising energy costs in Alaska, and paired it with a policy for the State to consider long-term energy costs when buying vehicles and equipment. DOT&PF must prepare a report on the feasibility of using CNG to power vehicles in the State by January 31, 2011.

A summary of the methodologies and techniques we employed to accomplish the scope of work for this project is provided below:

1. Develop and submit an information and data request to SEF;
2. Review SEF vehicle replacement practices;
3. Evaluate SEF fuel usage;
4. Review SEF fleet inventory, vehicle functions, and usage;
5. Analyze data to calculate SEF greenhouse gas (GHG) emissions for the Anchorage region;
6. Conduct interviews with state government officials to understand the State's objectives for this endeavor;
7. Conduct interviews with potential stakeholders in Anchorage;
8. Conduct an analysis of internal strengths and weaknesses and external opportunities and threats relative to the objective goal (SWOT);
9. Present recommendations for Phase I feasibility study;
10. Incorporate feedback from Phase I presentation into development of a CNG Program (Phase II);
11. Review existing CNG fueling infrastructure in Anchorage area to determine lower cost opportunities for implementation of the CNG Program;
12. Determine station upgrade pricing estimates;
13. Determine vehicle conversion pricing estimates;
14. Develop a strategy regarding Clean Cities participation to bring Anchorage area fleets into synchronization regarding alternative fuel activities; and

Document study methodology, findings, conclusions, and recommendations in a formal report and *WebEx* online presentation.

Phase I – Feasibility Study

Phase I of the study includes a review of existing innovative government programs and incentives in place in Utah and other North American jurisdictions that promote the use of compressed natural gas (CNG); a summary of relevant studies and investigations on existing public policy incentives for the same purpose; an evaluation of the environmental benefits and technical merits of using CNG; an outline of the economic, environmental, and technical advantages and disadvantages of using and promoting the use of CNG in the State of Alaska.

Key Findings

We conducted research of historical events of government programs and incentives (fleet and general public) in the States of Utah, California, Oklahoma, New York, Texas, and Washington. Overall, we found eight significant prevailing programs, factors, and incentives offered to fleet organizations and the general public in the six states. These characteristics are listed below, not in any particular order of rank:

Similarities of Characteristics Between States

1. Tax credits for public
2. Reduced fuel tax rate for public
3. Grants
4. Loans
5. Honda natural gas vehicle retail dealers in UT, CA, NY, and OK
6. Relatively large infrastructure centered near interstate highways
7. Fleets moderately regulated
8. At least one Clean Cities organization in each state

Successful natural gas vehicle (NGV) programs must include a commitment to three elements: 1) the appropriate **vehicles**, preferably from an original equipment manufacturer (OEM) rather than retrofitted by a third party; 2) a fueling and maintenance **infrastructure** to support the vehicles; and 3) **incentives** to kick-start the program and overcome barriers to acceptance. All three of these elements must converge for a successful market transition to the alternative fuel.

Below is a list of the most current CNG incentives and infrastructure provided in Utah, which has an estimated public and private 10,000 NGVs. A summary of the incentives and laws for all states is provided in the Appendix, distinguished by the type of incentives, type of user, and by technology or fuel class. Moreover, the separate *Excel*

workbook provides detailed information and data collected from the six states included in this study.[1]

Utah CNG Incentives

- Income tax credit of 35 percent of the new vehicle purchase price or $2,500, whichever is less
- Credit of 50 percent of the cost of converting a NGV, up to a maximum of $2,500 per vehicle
- Grants and loans to businesses and government entities for the cost of conversions and incremental cost of purchasing OEM vehicles
- Maximum annual awards are $500,000 and maximum grant/loan is $100,000 per project (minimum is $5,000) up to 100 vehicles acquired
- Tax of $0.085 per gasoline gallon equivalent to be modified proportionally with any changes to the traditional motor fuel rate
- Authorization to travel in high-occupancy vehicle (HOV) lanes regardless of the number of occupants
- PUC may find a gas corporation's request for a NGV rate less than full cost of service may be just and reasonable in the interest of the public; if approved, remaining costs must be spread to other customers of the gas corporation
- Public access to State-owned CNG fuel stations
- Loans and grants for NGVs and infrastructure
- Clean Cities grants
- Free parking in downtown Salt Lake City

Utah Infrastructure

- Established I-15 corridor CNG fueling infrastructure
- Developed by Questar Gas[2] for its NGV fleet
- Regulated by the State and cost spread amongst consumers
- One of few states where an individual can drive throughout the major population corridors of the state without limited access to CNG stations
- Public access to state CNG stations
- ~35 CNG public and private stations

---

[1] Mercury Associates, Inc. Government CNG Programs and Incentives. December 2010.

[2] Questar Gas provides retail natural gas-distribution service to almost 900,000 customers in Utah, southwestern Wyoming and a small portion of southeastern Idaho. The Public Service Commission of Utah and the Wyoming Public Service Commission regulates Questar. Questargas.com.

Clean Cities

Since a majority of 2009 awards originated from Clean Cities, including NGVs and CNG fueling infrastructure, we believe the establishment of a Clean Cities coalition in Alaska will be a vital factor towards achieving goals relating to the expanded use of CNG in the region. The State of Utah, for example, received about $15 million in FY-09 Clean Cities grants. The mission of Clean Cities is to advance the energy, economic, and environmental security of the U.S. by supporting local initiatives to adopt practices that reduce the use of petroleum in the transportation sector. Established in 1992, Clean Cities carries out this mission through a network of more than 90 volunteer coalitions, which develop public/private partnerships to promote alternative fuels and advanced vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction. The Anchorage Metropolitan Planning Organization (MPO) served as a coordinating organization similar to Clean Cities during the area's push for CNG use in the 1990s and could provide valuable assistance in establishing a Clean Cities in Anchorage.

Emission Reduction

CNG reduces GHG emissions versus conventional fuels primarily due to the molecular structure of methane, the primary component of natural gas. Methane, CH_4, has the highest ratio of hydrogen to carbon (4:1) of any hydrocarbon fuel. While unburned methane itself is a serious greenhouse contributor, the net effect is still a significant benefit for the environment. NGVs can produce significantly lower amounts of harmful emissions such as oxides of nitrogen (NO_X), particulate matter $PM_{2.5}$, and toxic and carcinogenic pollutants as well as carbon dioxide (CO_2) compared with vehicles fueled by diesel and gasoline. A report by Argonne National Laboratory (ANL) combined emission data from 14 primary studies to determine the effects of natural gas fuels on light duty vehicle (LDV) tailpipe emissions. The weighted results are illustrated in the table below.

Table 1
Pollutants Found to Be Significantly Reduced in CNG Use When Compared to Reformulated Gasoline in LDVs[3]

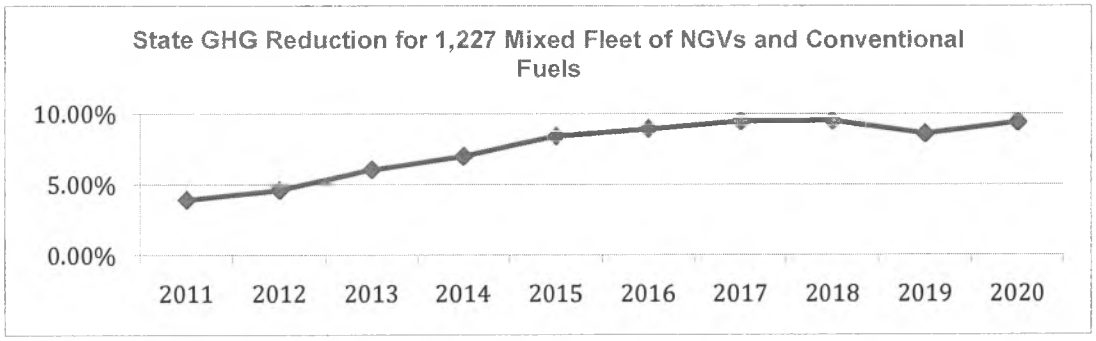
Pollutant	Percent Reduced
Volatile Organic Compounds (VOC)	10%
Carbon Monoxide (CO)	20% to 40%
Oxides of Nitrogen (NO_X)	0%
Particulate Matter (PM)	80%
Methane	-400% (increase)

[3] Argonne National Laboratory Transportation Technology R&D Center. A Full Fuel-Cycle Analysis of Energy and Emissions Impacts of Transportation Fuels Produced from Natural Gas. December 1999.

Overall, GHG emissions from natural gas are 23 percent lower than diesel and 30 percent lower than gasoline fuels.[4] CNG reduces petroleum consumption almost 100 percent from the level of gasoline, whereas LNG reductions are slightly less, because LNG requires more energy to process.

Mercury Associates' *Eco Fuel-Tool* model forecasts that 47 percent of the 1,227 SEF fleet (571 vehicles) located in the Cook Inlet region could eventually be converted to CNG, providing a 40 percent fuel substitution. The model projects an overall 7.7 percent net decrease in GHG emissions over the decade for the entire regional fleet of 1,227 units (i.e., 571 units converted to NGVs and 656 units continuing to operate on diesel or gasoline fuels), including a 9.8 percent net decrease in the last year of the model.

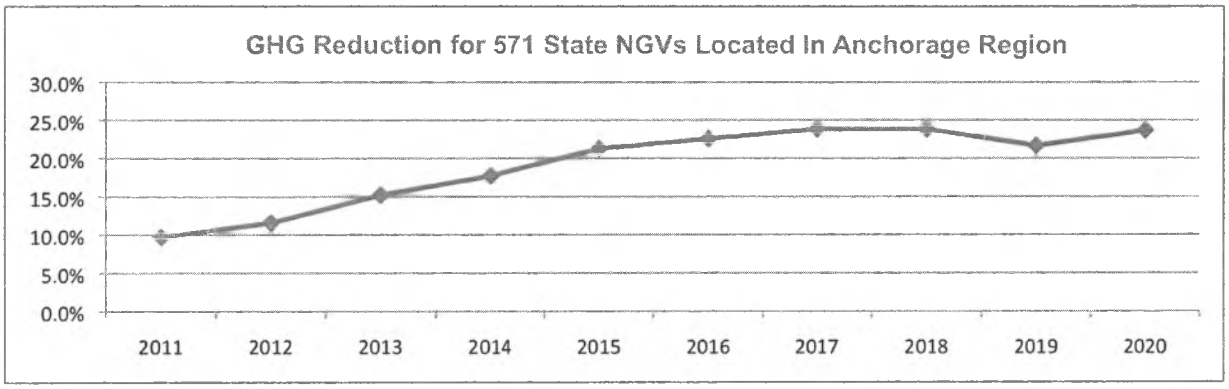
Exhibit 1
State GHG Reduction Forecast All Anchorage Vehicles



When comparing only the 571 units as NGVs versus conventional fuels, the GHG reduction ranges from 9.7 percent to 23.7 percent and averages 19.1 percent over the 10-year period. This percentage (19.1) is consistent with the ANL research presented in Table 2, *Petroleum Use and GHG Emission Reductions*, which show reductions between 21 and 26 percent.

[4] California Energy Commission. 2007. Alternative Fuels Data Center. Natural Gas Emissions. http://www.afdc.energy.gov/afdc/vehicles/emissions_natural_gas.html.

Exhibit 2
State NGV GHG Reduction Forecast vs. Conventional Vehicles



As indicated in the Methodology section of this report, we note that the management of fuel for the State of Alaska fleet is a decentralized activity and data is not collected through an automated fuel management system. SEF has requested, but not received approval, for funding of a $3 million statewide-automated fuel management system and has offered to take responsibility for centralized management of the State's estimated $29 million fuel ($25 million for bulk fuel and $4 million through retail outlets) purchases.

Centralization of fuel management and automating key processes in fuel management is an industry standard and considered a fleet management best practice. We believe such an endeavor would allow the State to reduce the cost of its fuel operations. With today's high cost of fuel, issues with fuel "shrinkage" and white-collar crime, and concerns regarding stability of supply in the event of a national emergency, weather issues, or other disruptions, fleet organizations must rely on automated systems in order to maintain consistent operations to ensure their fleet stays on the road. To this end, we have recommended SEF pursue the acquisition of a fuel management system.

Advantage and Disadvantages of CNG

Despite several advantages compared to liquid fuels, NGVs have not gained a significant share of the transportation market, other than a growing number of centrally fueled fleets such as transit; school buses; refuse; airport shuttles, taxis, and support vehicles; and regional delivery trucking. While operational characteristics of NGVs are no longer a significant problem or barrier to adoption, the vehicle choices as of late 2010 are still limited, as domestic automakers reduce spending on alternative fuel R&D investments in order to deal with endeavors related to financial restructuring. Having said this, the emission and fuel cost benefits of CNG continue to appeal to fleet operators, particularly since 95 percent of the natural gas consumed in the U.S. is domestically produced.

Natural gas supplies in Alaska are stretched by residential and commercial use, electric generation, and liquefied natural gas exports; however, the large and stable demand

offered by State vehicles could help justify the need for natural gas exploration, storage facilities, and other solutions for replacing the diminishing natural gas reserves in Cook Inlet.

High costs to build a fueling network and comparatively high initial costs of the vehicles themselves are significant barriers. For several decades, the alternative fuels industry as a whole has suffered from a "chicken and egg" situation where fueling stations are financially risky without a significant demand, and vehicle adoption is seen as risky without the assurance of fuel availability. Incremental conversion of fleets or individual users does not sufficiently create enough demand to make fueling investment work financially. A coordinated, large-scale commitment is needed. Government funds have generally been the mechanism to fund or at least incent fueling infrastructure.

NGV operators are subject to the frustrations of a limited fueling network and "fueling fatigue," both a result of the fact the natural gas is stored on board as a gas instead of a liquid, despite the high pressures involved. NGVs generally have to be fueled every day. Unless there is a fixed fueling site with multiple hoses (i.e., time fill, overnight fill) where vehicles can be fueled while parked over night, drivers resent the lack of convenience with the common fast fill public fueling sites if they have to visit every day. Overnight fueling, however, can be a convenience advantage over liquid fuels, because there is no longer a need to visit a fuel pump, and productivity is enhanced.

OEMs are expanding the availability of NGVs, although they are taking different approaches to how involved the buyer becomes in the conversion process. Only a limited number of NGVs are 100 percent manufactured by the OEM. Instead, most vehicles are shipped as conventional vehicles with engines that must be converted by a certified engine upfitter. General Motors, Ford Motor Company, Fiat, Freightliner Trucks, International Truck, Kenworth Truck Company/Peterbilt, and Mack Trucks offer NGVs in the U.S market. Only Honda, GM, and Freightliner/Cummins vehicles are entirely assembled at the OEM factory, shipped directly to delivering dealers, and carry identical warranties to the conventional models. While Ford's partnership with BAF is an improvement over past "conversions" due to utilization of the "ship through" process, fleet operators must still deal with two different warranty providers. The latter can result in "finger pointing" relating to which is responsible for what failure.

Certification of aftermarket conversion systems continues to be cumbersome and expensive. This hinders the development and use of NGVs. Proposed legislation in the U.S. House of Representatives and U.S. Senate would streamline, and, thereby reduce the cost of certification. Until this issue is resolved, the difficulty and high cost of retrofitting vehicles to operate on CNG will continue to be a hindrance to wider acceptance.

Analysis of Strengths, Weaknesses, Opportunities, and Threats

We conducted a SWOT analysis as a strategic planning method to evaluate the strengths, weaknesses, opportunities, and threats involved in assessing the feasibility of CNG as a viable alternative fuel for the Alaskan market.

Table 2
SWOT Objective: Feasibility of CNG for State Fleet

	Strengths	Weaknesses
Internal Origin (Attributes of the organization)	School, Railroad, SEF are supportive	Transit, Waste, Airport tepid towards CNG
	Positive experience with NGV operational performance	Previous technical glitches still remembered
	Desire for sustainability	Limited natural gas supply in many areas
	Existing, albeit limited, infrastructure	Issues with refueling nozzles during winter
	Willingness to appropriate additional funds	Perception of garage modification requirements
	Opportunities	**Threats**
External Origin (Attributes of the environment)	Various natural gas pipeline and storage facility proposals	Timeframe to build
	Alaska has 15% of U.S. natural gas reserves	Peak demand supply shortages in Cook Inlet area during January and February
	Jobs	Abundance of natural gas in Lower 48; shale expansion
	Reduce dependence on imported oil, as prices rise	Lack of Clean Cities program
	Political support for sustainability initiatives	Limited sources of conversion kits and M&R technicians
	Renewed interest in NGVs by OEMs	Hybrid electric and electric vehicle competition

The SWOT analysis indicates that CNG is a feasible fuel for certain Alaskan fleets and that an expansion of the CNG program would be beneficial towards Alaska's sustainability efforts. A variety of stakeholders have expressed an interest in expanding their use of CNG, providing the cost barriers are surmountable and the users can

reasonably expect an ample supply of the fuel. Consequently, we recommended proceeding to Phase II of the feasibility study.

Phase II – Pilot Program Proposal

The purpose of Phase II was to prepare a detailed proposal for a pilot CNG program for the State of Alaska.

Key Findings

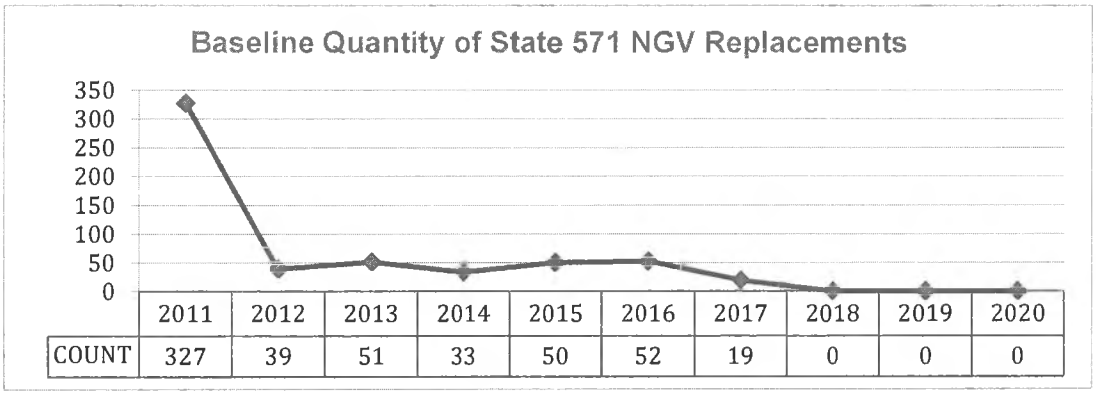
Fleets with high fuel consumption are critical to the support of a financially sound fueling CNG infrastructure, and the long-term participation of such fleets will be necessary for a sustainable program. Centrally fueled and maintained fleets are ideal candidates for conversion until such time as a broad network of fueling stations and maintenance support facilities are available.

Program Participants

Nationally, the three largest users of natural gas for transportation have been 1) transit and school buses; 2) waste collection trucks; and 3) airport support transportation vehicles. While Senate Bill 220 refers to the use of vehicles owned or operated by the State for the CNG Program (presuming the use of CNG was first found to be feasible), we believe other fleet organizations should be invited to participate due to either 1) their interest and willingness to contribute towards the mission and goals of the Program; or 2) their fleet includes the types of vehicles best suited to operate on CNG (i.e., transit, waste, airport support, high fuel consumption vehicles).

As discussed during the first Phase of this report, we have identified a total of 571 potential State vehicles, which are due for replacement over the next 10 years that would be suitable for operational use as NGVs. A complete list of the vehicles is provided in a separate *Excel* workbook, which contains the *Eco Fuel-Tool* database as well as NGV incremental replacement costs, fuel costs, and GHG emission reductions by each of pollutant category. In the following Exhibit, we have provided the number of potential vehicles by calendar year. Again, only vehicles located in the Anchorage region have been considered for the Program.

Exhibit 3
Recommended Quantity of State NGVs for CNG Program



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
COUNT	327	39	51	33	50	52	19	0	0	0

The spike of 327 vehicles due for replacement in 2011 indicates a large backlog of vehicles in the State fleet that have not been replaced within the normal SEF parameters provided to us for each vehicle class. For the most part, these vehicles are in their "secondary" life as State agency vehicles after completing their useful life within the SEF organization. This portion of the fleet represents amongst the highest polluters within the State fleet due to the age of the vehicles. The agencies cannot afford to replace the assets, a problem which would remain with NGVs since they could not afford to pay the incremental costs. This is not an unusual situation for government fleets and is even more commonplace as a result of the poor economic conditions over the past several years. Needless to say, even if the State had sufficient funds to replace all of the 327 vehicles in one year, we would not recommend doing so, since future spikes in replacement due date would occur in the future. Instead, we recommend "smoothing" the plan so that mission critical, obsolete, poorly functioning, and other undesirable vehicles are replaced first while the remaining vehicles are scheduled for replacement in future years.

Steps After A Successful Program

In the event the Program is successful, it will most likely be expanded in order to increase the number of NGVs in the State by reaching out to additional fleet organizations as well as to private citizens. A successful program is expected to result in several fleet organizations *wishing* to initiate use of NGVs due to the benefits experienced, including fuel cost reduction, operational success, and environmental gains. The Program will result in a working coalition of interested participants, who can join together in agreements for fueling infrastructure design, driver and mechanic training, grant applications, problem resolution, and mutual ongoing support.

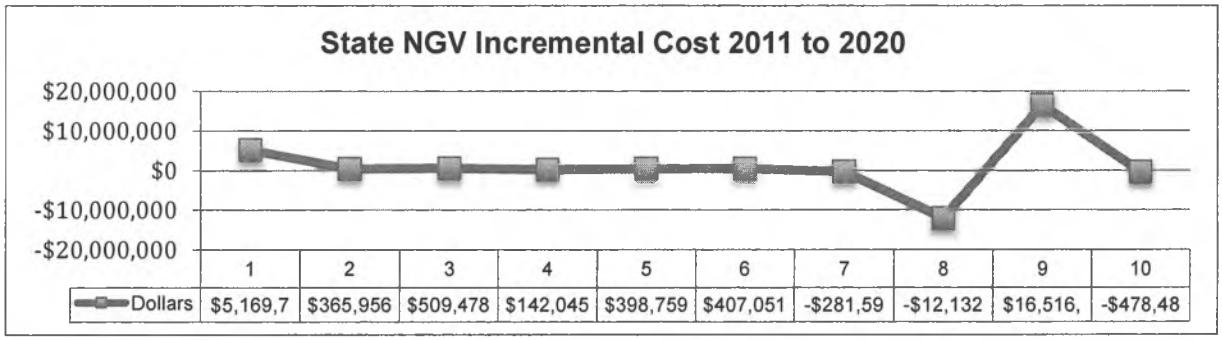
Estimated Costs

We estimate overall incremental State fleet costs will increase 7.6 percent over the next nine years (2011 to 2020), presuming the most appropriate candidate vehicles for conversions are replaced with NGVs when due for replacement. The *Eco Fuel-Tool*

model projects an increase in capital costs while fuel costs will decrease; the overall increase of seven percent does not include costs to build, operate or maintain a fueling infrastructure, which will be examined later in this report.

The incremental costs for the State fleet are provided in the following Exhibit; however, the large backlog of overdue vehicle replacements must be smoothed so that a large spike of vehicles are not replaced in one given year. The *Eco Fuel-Tool* model projects total existing conventionally fueled vehicle replacements to cost $140.5 million over the next 10 years whereas the costs of replacing 571 of the vehicles with NGVs costing $151.1 million. This results in an overall incremental cost of $10.6 million or 7.6 percent. Since the plan has not yet been smoothed, negative costs occur in the outlying years 2017, 2018, and 2020. Negative costs are a result of the longer lifecycle forecast for NGVs, fuel savings, and vehicle replacement costs being "top heavy" in 2011 while greatly diminishing in the outlying years.

Exhibit 4
State NGV Incremental Funding Costs



	1	2	3	4	5	6	7	8	9	10
Dollars	$5,169,7	$365,956	$509,478	$142,045	$398,759	$407,051	-$281,59	-$12,132	$16,516,	-$478,48

The cost of maintaining the NGVs by all estimations should be very similar to that of maintaining the equivalent liquid fuel vehicle, especially during the vehicle's warranty period. In fact, while there is an expectation that some vehicle mechanics will need NGV training, the CNG systems themselves will come with a warranty that will either allow the vehicle to be repaired for free or that will provide reimbursement for mechanic labor costs in addition to free parts. There is a potential savings opportunity for NGV maintenance cost through extended service intervals.

Estimating the extent and cost of modifications needed to safely convert older diesel garages to CNG is made uncertain by the absence of definitive codes applicable to CNG. Certain National Fire Protection Agency (NPA) and the National Electric Code may be broadly applied to CNG garages. In the National Renewable Energy Labs (NREL) study for municipal school, refuse, and transit fleets, facility upgrade costs associated with upgrading a fleet from diesel to CNG were considered zero. NREL based this conclusion on the fact that the incremental cost of making a new garage and maintenance facility compatible with CNG is minimal (Marathon 2006). At any rate, the

most common improvements cited were for use of sloped roofs, ventilation and heating system alternations, gas detection systems, various different electrical upgrades, standby generators to maintain ventilation, and fall-arrest systems to enhance safety of works on the roof of the bus during cylinder inspections.[5]

Most existing CNG stations in the Anchorage area are underutilized and require updating, especially with fuel dispensing equipment. These stations were built 10 to 25 years ago in support of prior CNG efforts, and still support a few remaining NGVs. There are several advantages to continuing use of the existing infrastructure. These sites are already established as CNG fueling centers, each supporting a small group of NGVs, and use of the existing sites will allow the widest network of stations with the smallest capital investment funded via this pilot.

The proposed fuel facility upgrades of $380,000 will decrease time required for fueling and allow fuel cards to be issued to track usage (a recommended best practice). An engineering analysis of the individual stations will need to be performed to determine what equipment in addition to the dispensers will require upgrading, rebuilding or replacement. There are several enterprises in the U.S. and Canada who will be interested in bidding on this project. It should be noted that the Railroad recently rebuilt their station, converting it from a fast fill to a time fill, and are capable to share expertise relating to this endeavor.

Fuel costs will be lower during the first phase of the Program since CNG costs less per mile than gasoline or diesel. Program participants will need to work using the base natural gas system fuel cost from Enstar to develop a reasonable markup per gallon to provide funds for the station owner, depending on how the station usage contracts are written. State fuel cost projections are provided in the *Eco Fuel Tool Excel* file.

If 35 additional NGVs are included in the Program (25 light-duty and 10 medium-duty), CNG consumption should approach 4,030 GGE (gasoline gallon equivalent) per month. Assuming a CNG cost advantage of a minimum of $1.25 per GGE (estimated $2.25/CNG GGE vs. $3.50/gallon for the liquid fuels), a savings of approximately $5,000 per month will result for the participants. Note if gasoline engines are used to power the CNG compressors, their fuel consumption must be either backed out of the total or separately metered. Not accounting for this could increase the apparent vehicle fuel consumption. In the NREL survey of transit fleets, the consumption amounted to approximately five to 10 percent of total fuel consumption.

Finally, when considering the number of "moving pieces" in the Program as envisioned and detailed herein, we recommend the State designate one individual or a consultant to manage the Program. This Program Coordinator, which should work in an inter-

[5] National Renewable Energy Laboratory (NREL). Compressed Natural Gas (CNG) Transit Bus Experience Survey. R. Adams, Marathon Technical Services and D.B. Horne, Clean Vehicle Education Foundation. April 2009 – April 2010. NREL/SR-7A2-48814. September 2010.

government capacity, would be responsible for the details such as working with participating agencies on vehicle selection, site evaluations, getting multiple competitive bids and time estimates from suppliers, problem solving and intervention, monitoring progress, and ultimately communicating results. Without a dedicated individual, the diverse aspects of the pilot would be left to those who have other responsibilities, resulting in a Program, which at a minimum is less timely and coordinated, and the chance for success would be diminished. We estimate the fully burdened cost of this individual to be $150,000 for a one-year period.

Table 3
Estimated Program Cost

Type Expense	Total Cost
25 State NGVs	$400,000
4 NGV School Buses	$240,000
4 NGV Trash Compactor Trucks	$240,000
2 Transit Buses	$160,000
2-Time Fill CNG Stations for DOT&PF	$800,000
Upgrading Existing CNG Fuel Infrastructure	$380,000
Estimated Fuel Cost Savings	-$60,000
Other Costs (staff, consultants, etc.)	$150,000
SUBTOTAL	**$2,310,000**
100% NGV Cost "Secondary Use Vehicles"	To be Determined
Fuel Management System Data Collection for Bulk Diesel and Gasoline Fuels	$3,000,000
TOTAL COSTS	**To be Determined**

Summary of Recommendations

CNG Program Phase I

The following timeline provides an overview of the activities and tasks that should be accomplished over the first 24 months of the Program.

Table 4
Program Timeline

Months	Activities
1	Contract with or designate a Program Coordinator
2	Determine/Design CNG Fueling Station Upgrades Designate and Order NGVs
3	Apply for Clean Cities Status Determine Contractor for CNG Fueling Site Upgrades Build Data Accumulation Database Determine/Arrange Technical Training for support personnel
4	Apply for Federal Grant/External Financial Support Coordinate CNG Fueling Site Upgrades First Progress Report

Months	Activities
5	Begin Receiving/Deploying NGVs Arrange CNG Driver Training
6	Continue Receiving/Deploying NGVs Ongoing Program Administration
7	Continue Receiving/Deploying NGVs Second Progress Report
8-12	Ongoing Program Administration and Problem Solving Develop Concepts for Pilot Expansion Ongoing Reporting
13-24	Conclude Receiving/Deploying transit and school bus NGVs (currently ~210 days from order through delivery dates)

1. Implement Program timeline as provided in Table 4.
2. Assign full-time responsibilities to a CNG Program Coordinator. We believe the State would be best served if this individual works for the State in the capacity of an inter-government coordinator who could assist local government entities as well as the State. We recommend the individual report to SEF, since they manage the largest number of government vehicles in the State.
3. Assign grant-writing responsibilities either to the CNG Program Coordinator or utilize private sector grant writing services.
4. Determine funding amount in order to develop budget for State fleet incremental costs (i.e., number of NGVs that may be ordered in year-one). We recommend SEF identify the "secondary" portion of the State fleet and the extent of its growth over recent years in order to possibly pursue additional State funding to replace these vehicles with NGVs (i.e., provide 100 percent of the cost to replace the vehicles rather than incremental costs).
5. Determine incremental funding for additional participants:
    - Municipality of Anchorage
        - Transit
        - Solid Waste
        - School District
        - Public Works
    - Vehicle Types
        - Street sweepers
        - Dump trucks
        - Bucket trucks
        - Shuttles/paratransit

- Construction equipment
- Other high-idling vehicles and/or equipment

6. Conduct meetings with the Alaska Railroad and Alaska Waste to bring both organizations into the Program.
7. Determine and contract for required upgrade to existing CNG stations.
8. Initiate planning for a minimum of two time fill CNG stations for SEF (ideally three-stations); contract with provider.
9. Develop a memorandum of understanding (MOU) between the various agencies that will participate in the Program so each may use available CNG stations while the infrastructure is further developed and capacity increases.
10. Initiate establishment of a Clean Cities coalition in Anchorage.
11. Initiate meetings with Enstar and other NGV business partners.
12. Arrange field site visits for Anchorage Transit staff visit the Los Angeles MTA to understand their rationale for acquiring 1,800 CNG buses since 2009, as well as to tour their garage facilities, and become acquainted with the steps taken for implementing one of the largest CNG transit bus operations in the nation.
13. Engage with Clean Energy (or similar providers) to encourage participation in the Program as well as funding partnership relationship for development of a public fuel infrastructure.
14. Consider a similar field trip by the Anchorage airport fleet manager in order to understand modifications to garages at other airports.
15. Modify current practice of decentralized bulk and fuel card management so as all State-purchased fuel is centralized under SEF who should continue to pursue acquisition of a centralized fuel management system. While the fuel system is not required for implementation of the CNG Program, it is necessary to accurately calculate the amount of liquid fuels used by the State and to calculate the amount of GHG emission reduction based on actual fuel consumption (versus the MPG methodology used for this study).

CNG Program Phase II

16. Identify and contact potential fleet operators in both the public and private sector that may have an interest in using CNG after successful implementation of the Program. We recommend consideration of the following organizations:
    - Airport on-site work vehicles
    - Airport private shuttles and taxis
    - Airport Federal Express and United Parcel Service
    - Port of Anchorage

- City of Fairbanks
- U.S. Postal Service
- Comcast Cable
- Time Warner Cable
- AT&T
- Verizon
- Carlile Transportation Systems
- Lynden Logistics
- Totem Ocean Trailer Express

17. Enact incentives to encourage use of CNG and NGVs.
18. Consider a State-sponsored, Governor-led, single-messaging communication program that would collaborate, support, and complement efforts and raise public awareness and understanding about the importance and cost-effectiveness of CNG efficiency, and thereby accelerate the deployment of NGVs.
19. Consider K-12 funding for NGV educational programs.
20. With the Governor's leadership, educate industry and the commercial sector that NGVs are also a risk-management opportunity when considering the volatile price of conventional fuels.
21. Encourage utilities and their regulators to expand NGV programs.
22. Consider job-creation tax incentives for hiring NGV resource efficiency/energy managers at private businesses.
23. Consider tax incentives to draw NGV-related businesses to Alaska.

INTRODUCTION

The Alaska Sustainable Energy Act, Senate Bill 220, an energy policy bill passed in 2010, mandated Department of Transportation & Public Facilities (DOT&PF) Division of Statewide Equipment Fleet (SEF) to prepare a report on the feasibility of using compressed natural gas (CNG) to power vehicles in the State, including vehicles owned or operated by the State, and incorporating in that study, if warranted, a pilot program proposal for powering some vehicles owned or operated by the State with CNG. The legislation described fleet conversion as a possible short-term solution for rising energy costs in Alaska, and paired it with a policy for the State to consider long-term energy costs when buying vehicles and equipment. DOT&PF must prepare a report on the feasibility of using CNG to power vehicles in the State by January 31, 2011.

In August 2010, DOT&PF solicited proposals for a qualified consultant to conduct a study of the State of Alaska vehicle fleet and make specific written recommendations regarding the feasibility of using CNG-powered vehicles (NGVs) in the SEF fleet. Mercury Associates, Inc. was selected in September 2010 to conduct the study, including the following tasks:

1. A review of existing government programs and incentives offered in Utah and other North American jurisdictions that promote the use of CNG to power vehicles;
2. A review and summary of relevant studies and investigations on existing public policy incentives that encourage the use of CNG to power vehicles;
3. An evaluation of the environmental benefits and technical merits of using compressed natural gas to power vehicles; and
4. Outlines the economic, environmental, and technological advantages and disadvantages of using and promoting the use of CNG to power vehicles in the state.
5. If the study shows that the use of CNG is feasible by DOT&PF, the project is expanded to include a proposal for a pilot program in the state to test the use of CNG to power vehicles owned, operated, or paid for in whole or in part by the State.
6. A recommendation for the most cost-effective and appropriate departments and geographic locations for a pilot program;
7. Detail how the pilot program, if successful, could be expanded to provide for increased use of CNG to power vehicles owned or operated by the State, as well as privately owned or operated vehicles;

8. An estimate of the costs to the State of a pilot program in which the State would purchase vehicles powered by CNG or convert existing vehicles to be powered by CNG, including:
    a. The costs of maintaining vehicles powered by CNG and training maintenance personnel;
    b. The costs of adapting, or encouraging the adapting of, state vehicle fueling locations to provide CNG;
    c. The costs of using CNG instead of diesel fuel or gasoline;
    d. The costs of expanding the pilot program or developing additional pilot programs; and
    e. Other costs or savings that can be reasonably expected to accompany the pilot program.

BACKGROUND INFORMATION

CNG has many advantages over mainstream liquid conventional fuels (i.e., gasoline and diesel), but, as with all liquid fuel alternatives, fights an uphill battle to gain market acceptance in the U.S, particularly when gasoline and diesel fuel prices are low. Conventional liquid fuels won over the market in the early 20th century, defeating challengers like the electric battery, steam power, and alcohols, due to its fuel energy density and ease of handling. Gasoline and diesel retain their popularity today, and the overall per-gallon cost in the U.S. remains among the lowest in the world, primarily due to relatively low levels of taxation.

With a 100-year head start, mainstream liquid fuels have the huge advantages of public acceptance and a comprehensive fuel delivery system, which culminates in a fueling "convenience store" at practically every major road intersection in the nation. The disadvantages to these fuels have become well known: contributions to greenhouse gas emissions; negative impact on U.S. balance of trade; and direct environmental costs as graphically seen in the Gulf of Mexico in 2010. To date, CNG has not taken advantage of a remarkable distribution system of its own: natural gas is delivered to millions of houses through a network lying beneath a large percentage of the roadways in the country. However, use of natural gas in vehicles generally requires the gas to be compressed for storage on the vehicle, and compression stations are neither widespread nor inexpensive (typically $250,000 to $500,000).

The Alaska statewide fleet of 7,500 vehicles is managed by SEF, which is centrally managed and headquartered in Anchorage with additional office locations in Fairbanks and Juneau. As a part of DOT&PF, SEF operates 60 maintenance and repair shops to service vehicles assigned to 252 locations around the State and on the ferry system. SEF employs 165 people and is responsible for annual operating and capital budgets of approximately $26 million and $15 million respectively. SEF does not manage the State's acquisition of fuel, which is decentralized to various departments, agencies, and divisions. As explained in the Methodology section of this report, the lack of a centralized and automated fuel program presents a challenge to quantify and manage the overall environmental impact of conventional fuels. According to SEF, the State spends $25 million per year for the purchase of bulk fuel and an additional $4 million for fuel purchased through the use of fuel cards at retail merchants.

The use of CNG in Anchorage dates back to at least 1974. Early programs featured "bi-fuel" aftermarket conversions on gasoline vehicles, which after conversion allowed the vehicle operator to switch between gasoline and CNG operation. Compressors were primitive, unreliable, and vehicles were not sufficiently powerful. To this end, drivers most often did not elect natural gas operation and vehicles were usually run on gasoline power. Subsequent conversion efforts in the following decades of the 1980s and 1990s resulted in similar lackluster results: lack of critical mass of vehicles, infrastructure, vehicle reliability, and fuel cost differential. Today, several business organizations in Anchorage (many which made financial investments with poor returns) continue to have

valuable expertise with NGVs, but are not eager to repeat past mistakes. Having said this, several trained vehicle conversion technicians, maintenance mechanics, and CNG station maintenance technicians continue to support the remaining NGVs and CNG fuel facilities in the Anchorage area.

Centralized vehicles (i.e., vehicles that return to a common location at the end of the work day) can be fueled overnight, through a network of hoses, similar to a line of block heaters. This spreads the demand/load of the fueling facility and is convenient for the drivers. In fact, overnight fueling makes CNG *more* convenient than gasoline or diesel. In contrast, repetitive CNG fueling at a fast-fill public station is less convenient than liquid fuels because, being a gaseous fuel, CNG has to be refueled two- to three-times as often.

The State of Alaska fleet can be used to support an effort to move a significant portion of the fleet vehicles in greater Anchorage to CNG fuel. As shown in the Salt Lake City area, the general public will participate in alternative fuel endeavors, given the existence of a network of fueling stations and a lower-priced fuel alternative. While natural gas is routed underground through many cities and neighborhoods, and is already in many private houses, public CNG fueling stations to support vehicle transportation is not common. It is costly to compress natural gas in the amounts needed for public fueling, typically up to $500,000 (or greater) per station. Therefore, fleets are needed to establish a demand for CNG sufficient to encourage investment in a CNG fueling network. We located seven CNG stations in the Anchorage area, with only one being open to the public:

1. Downtown (Health & Human Services)
2. Public Works
3. Tudor Garage
4. School District
5. Alaska Railroad
6. Elmendorf Air Force Base
7. Ditch Witch (public)

In recent developments, The Regulatory Commission of Alaska approved a certificate of public convenience and necessity for the natural gas storage facility that Cook Inlet Natural Gas Storage Alaska (CINGSA) wants to build on the Kenai Peninsula. The $180 million storage facility would hold excess natural gas production from warmer months so that Southcentral Alaska utilities could use the gas during the higher-demand cold months. Production from the Cook Inlet gas fields continues to decline, and Enstar Natural Gas Company has reported that gas storage is needed for it to meet all of its customers' needs during peak cold conditions in the winter of 2012-13. Both Enstar and CINGSA are subsidiaries of gas company Semco Energy, however, Semco has

established CINGSA as a joint venture with MidAmerican Energy Holdings Company. The additional storage facility and new exploration in the Cook Inlet are expected to provide a secure and predictable natural gas fuel supply for the region by 2013-2014. Until that time, shortages of natural gas may occur during peak periods during the months of January and February when the demand rate is five to six times the summer rate.

METHODOLOGY USED FOR THE PROJECT

A summary of the methodologies and techniques we employed to accomplish the scope of work for this project is provided below, followed by individual details relating to specific processes.

1. Develop and submit an information and data request to SEF;
2. Review SEF vehicle replacement practices;
3. Evaluate SEF fuel usage;
4. Review SEF fleet inventory, vehicle functions, and usage;
5. Analyze data to calculate SEF greenhouse gas (GHG) emissions for the Anchorage region;
6. Conduct interviews with state government officials to understand the State's objectives for this endeavor;
7. Conduct interviews with potential stakeholders in Anchorage;
8. Conduct an analysis of internal strengths and weaknesses and external opportunities and threats relative to the objective goal (SWOT);
9. Present recommendations for Phase I feasibility study;
10. Incorporate feedback from Phase I presentation into development of a CNG Program (Phase II);
11. Review existing CNG fueling infrastructure in Anchorage area to determine lower cost opportunities for implementation of the CNG Program;
12. Determine station upgrade pricing estimates;
13. Determine vehicle conversion pricing estimates;
14. Develop a strategy regarding Clean Cities participation to bring Anchorage area fleets into synchronization regarding alternative fuel activities; and
15. Document study methodology, findings, conclusions, and recommendations in a formal report and *WebEx* online presentation.

Review of Government Programs and Incentives

Utilizing resources identified in the Appendix and in the separate *Excel* workbook,[6] we have prepared a summary table of six North American jurisdictions that promote the use of CNG. We researched comparisons of CNG infrastructure, tax rates, licensing and reporting requirements, special fuel tax credits, vehicle and vehicle conversion tax credits, grants and loan programs, home refueling, etc. As appropriate for each jurisdiction, we have compiled a high level summary of the major legislation that was

[6] Mercury Associates, Inc. Government CNG Programs and Incentives. December 2010.

essential to establishing use of CNG in each jurisdiction. We have also included major communication methods to promote use of CNG to both fleet organizations and the general public (e.g., local meetings, the number of CNG fueling locations for fleets and private citizens, and the involvement of Clean Cities for each jurisdiction included in the study.

We reviewed reports, newsletters, plans, fact sheets, demonstration programs, brochures, and business cases from a wide variety of sources in order to assemble information on approaches for development of successful public policies.

Greenhouse Gas Emission Calculations

Mercury Associates has developed the *Eco-Fuel Tool*™ to capture fuel data such as the average fuel cost per year by individual vehicle, total fuel dollars spent per year, average miles-per-gallon (MPG) per unit, energy score (barrels of fossil fuels) per unit, and total carbon dioxide (CO_2) footprint from the current fleet inventory. The tool has the capability to analyze the same factors for the new replacement vehicle and calculate the improvements in fuel economy, savings in fuel costs, difference in energy score, and total CO_2 reduction.

Fuel consumption data is used to generate a GHG baseline as a starting point from which to measure future reductions in fuel consumption and emissions, because each gallon of gasoline burned releases approximately 19.5 pounds of CO_2. CO_2 is the dominant GHG (95 percent) from vehicles. The U.S. Environmental Protection Agency (EPA) has developed a specific CO_2 coefficient factor, which is used as follows in order to measure CO_2 emissions from a given fleet:

Gallons of gasoline x CO_2 coefficient for gasoline 8.81 kg[7] = total carbon dioxide

For diesel, CO^2 coefficient = 10.15 kg

The remaining ~five percent of emissions include: methane (CH_4 = 0.12%), nitrous oxide (N_2O = 1.88%), and refrigerant leakage (HFC = 3.71%). For the measurements of these emissions, EPA produces a grams-per-mile emissions factor for CH_4 and N_2O.[8]

Utilizing the inventory of vehicles provided to us by SEF, we conducted a two-fold calculation to determine the current baseline of GHG emissions and, subsequently, the potential for improvement through the use of CNG. Through the tracking of GHG, we assessed the current environmental impact of the fleet and potential to lower the impact through use of CNG vehicles. It should be noted that the management of fuel for the State of Alaska fleet is a decentralized activity and data is not collected through an automated fuel management system. SEF, therefore, did not have access to the fuel

[7] U.S. EPA. Climate Leaders. Mobile Source Guidance. May 2008.

[8] U.S. EPA. Climate Leaders. Direct Emissions from Mobile Combustion Sources. Table 2. May 2008.

data (e.g., gallons purchased by vehicle) as requested by Mercury.[9] To that end, we resorted to calculating fuel consumption based on the vehicle mileage provided to us by SEF and using EPA vehicle make/model MPG estimates based on an average of city and highway driving. This methodology tends to underestimate emissions, because of vehicle idling and other driving behaviors that impact real-world fuel usage, but are not considered when using EPA MPG-based data. Moreover, since we were required to manually match the SEF vehicles to EPA MPG estimates, we were only able to analyze the portion of the SEF fleet designated as domiciled in the greater Anchorage area; a total of 1,227 vehicles or about 16 percent of the entire State fleet. While viable local "pockets" of SEF vehicles most likely are domiciled in Fairbanks, Juneau or elsewhere, the conversion of vehicle fuel data was beyond the scope of this project.

Of 1,227 SEF vehicles domiciled in the greater Anchorage area, 571 units—47 percent of the vehicles reviewed—are projected to be acceptable CNG candidates. The following parameters were used in order to establish a set of realistic limitations and assumptions for the selection of viable vehicles:

1. Vehicle selections were limited to only those vehicle classes (24 of 113 classes in total) where certified conversions and/or original equipment manufacturer (OEM) products are available, primarily light duty vehicles and shuttle buses.
2. All existing SEF fleet vehicles will be operated until the end of their projected useful life, at which time the replacement vehicle will be a NGV.
3. CNG capital costs were projected to be between $16,000 and $24,000 higher per vehicle, depending on vehicle class.
4. NGVs were projected to have an extended vehicle life, by one year, based on engine life, oil life, and a desire to recover the higher initial investment.[10]
5. Baseline fuel costs equal $3.33 per gallon for gasoline, $3.60 per gallon for diesel, and $0.75 per gallon equivalent for CNG.

It is important to note that a limitation, which could not be quantified, is the proper designation of a domicile location for SEF vehicles since vehicles designated as being domiciled in Anchorage, may actually leave the area for periods as long as one year. Such vehicles would not be viable candidates as NGVs, meaning a slightly lower number of vehicles (than 571) would eventually be replaced as NGVs.

Interviews

We conducted interviews with State government officials in order to understand the State's objectives for this endeavor (e.g., clean air, displacement of foreign oil, creation of jobs, technology development, lower cost transportation fuel) as well as with a

[9] SEF requested, but has not received funding of $3 million for an automated statewide fuel management system, as of the date of this report.

[10] Extended NGV lifecycles are reflected as negative costs in the model.

number of stakeholders and potential stakeholders. Interview summaries are provided in the Appendix, whereas pertinent details regarding findings and recommendations are provided within the various sections of this report.

Municipality of Anchorage

- Mayor Dan Sullivan
- Public Works: Mark Warfield, Principal Administrative Officer
- Schools: Steven Kalmes, Director Transportation/Vehicle Maintenance
- Transit: Gary Taylor
- Solid Waste: Mark Madden

Anchorage Airport:

- Mark Luiken, Deputy Commissioner of Aviation

Alaska Railroad:

- Dave Thompson, Fleet Manager and Paul Farnsworth, Director of Facilities

Enstar:

- Mark Slaughter, Inna Johansen, Nick Szymoniak

Others:

- Charles Bussell, Ditch Witch Compressor Dealer
- Arnie Swanson, Truckwell

Strengths, Weaknesses, Opportunities, and Threats Analysis

We conducted a SWOT analysis as a strategic planning method to evaluate the strengths, weaknesses, opportunities, and threats involved in assessing the feasibility of CNG as a viable alternative fuel for the Alaskan market. Identification of SWOTs is essential, because subsequent steps in the process of planning for achievement of the objective may be derived from the SWOTs. The aim of any SWOT analysis is to identify the key internal and external factors that are important to achieving the objective. The SWOT analysis groups key pieces of information into two main categories:

1. **Internal factors:** The strengths and weaknesses internal to the organization (i.e., government organizations in the State of Alaska)
2. **External factors:** The opportunities and threats presented by the external environment to the organization (e.g., macroeconomic matters, technological changes, legislation, and socio-cultural changes, as well as changes in the marketplace or competitive position)

During the SWOT process, decision makers determine whether the objective is attainable, given the SWOTs. If the objective is NOT attainable, a different objective must be selected and the process repeated.

Phase II

Using the information gained doing research for Phase I, knowledge of the current state of the CNG industry in the Anchorage area gathered during interviews and site visits, and feedback from the Phase I presentations with stakeholders, a Phase II recommendation for a pilot program (Program) was developed. The most logical Program would utilize existing infrastructure in Anchorage and involve parties who have past experience.

The site visits and interviews conducted during the fall of 2010 revealed that the CNG fuel dispensers had not been upgraded since their initial installation, resulting in paper recordkeeping and sub-optimal fuel delivery times. The upgrading of several CNG dispensers would result in increased driver satisfaction at these sites, as well as complete documentation of fuel usage during any potential pilot program.

The cost of the potential fueling site upgrades was estimated by obtaining an approximate installed cost for a combination card reader/CNG fueling dispenser from Clean Energy Fuels Corp.[11], who has been the fueling station equipment leader in the lower-48 states. The estimated approximate cost was used for Program cost development only: a precise estimate will need to be determined after site selection and evaluation, and will depend of factors such as electrical and phone infrastructure, traffic patterns, routing, etc. Additional funding for site upgrades has been included as a separate line item in the Program cost section. Any grants or tax credits, which might be obtained to cover these station costs were not included in the estimates, and if obtained, could be used to either reduce Program costs or extend the number of participating fueling sites. The same can be said if the installed costs are lower than expected.

Program participant costs were estimated through several studies, including the NREL report on CNG Municipal Fleets,[12] and other on-line references cited later in this report. An average of these prices suffice for the needs of this study until such time as specific fleets and vehicles are determined during the early part of the Program, and the various options for CNG suppliers can be determined. The number of OEM vehicle suppliers is increasing and multiple bids may be available for any given vehicle application, a welcome problem to have. We note that only incremental costs of CNG vehicles were

[11] Clean Energy Fuels Corp. Seal Beach, CA. Northstar, BAF Technologies, and IMW Industries are wholly owned subsidiaries of Clean Energy, which was founded by T. Boone Pickens in 1997 as Pickens Fuel Corp. Mr. Pickens serves on the Clean Energy Board of Directors. cleanenergyfuels.com.

[12] National Renewable Energy Laboratory (NREL). Business Case for Compressed Natural Gas in Municipal Fleets. Caley Johnson. NREL/TP-7A2-47919. June 2010.

included: it is presumed that each participating agency or business would be replacing vehicles during normal business in 2011 and these vehicles would be selected and deployed in the Program. Again, any grants or tax credits designed to encourage vehicle conversion costs were not included, and if obtained could be used to either reduce Program costs or increase the number of participating vehicles.

PHASE I

Review of Existing Government Programs and Incentives

As stipulated in the Request for Proposal (RFP), we conducted research of historical events of government programs and incentives (fleet and general public) in the State of Utah, which contributed to the success of NGVs in the State. We also conducted similar research of five other states where a foothold has been established for the use of CNG as is evident based on the number of CNG stations located in each jurisdiction. These states are: California, Oklahoma, New York, Texas, and Washington.

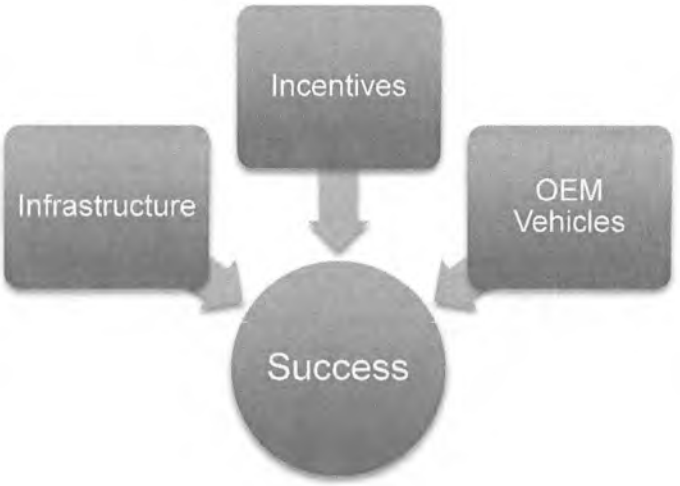
Overall, we found eight significant prevailing programs, factors, and incentives offered to fleet organizations and the general public in the six states. These characteristics are listed below, not in any particular order of rank:

Similarities of Characteristics Between States

1. Tax credits for public
2. Reduced fuel tax rate for public
3. Grants
4. Loans
5. Honda NGV retail dealers in UT, CA, NY, and OK
6. Relatively large infrastructure centered near interstate highways
7. Fleets moderately regulated
8. At least one Clean Cities organization in each state

An overview of the advantages and disadvantages of the various incentives is provided later in this section, as is the importance, in our view, of Clean Cities. We note that, excluding perhaps California, each of the states only moderately regulated fleet use of alternative fuels and, yet, was able to increase use of NGVs. Moreover, a contributing factor towards success with the general public's acceptance of NGVs, is the availability of a Honda retail NGV dealer in four of the six states (excludes Washington and Texas). Although the general public can acquire the Honda NGV through other sources, the presence of the OEM within the State of Alaska would indicate its support for the use of NGVs in the area.

Successful NGV programs must include a commitment to three elements: 1) the appropriate **vehicles**, preferably from an OEM rather than retrofitted; 2) a fueling and maintenance **infrastructure** to support the vehicles; and 3) **incentives** to kick-start the program and overcome barriers to acceptance.



All three of these elements must converge for a successful market transition to the alternative fuel. To that end, we have structured our research of existing government programs and incentives based on each of these key elements.

Use of Natural Gas in Utah

According to Utah Energy Initiative[13], future energy projections place significant demands on natural gas production in Utah and may require the importation of additional natural gas supplies from neighboring states. Natural gas demand has historically come from the residential home heating, commercial, and industrial sectors. In 2008, those sectors consumed approximately 137 billion cubic feet (bcf) of natural gas.[14] NGVs consumed only approximately 240 million cubic feet. Even a doubling of transportation fuel use would have little impact on consumption. However, natural gas consumption for electricity generation has increased steadily since the late 1990s, totaling more than 55 bcf in 2008, while generating approximately 16 percent of Utah electricity production.

Utah Incentives

Utah currently does not distinguish incentives between light-duty vehicles (LDVs) and heavy-duty vehicles (HDVs), however, the most current draft of the State's 10-year strategic energy plan (draft dated November 3, 2010) recommends that incentives be prorated on a sliding scale, with higher amounts for larger vehicles. We find this to be logical since HDVs achieve a much greater reduction in GHG emissions than LDVs. Utah's draft plan also calls for changing the current Utah Clean Fuel Tax provision from being applicable to only CNG-powered NGVs to include liquid natural gas (LNG) and

[13] Utah Energy Initiative Governor Herbert's 10-Year Strategic Energy Plan draft dated November 3, 1010.

[14] Utah Geological Survey Energy Statistics. Geology.utah.gov/emp/energydata/renewenergydata.htm. Cited in Utah Energy Initiative Governor Herbert's 10-Year Strategic Energy Plan draft dated November 3, 1010.

other clean fuels (presumably non-petroleum liquids). In addition, due to current economic conditions, Utah does not intend to increase gasoline taxes.

Below is a list of the most current incentives provided in Utah:

- Income tax credit of 35 percent of the new vehicle purchase price or $2,500, whichever is less
- Credit of 50 percent of the cost of converting a NGV, up to a maximum of $2,500 per vehicle
- Grants and loans to businesses and government entities for the cost of conversions and incremental cost of purchasing OEM vehicles
- Maximum annual awards are $500,000 and maximum grant/loan is $100,000 per project (minimum is $5,000) up to 100 vehicles acquired
- Tax of $0.085 per gasoline gallon equivalent to be modified proportionally with any changes to the traditional motor fuel rate
- Authorization to travel in high-occupancy vehicle (HOV) lanes regardless of the number of occupants
- PUC may find a gas corporation's request for a NGV rate less than full cost of service may be just and reasonable in the interest of the public; if approved, remaining costs must be spread to other customers of the gas corporation
- Public access to State-owned CNG fuel stations
- Loans and grants for NGVs and infrastructure
- Clean Cities grants
- Free parking in downtown Salt Lake City

Utah Infrastructure

- Established I-15 corridor CNG fueling infrastructure
- Developed by Questar Gas[15] for its NGV fleet
- Regulated by the State and cost spread amongst consumers
- One of few states where an individual can drive throughout the major population corridors of the state without limited access to CNG stations
- Public access to state CNG stations
- ~35 CNG public and private stations

[15] Questar Gas provides retail natural gas-distribution service to almost 900,000 customers in Utah, southwestern Wyoming and a small portion of southeastern Idaho. The Public Service Commission of Utah and the Wyoming Public Service Commission regulates Questar. Questargas.com.

Utah Vehicles

- More than 10,000 CNG vehicles in Utah[16]

The next section provides a high-level overview of various alternative fuel incentives in all states along with the advantages and disadvantages of each. A summary of the incentives and laws for all states is provided in the Appendix, distinguished by the type of incentives, type of user, and by technology or fuel class. Moreover, the separate *Excel* workbook provides detailed information and data collected from the six states included in this study.[17]

Overview of Alternative Fuel Incentives[18]

Grants

- 33 states offer grants for alternative fuels
- Commonly used incentive to provide funding for use of alternative fuels
- Highly desirable since funds reduce cost of goods or services
- Unlike loans, are not repaid by the recipient
- Most grants are available to both public and private entities
- Consumers typically receive grant funds at the time goods are purchased

Tax Incentives

- 39 states offer tax incentives for alternative fuels
- Less popular than grants
- Most tax incentives do not help municipalities, state governments, and municipal utilities[19]
- Less useful to small business fleets with low net income
- Fuel price discounts encourage fuel use rather than vehicle purchases
- Fuel tax deductions have a long payback period
- Fuel tax deductions do not result in enough of a price discount to attract a new market

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[16] Source: Questar Gas.

[17] Mercury Associates, Inc. Government CNG Programs and Incentives. December 2010.

[18] U.S. Department of Energy Alternative Fuels Data Center. All Incentives and Laws Sorted by Type. http://www.afdc.energy.gov/afdc/laws/matrix/incentive. Includes District of Columbia.

[19] Alternative Fuel Excise Tax Credit is an exception. Tax-exempt entities such as state and local governments that dispense qualified fuel from an on-site fueling station for use in vehicles qualify for the incentive.

Loans and Leases

- 19 states offer loans
- Powerful, but can be less effective than tax deductions, credits or grant funding
- Useful for fleets to offset high price differentials between alternative and conventional fuels

Rebates

- 18 states offer rebates
- Typically for the purchase of a vehicle or fuel purchases

Exemptions

- 39 states offer exemptions from restrictions and requirements
- Many states include HOV lane access and some allow access with less than the required occupants
- Other examples include roadway weight limitations, parking fees or preferential parking, and vehicle inspections
- Non-financial incentives can be particularly attractive to private fleets, but often require additional vehicle identification, such as decals or special license plates

Clean Cities

The mission of Clean Cities is to advance the energy, economic, and environmental security of the U.S. by supporting local initiatives to adopt practices that reduce the use of petroleum in the transportation sector. Established in 1992, Clean Cities carries out this mission through a network of more than 90 volunteer coalitions, which develop public/private partnerships to promote alternative fuels and advanced vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction. At the national level, the organization provides OEMs, trade associations, and federal agencies with coordinated strategies and resources they can leverage to obtain maximum petroleum reduction. Clean Cities also provides coalitions with access to information and incentives from U.S. Department of Energy (DOE), other federal agencies, and industry partners that can help fund significant, high-impact projects. The organization is part of the Office of Energy Efficiency and Renewable Energy's Vehicle Technologies Program.[20]

[20] U.S. Department of Energy Vehicle Technologies Program. What is Clean Cities? http://www1.eere.energy.gov/cleancities/pdfs/48384.pdf.



For the most current list of Clean Cities coordinators, visit *www.afdc.energy.gov/cleancities/progs/coordinators.php.*

Since a majority of 2009 awards originated from Clean Cities, including NGVs and CNG fueling infrastructure, we believe the establishment of a Clean Cities coalition in Alaska will be a vital factor towards achieving goals relating to the expanded use of CNG in the region. The State of Utah, for example, received about $15 million in FY-09 Clean Cities grants. The West Coast received $52 million, East Coast $99 million, and Midwest $134 million. Heavy-duty vehicles are generally the largest fuel users and thus, tend to be the most cost-effective project vehicles for grant funding programs (e.g., Clean Cities 2011).

The Anchorage Metropolitan Planning Organization (MPO) served as a coordinating organization similar to Clean Cities during the area's push for CNG use in the 1990s and could provide valuable assistance in establishing a Clean Cities in Anchorage. Likewise, the Fairbanks MPO should be included in coalition efforts, since the city is a non-attainment area for $PM_{2.5}$[21] and is the next most likely city in Alaska where potential NGVs would be feasible (after Anchorage).

National Clean Diesel Campaign

EPA's National Clean Diesel Campaign is distributing funding for the National Clean Diesel Funding Assistance Program through EPA's Fiscal Year (FY) 2011 Appropriations. The National Clean Diesel Funding Assistance Program provides funding to reduce emissions from existing diesel engines through a variety of strategies, including but not limited to: add-on emission control retrofit technologies; idle reduction technologies; cleaner fuel use; engine repowers; engine upgrades; and/or vehicle or

[21] Particle matter that is 2.5 microns or less in diameter ($PM_{2.5}$) is a subset of the larger PM_{10}. $PM_{2.5}$ can be emitted directly from both human activities and natural sources. "Secondary" $PM_{2.5}$ can form from gases, such as oxides of nitrogen (NO_X) or sulfur dioxide (SO_2), reacting in the atmosphere. The U.S. EPA set the first $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS) in 1997.

equipment replacement; and the creation of innovative finance programs to fund diesel emissions reduction projects. Under this grant program, funding is restricted to the use of U.S. EPA and California Air Resources Board (CARB) verified and certified diesel emission reduction technologies.[22] Eligible participants include:

- U.S. regional, state, local or tribal agencies/consortia or port authorities with jurisdiction over transportation or air quality
- Nonprofit organizations or institutions that:
  - Represent or provide pollution reduction or educational services to people or organizations that own or operate diesel fleets; or
  - Have, as their principal purpose, the promotion of transportation or air quality
- School districts, municipalities, MPOs, cities, and counties are all eligible entities under this assistance agreement program to the extent that they fall within the definition above
- Buses, medium, and heavy duty trucks qualify for funding

School Bus USA

We understand that the following programs are currently available to assist with funding school bus fleets towards cleaner burning vehicles. The U.S. EPA has compiled a list of state and federal grants and funding that applies especially to school buses, including the Congestion Mitigation and Air Quality Program (CMAQ).[23]

- A new program from the National Association for Pupil Transportation (NAPT) will help school districts convert older buses to run on CNG. The grant for the program was provided through the U.S. EPA from American Recovery and Reinvestment Act funds.
- The National School Bus Equity Investment Lease Program aims to help qualified districts take diesel school buses that are scheduled for retirement and cost-effectively extend their life by converting them to CNG. Program officials claim that it can save districts as much as 50 percent on the interest rate to finance the cost of repowering a school bus with a new CNG engine. The program manages the sourcing for conversion to CNG, the utilization of U.S. EPA funds and the lease program. It also works with participating districts to monitor monthly fuel consumption.[24]

[22] Clean Diesel Program. http://epa.gov/cleandiesel/prgnational.htm.

[23] School Bus Program. http://epa.gov/cleanschoolbus/funding.htm.

[24] National School Bus Equity Investment Lease Program. http://schoolbusmoney.org/. http://operationupcycle.org/.

Federal Transit Administration Grants

The Federal Transit Administration (FTA) offered grants for transit buses in urban areas through its Urbanized Area Formula Program and Clean Fuels Grant Program. Funding for these programs has expired, but is expected to resume through upcoming legislation. The grants are expected to pay for 83 percent of the cost of a CNG bus to eligible recipients. This funding scenario resulted in the CNG buses actually being $2,700 less than diesel buses in the NREL business case model for municipal transit fleets. In the NREL model, FTA funding reduced the payback period for transit buses by approximately 1.6 years for all fleet sizes over 10 vehicles.

Fleets' Experience with CNG

This section of our report recaps the results of our review of government fleets' experience using CNG-fueled vehicles. The review involved interviews of fleet management officials in selected government jurisdictions and institutions, including the states of Utah and Washington, Oklahoma State University, and the City of Seattle. We also reviewed the findings of a recently published study of transit bus fleets' experience with CNG.

General Conclusions

Of all of the types of government fleets operating NGVs, the public transit industry has gone the farthest in embracing the use of such vehicles. NGVs account for an estimated 20 to 25 percent of all U.S. transit bus purchases over the last 10 to 15 years.[25] This degree of adoption of NGVs by an industry that operates very expensive vehicles to provide transportation services for which there is little tolerance for unreliability and a high degree of public visibility, scrutiny, and accountability suggests that CNG is a very viable fuel for certain types of fleets. Overall, the transit industry (as well as school bus transportation) has found the performance and costs of NGVs and the infrastructure required to fuel them to be acceptable.

Not all government fleets have the same operating characteristics as do transit fleets, however, and the adoption of NGVs thus has not been uniformly extensive or enthusiastic. General-purpose government fleets that have embraced NGVs generally have done so where third parties, principally local gas utility companies, have fronted much of the cost of building the necessary vehicle fueling infrastructure. This has been one of the keys to adoption of NGVs in Utah and Oklahoma. Conversely, the lack of conveniently located fueling facilities has been the principal impediment to fleet users' embrace of NGVs in jurisdictions such as the State of Washington and the City of Seattle.

Although there were concerns years ago about the reliability and performance of NGVs and CNG fueling infrastructure, these concerns have largely been addressed through

[25] Adams, R. and Horne, D.B. Compressed Natural Gas (CNG) Transit Bus Experience Survey. Golden: National Renewable Energy Laboratory. September 2010. afdc.energy.gov/afdc/pdfs/48814.pdf.

advances in their respective technologies. The incremental costs of using NGVs have not been a major obstacle to their adoption by the organizations with which we spoke, partly because these costs have been subsidized with grant funds and federal fuel subsidies (some of which recently have expired or have been reduced) and/or have been borne by third party fuel providers who amortize and recover the costs over long periods of time. Neither operational performance nor costs were cited as the number one reason that those entities such as Utah and Oklahoma that are expanding their NGV fleets are doing so. Rather, the concerns of elected officials about reducing U.S. dependence on imported oil and reducing the environmental impacts of using gasoline and diesel fuel reportedly are the primary factors behind such expansions.

Operational Considerations

As just noted, the operational performance (e.g., reliability, safety, horsepower and torque) of NGVs does not appear to be a major concern to those organizations that have deployed such vehicles in significant quantities, most notably the transit industry. While there are operational and maintenance issues with any type of automotive technology, such problems are not reported to be significantly more prevalent with most of today's CNG technology, although fleet operators such as the State of Utah report more technical glitches with NGVs that have been converted to run on CNG than with OEM NGVs, such as the Honda Civic.

The principal technical issues with NGVs reported by transit bus operators related to the failure rates of ignition systems and sensors. In comparison to older diesel buses, the miles driven between failures are higher for NGVs largely due to such problems. However, the introduction of clean diesel buses, which use sophisticated aftertreatment systems, is anticipated to narrow, if not eliminate, this reliability gap. On the flip side, some fleet operators report being able to reduce the frequency with which they have to perform certain types of preventive maintenance on NGVs. Oklahoma State University, for instance, has increased the intervals for some chief preventive maintenance services on its CNG buses from 5,000 to 10,000 miles.

Perhaps the biggest vehicle-related technical concern of fleet operators with significant numbers of NGV vehicles stems from the limited availability of OEM vehicles, components, and parts. Bus transit operators surveyed in the recently completed U.S. DOE study expressed concern that there was, until recently, only one mainstream supplier of engines (Cummins) and that its monopolistic position seemed to adversely affect its responsiveness to customer concerns and complaints. While a second engine manufacturer (Doosan) has recently entered this market, there now is some concern that such competition might dampen Cummins' enthusiasm for staying in NGV engine production.

In the small vehicle market, there seems to be less concern about the responsiveness of Honda (the sole OEM producer of NGVs prior to GM shipping its new CNG-fueled Chevy Express and GMC Savana cargo vans late in 2010) to vehicle performance issues, but more concern about the high cost of replacement parts for NGVs resulting

from its quasi-monopolistic position. On the other hand, the use of conversion kits clearly results in more technical glitches and associated concerns about not voiding OEM warranties and finding qualified service providers. According to the State of Utah, which has access to the second largest network of CNG fueling stations in any state (after California), initial technical problems with converted NGVs have been a source of fleet user resistance to increasing their use of such vehicles.

On the fleet fueling side, the number one operational impediment to greater use of NGVs is access to fuel. This is much less of an issue for transit fleets than for many types of vehicles in government fleets, because transit buses are centrally garaged or stored at night and can be refueled overnight using relatively inexpensive time fill stations. Many types of fleet vehicles require access to fast fill stations where they can refuel during the course of normal daily operations, because they are not usually parked overnight in the same fashion as transit or school buses and in sufficiently large quantities to warrant the construction of fueling stations. In addition, the use of such vehicles is usually much less predictable than that of buses operated on fixed routes and schedules. Unfortunately, fast fill stations are very expensive to build (as much as $500,000 or more) and maintain. Consequently, fleet operators cannot provide its vehicle operators as many points of access to fuel with CNG as it can for gasoline and diesel fuel. The lack of ready access to fueling stations is the primary reason cited by jurisdictions such as the State of Washington and the City of Seattle for not having more NGVs in their fleets.

The performance and reliability of fueling stations (once they are available) is not reported to be a significant concern by fleet operators with sizable numbers of NGVs. However, transit operators point out that a fleet comprised predominantly if not entirely of such vehicles is highly susceptible to major service disruptions if their fueling infrastructure fails, so building redundancy into such systems is of critical importance. The aforementioned U.S. DOE-funded study addresses a number of industry best practices related to CNG station design, ranging from modular design features that readily accommodate expanding capacity, to the use of gas filtration systems that minimize downstream oil contamination that can void engine manufacturers' warranties, to the merits of natural gas versus electric-powered compressors.

A final set of operational considerations associated with using CNG as a fleet fuel relates to operator, mechanic, and public acceptance. After 15 years, such acceptance is widespread and commonplace.

Cost Considerations

It is universally acknowledged by the organizations with whom we spoke that NGVs do not "make sense" from a direct vehicle total cost of ownership standpoint. NGVs cost more to procure than do comparable conventionally fueled vehicles. For instance, the State of Utah told us that the cost of EPA-certified conversion kits for light-duty vehicles

is around $14,000.[26] The incremental cost of the CNG package for the aforementioned Chevy Express and GMC Savana cargo vans is more than $15,000; and Oklahoma State University pays a price premium of about $9,000 for a CNG-fueled Honda Civic, and about $13,000 for an aftermarket Chevy Impala conversion.

Based on the gasoline gallon equivalent fuel consumption rates and typical annual usage rates for light-duty vehicles, Utah has calculated that gasoline needs to cost in excess of $3 per gallon in order to justify paying the higher capital costs of NGVs. In our experience, however, such break-even calculations typically do not take into account the relatively lower (or unknown) residual values of NGVs or the relatively higher costs of building, maintaining, and accessing CNG fueling stations. Moreover, without the federal fuel tax credit of $0.50 per gasoline gallon equivalent, the break-even point for recouping the incremental capital costs of NGVs is even higher. The federal fuel tax credit, which expired in 2010, has been extended for 2011.

While such capital cost recovery considerations are not unimportant, the principal economic impediment to wider use of NGVs in government fleets is the substantial up-front costs of building fast fill fueling stations. As mentioned earlier, the State of Utah fleet enjoys access to the second largest network of CNG fueling stations of any state. However, only six of the 33 stations in this network are owned by the State; the local gas utility company, Questar, owns the other stations. The State of Oklahoma is expected to invest an estimated $20 million in the construction of new CNG stations over the next five years. All of this investment will be paid for by Clean Energy Fuels Corp. and recouped through a combination of grants and surcharges on the price of CNG furnished for State vehicles under long-term contracts. Similarly, CNG fueling stations in Seattle were built not by the City, but by third-party providers such as Clean Energy Corp. and WorldCNG[27].

The implications of these practices are that government fleets are unlikely to make significant investments in the construction of additional CNG fueling infrastructure without either sizable amounts of grant funds from federal, state, and/or local sources or public-private partnerships with third-party fuel providers that can, in essence, finance up-front facility costs through long-term fuel supply agreements.

Other Considerations

Given the relatively weak economic arguments for using NGVs—until such time as gasoline and diesel fuel prices increase as they did in 2008—and/or the number of such

[26] Although the Utah State legislature passed and the governor signed HB 70 earlier this year, which authorizes the manufacture, distribution, and certification (by the State of Utah) of aftermarket CNG conversion kits at a cost of about $6,000 apiece, the U.S. EPA has communicated its reservations about Utah trying to bypass federal law requiring EPA certification of such kits, and Utah told us that it has not purchased such locally certified kits for any of its own vehicles—and has no plans to do so at the present time.

[27] WorldCNG. Located in Seattle, WA, produces and installs U.S. EPA-certified natural gas fueling systems. Worldcng.com.

vehicles on the road increases substantially so as to more easily recoup the costs of building and maintaining more infrastructure, one may well wonder why government jurisdictions such as the State of Alaska should seriously contemplate facilitating the increased use of NGVs. The *principal* reasons that the representatives of the states of Utah and Oklahoma with whom we spoke cited for continuing to do so have nothing to do with the *direct* economic costs of vehicles, fuel stations, or fuel. In Oklahoma, a primary motivator for the legislature is reducing dependence on imported oil. In Utah, it is reducing the harmful environmental impacts of using carbon-based fuels to power motor vehicles. While the benefits to the citizens of these two states of achieving these particular goals are difficult to express in quantitative terms, the elected officials in both states (which, it might be noted, are relatively conservative politically and not known for having large populations of "tree huggers"), apparently feel that paying a little—or even a lot—more to fuel state-owned vehicles with CNG is worth it.

Review of Existing Public Policy Incentives

A number of the incentives already identified in the previous section of this report include public policy incentives, which influence the use of CNG by private citizens; however, common incentives that exist in the six states include the following:

- Grants
- Loans
- Tax credits
- Use of government CNG stations
- Use of HOV lanes regardless of the number of occupants
- Insurance discounts

Evaluation of Environmental Benefits and Technical Merits

CNG reduces GHG emissions versus conventional fuels primarily due to the molecular structure of methane, the primary component of natural gas. Methane, CH_4, has the highest ratio of hydrogen to carbon (4:1) of any hydrocarbon fuel. While unburned methane itself is a serious greenhouse contributor, the net effect is still a significant benefit for the environment. NGVs can produce significantly lower amounts of harmful emissions such as NO_X, particulate matter $PM_{2.5}$, and toxic and carcinogenic pollutants as well as CO_2 compared with vehicles fueled by diesel and gasoline.

Light-Duty Vehicles

A report by Argonne National Laboratory (ANL) combined emission data from 14 primary studies to determine the effects of natural gas fuels on LDV tailpipe emissions. The weighted results are illustrated in the table below.

Table 5
Pollutants Found to Be Significantly Reduced in CNG Use When Compared to Reformulated Gasoline in LDVs[28]

Pollutant	Percent Reduced
Volatile Organic Compounds (VOC)	10%
Carbon Monoxide (CO)	20% to 40%
Oxides of Nitrogen (NO_X)	0%
Particulate Matter (PM)	80%
Methane	-400% (increase)

Overall, GHG emissions from natural gas are 23 percent lower than diesel and 30 percent lower than gasoline fuels.[29] CNG reduces petroleum consumption almost 100 percent from the level of gasoline, whereas LNG reductions are slightly less, because LNG requires more energy to process.

Table 6
Petroleum Use and GHG Emission Reductions[30]

Fuel	Percent Reduction in Petroleum Use	Reduction in GHG Emissions
CNG	~100%	21-26%
LNG	~98%	21-25%

According to the AFDC website, a NREL fleet study of 13 vans in the Denver Super Shuttle fleet found that dedicated CNG vans have significantly lower emissions of nonmethane hydrocarbons (NMHC), CO_2, and NO_X than gasoline or bi-fuel vans operated on CNG or gasoline. Another NREL study of 20 taxicabs also found that CNG reduced NMHC and CO_2, but did not find any reduction in NO_X.

Heavy-Duty Vehicles

NREL and the University of West Virginia (UWV) conducted studies of numerous fleets as part of its Alternative Fuel Truck Evaluation Project. The following table lists the natural gas vehicle emissions as a percentage below the emissions of comparable diesel HDV.

[28] Argonne National Laboratory Transportation Technology R&D Center. A Full Fuel-Cycle Analysis of Energy and Emissions Impacts of Transportation Fuels Produced from Natural Gas. December 1999.

[29] California Energy Commission. 2007. Alternative Fuels Data Center. Natural Gas Emissions. http://www.afdc.energy.gov/afdc/vehicles/emissions_natural_gas.html.

[30] Argonne National Laboratory Transportation Technology R&D Center. A Full Fuel-Cycle Analysis of Energy and Emissions Impacts of Transportation Fuels Produced from Natural Gas. December 1999. Results are relative to baseline light-duty vehicle fueled with reformulated gasoline.

Table 7
NREL and UWV Field Test of NGV Emissions

Vehicle Type	CNG Mail Delivery Trucks	LNG Buses*	LNG Semi Trucks	LNG Refuse Trucks	LNG Dual-Fuel Refuse Trucks
Fleet	United Parcel Service (UPS)	Dallas Rapid Transit (DART)	Raleys	Waste Management (WM)	Los Angeles Bureau of Sanitation
Number of NGVs	7	15	8	6**	10
Number of Diesel Vehicles	3	5	3	2	3
Drive Cycle	City Suburban HDV Route	Central Business District	Five-Mile Route	WM Refuse Truck Cycle	AQMD Refuse Truck Cycle
PM Reduction	95%	NSS***	96%	86%	NSSS***
NO_X Reduction	49%	17%	80%	32%	23%
NMHC Reduction	4%	96%	59% less than diesel THC	64% less than diesel THC	NSS***
CO_2 Reduction	75%	95%	-263%	-80%	NSS***

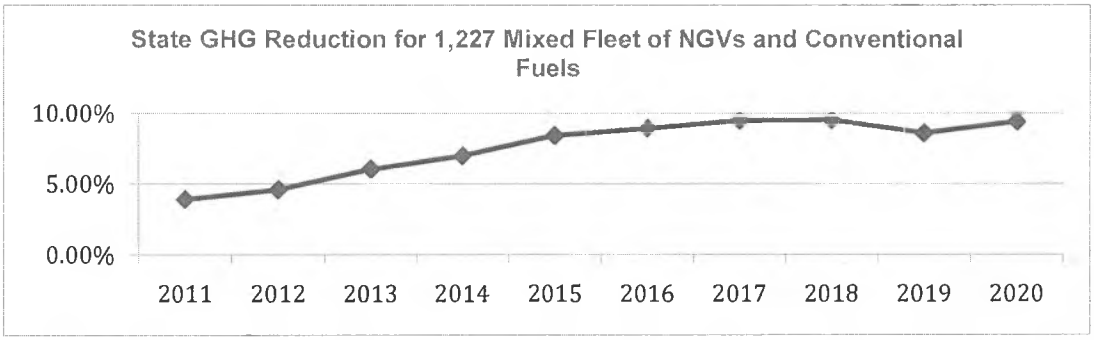
*Diesel buses in DART study used oxidation catalysts.
**WM's NOx tests omitted three trucks due to malfunctioning turbochargers; a problem that skewed results and has been since fixed.
***NSS: Not statistically significant because emissions were too low for the testing equipment for the LNG buses or both LNG and diesel (due to the use of catalyzed particulate filters) refuse trucks. Emissions given in percentage reduced from diesel emissions, based on grams emitted per mile driven. Negative reduction values indicate an increase in pollutants.

This table shows that PM is heavily reduced by natural gas—reduced to undetectable levels in two tests and by at least 85 percent in the other three. NOx is reduced by 17 percent to 80 percent from diesel. The reduction of NMHCs varies widely, but all tests show a reduction. Two of the tests compare NMHCs from natural gas to the total hydrocarbons (including methane) from diesel, and both show the NMHCs to be 60 percent lower. The CO_2 reduction varies widely from a near 100 percent reduction to a 260 percent increase, but the reports do not offer insight to this wide variance.

State Fleet Anchorage Region GHG Reduction Findings

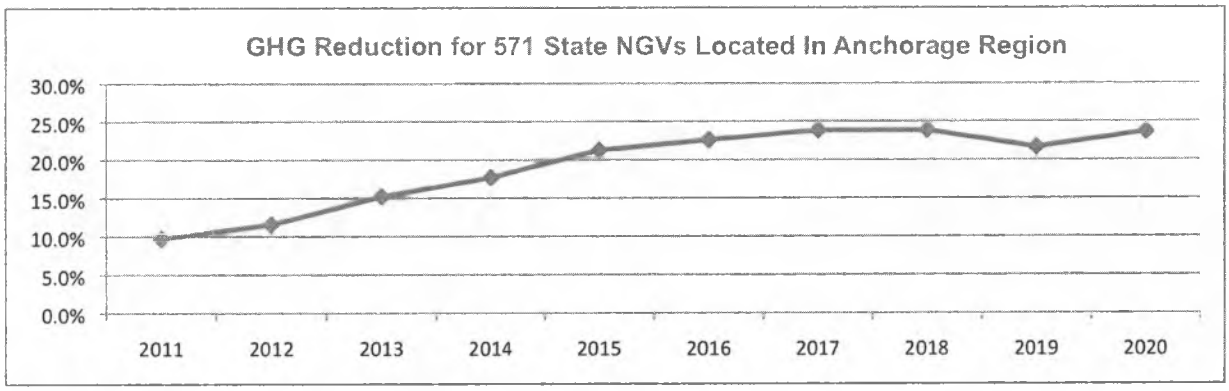
The Mercury Associates *Eco Fuel-Tool* model forecasts that 47 percent of the 1,227 SEF fleet (571 vehicles) located in the Cook Inlet region would eventually be converted to CNG, providing a 40 percent fuel substitution. The model projects an overall 7.7 percent net decrease in GHG emissions over the decade for the entire regional fleet of 1,227 units (i.e., 571 units converted to NGVs and 656 units continuing to operate on diesel or gasoline fuels), including a 9.8 percent net decrease in the last year of the model.

Exhibit 5
State GHG Reduction Forecast All Anchorage Vehicles



When comparing only the 571 units as NGVs versus conventional fuels, the GHG reduction ranges from 9.7 percent to 23.7 percent and averages 19.1 percent over the 10-year period. This percentage (19.1) is consistent with the ANL research presented in Table 6, *Petroleum Use and GHG Emission Reductions*, which show reductions between 21 and 26 percent.

Exhibit 6
State NGV GHG Reduction Forecast vs. Conventional Vehicles



Findings for the four specific areas of study: 1) GHG reduction; 2) replacement costs; 3) fuel costs; and 4) overall net cost are presented in further detail within both sections of this report: Phase I and Phase II. The environmental benefits are presented in this section as well as in the subsequent section, *Advantages and Disadvantages of CNG for Alaska*. We have presented the advantages and disadvantages by three different characteristics, including technological. Vehicle incremental replacement cost, fuel cost, and overall costs are presented in the Phase II section of the report. Finally, a complete *Excel* workbook of the *Eco Fuel-Tool* model is provided as an attachment to this report.

As indicated in the Methodology section of this report, we note that the management of fuel for the State of Alaska fleet is a decentralized activity and data is not collected through an automated fuel management system. SEF has requested, but not received approval, for funding of a $3 million statewide-automated fuel management system and has offered to take responsibility for centralized management of the State's estimated $29 million fuel ($25 million for bulk fuel and $4 million through retail outlets) purchases.

Centralization of fuel management and automating key processes in fuel management is an industry standard and considered a fleet management best practice. Such an endeavor would allow the State to reduce the cost of its fuel operations through:

- Mitigating the risk of theft and pilferage of fuel by State employees and contractors
- Determining the true cost of a gallon of fuel
- Ability to compare State fuel operations to industry standard pricing and performance
- Determine an effective supply strategy by balancing security of supply with desired cost and margins
- Optimize inventories, daily pricing decisions and delivery schedules
- Streamline operations and accounting through centralization of tasks
- Reconcile bill-of-ladings with fuel delivery data
- Reconcile fuel price, volume, and freight costs
- Reduce manual data entry

Since SEF did not have access to the fuel data (e.g., gallons purchased by vehicle) as requested by Mercury, we resorted to calculating fuel consumption based on the vehicle mileage provided to us by SEF and using EPA vehicle make/model MPG estimates based on an average of city and highway driving. This methodology tends to underestimate emissions, because of vehicle idling and other driving behaviors that impact real-world fuel usage, but are not considered when using EPA MPG-based data. Moreover, since we were required to manually match the SEF vehicles to EPA MPG estimates, we were only able to analyze the portion of the SEF fleet designated as domiciled in the greater Anchorage area; a total of 1,227 vehicles or about 16 percent of the entire State fleet. While viable local "pockets" of SEF vehicles most likely are domiciled in Fairbanks, Juneau or elsewhere, the conversion of vehicle fuel data was beyond the scope of this project.

With today's high cost of fuel, issues with fuel "shrinkage" and white-collar crime, and concerns regarding stability of supply in the event of a national emergency, weather issues, or other disruptions, fleet organizations must rely on automated systems in order to maintain consistent operations to ensure their fleet stays on the road. To this end, we have recommended SEF pursue the acquisition of a fuel management system.

Advantages and Disadvantages of CNG for Alaska

Despite several advantages compared to liquid fuels, NGVs have not gained a significant share of the transportation market, other than a growing number of centrally fueled fleets such as transit; school buses; refuse; airport shuttles, taxis, and support vehicles; and regional delivery trucking. While operational characteristics of NGVs are no longer a significant problem or barrier to adoption, the vehicle choices as of late 2010 are still limited, as domestic automakers reduce spending on alternative fuel R&D investments in order to deal with endeavors related to financial restructuring. Having said this, the emission and fuel cost benefits of CNG continue to appeal to fleet operators, particularly since 95 percent of the natural gas consumed in the U.S. is domestically produced.

We have separated the advantages and disadvantages of CNG and NGVs by three different characteristics: 1) economic; 2) environmental; and 3) technological; these results are each displayed in a separate table. As appropriate, each advantage and disadvantage is displayed in a "point—counter-point" quick-scan format reflecting the fuel's merits compared to conventional fuels. Although presented from a fleet organization perspective, most points would apply to the general public as well.

Table 8
Economic Advantages and Disadvantages of CNG and NGVs

Economic Advantages	Economic Disadvantages
Fuel cost per mile is lower	Vehicle cost premium (OEM & retrofit)
Ability to fuel onsite overnight with unattended filling, enhancing productivity	Fueling station cost premium
CNG price stability versus diesel and gasoline	Limited number of public fueling stations
Alternative fuel excise tax credit of $0.50 per gallon extended through 2011 (including credits for tax exempt fleets)	Additional gas storage required in Cook Inlet to meet peak winter natural gas demand
Alternative fuel infrastructure tax credit extended for 2011, but less $$ than prior years	Secondary resale market for NGVs is lacking
Alternative fuel home refueling tax credit extended for 2011 but less $$ than prior years	Vehicle choices limited (OEM and certified conversion kits)
CNG has regained some "momentum" in the vehicle market	Federal alternative fuel vehicle purchase tax incentive expired 12/31/10
Potential for increased engine life/vehicle life	Upgrade costs for accommodation of NGVs in garages

Fuel Infrastructure

Natural gas supplies in Alaska are stretched by residential and commercial use, electric generation, and liquefied natural gas exports; however, the large and stable demand offered by State vehicles could help justify the need for natural gas exploration, storage facilities, and other solutions for replacing the diminishing natural gas reserves in Cook Inlet.

On the positive side, since Alaska has only a limited number of highways and limited number of conventional fuel filling stations, there is a potential to service a large group of State and municipal vehicles with somewhat limited resources as compared to other states (i.e., 80 percent of vehicles are most likely located in 20 percent of the geographic area).

High costs to build a fueling network and comparatively high initial costs of the vehicles themselves are significant barriers. For several decades, the alternative fuels industry as a whole has suffered from a "chicken and egg" situation where fueling stations are financially risky without a significant demand, and vehicle adoption is seen as risky without the assurance of fuel availability. Incremental conversion of fleets or individual users does not sufficiently create enough demand to make fueling investment work financially. A coordinated, large-scale commitment is needed. Government funds have generally been the mechanism to fund or at least incent fueling infrastructure.

NGV operators are subject to the frustrations of a limited fueling network and "fueling fatigue," both a result of the fact the natural gas is stored on board as a gas instead of a liquid, despite the high pressures involved. NGVs generally have to be fueled every day. Unless there is a fixed fueling site with multiple hoses (i.e., time fill, overnight fill) where vehicles can be fueled while parked over night, drivers resent the lack of convenience with the common fast fill public fueling sites if they have to visit every day. Overnight fueling, however, can be a convenience advantage over liquid fuels, because there is no longer a need to visit a fuel pump, and productivity is enhanced.

Availability of NGVs

Commercial truck manufacturers are expanding the availability of NGVs, although they are taking different approaches to how involved the buyer becomes in the conversion process. Only a limited number of NGVs are 100 percent manufactured by the OEM. For many years, the Honda Civic GX has been the lone OEM NGV in low volume production. Instead, most vehicles are shipped as conventional vehicles with engines that must be converted by a certified engine upfitter.

General Motors

General Motors recently launched a CNG option for its Chevrolet Express and GMC Savana vans in partnership with Productive Concepts Inc. (PCI), Union City, IN. Vans will be shipped to PCI for the conversion and then shipped to GM dealers for customer

delivery. They carry the same warranty as GM's conventional engines: three-year/36,000-mile vehicle warranty and five-year/100,000-mile powertrain warranty.

The protocol established by GM and Freightliner/Cummins is most favored by fleet operators since, like conventional models, vehicles are entirely assembled at the OEM factory, shipped directly to delivering dealers, and carry identical warranties. While Ford's partnership with BAF is an improvement over past "conversions" due to utilization of the "ship through" process, fleet operators must still deal with two different warranty providers. The latter can result in "finger pointing" relating to which is responsible for what failure.

Ford Motor Company

Ford Motor Company has been offering a CNG prep kit on its E-Series vans since November 2009 and recently added the Super Duty and Transit Connect models for the 2011 model year. Buyers can elect to send the vehicle to BAF Technologies in Dallas, currently Ford's only approved CNG conversion partner. BAF is setting up a "ship-through" facility near a Ford truck assembly plant that will enable the upfitter to complete conversions as soon as vehicles leave the production line. These vehicles then re-enter the distribution network and are distributed normally through participating dealerships. Buyers may also choose their own upfitter or complete the conversion at their own shop. Notwithstanding, all upfitters must completely follow a Ford-issued service bulletin on conversions to receive warranty coverage. However, Ford's warranty coverage does not extend to the injectors and fuel system; coverage for those parts falls to the upfitter.

Fiat

Fiat is planning to bring its CNG vehicles to the U.S. branded as Chrysler models. While GM and Toyota are focusing on hybrid electric vehicles as their alternative to conventional gasoline engines, Fiat's chief executive officer Sergio Marchionnethe, argues the hybrids present "too many obstacles," such as the recharge time for batteries. His five-year plan for Chrysler includes bringing CNG large and small commercial vans to the U.S. in 2012 under the Ram brand based on Fiat's trucks platforms. Fiat is the market leader in Europe in natural-gas engines, with an 80 percent share of methane-powered cars and 55 percent of light commercial vehicles, with sales of 127,000 methane-powered cars last year, including versions of the Panda compact and Ducato van. The OEM will re-enter the U.S. next year, and targets sales of 50,000 of its compact NGV in the market. [31]

Freightliner Trucks

Freightliner Trucks offers a medium-duty factory-installed CNG system, including tanks, powered by the Cummins Westport ISL G-series near-zero emission engine with 320

[31] NGV Journal. Fiat's CEO bets on CNG technology. June 12, 2010. http://www.ngvjournal.com/en/markets/item/3518.

horsepower for its M2 112 truck. This truck is available in several Class 7 and 8 GVW configurations for CNG and LNG. All components are factory-installed and warranted.

International Truck

International Truck is developing a natural gas variant of one of its big-bore engines and is currently offering dealer retrofits for its MaxxForce DT medium-duty engine. A conversion kit for Navistar's DuraStar medium-duty truck that was developed by Emissions Solutions Inc. (ESI), McKinney, TX, is sold through Navistar's Truck Specialty Center in Garland, TX. The kit, which has been available through aftermarket channels for some time, can support both CNG and LNG. ESI provides the engine warranty.

Kenworth Truck Company /Peterbilt

Kenworth Truck Company is targeting local and regional-haul and vocational customers with the natural gas-powered version of its T440 model. Available now, the truck features power from the Cummins Westport ISL G engine, which can run on either CNG or LNG. Peterbilt Motors[32] offers the same engine in its model 384, 365 and 320 trucks. While the 384 and 365 models can serve numerous vocational markets, the 320 is built specifically for refuse applications.

Mack Trucks

Mack Trucks also serves the refuse market with natural gas version of its TerraPro low-entry, which is available now. Equipped with the Cummins ISL G engine, rated at 320 horsepower, the engine is installed on the production line at the manufacturer's Macungie, Pa., assembly plant. Mack provides a full factory warranty on the trucks. Mack's sister company Volvo Trucks, does not offer a natural gas option.

High Cost of Certified Retrofit Conversions

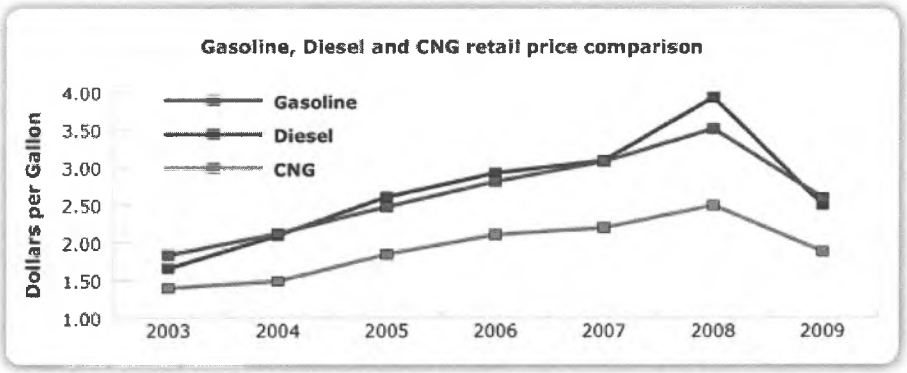
As discussed earlier in this report, the certification of aftermarket conversion systems is currently cumbersome and expensive. This hinders the development and use of NGVs. Proposed legislation in the U.S. House of Representatives and U.S. Senate would streamline, and, thereby reduce the cost of certification. Until this issue is resolved, the difficulty and high cost of retrofitting vehicles to operate on CNG will continue to be a hindrance to wider acceptance.

Economics of CNG

While the fuel costs vary across different regions of the country, a good rule of thumb, is that a gallon equivalent of natural gas costs about two-thirds the price of a gallon of fuel. Historical prices for CNG versus gasoline and diesel fuels in the State of California are provided in the exhibit below.

[32] Both Kenworth and Peterbilt are owned by PACCAR, Inc.

Exhibit 7
Comparison of California Fuel Prices[33]



Unless there is dissatisfaction with the cost of the mainstream conventional fuels (as there was most recently in 2008), fleet operators and the general public have taken a limited interest in any alternative fuels, including CNG. To that end, other than niche markets and regions of the country, it appears CNG will remain a fleet-only fuel unless an extensive, nationwide network of fueling stations is established. On the other hand, fleets will continue to use the lowest-cost fuel, which meets their entire operational requirement.

Table 9
Environmental Advantages and Disadvantages of CNG and NGVs

Environmental Advantages	Environmental Disadvantages
Longer oil life results in less used oil disposal	Fleet operators typically do not take advantage of longer oil life due to a desire to perform periodic safety inspections
Less greenhouse gas emissions per mile	
Demonstrates environmental stewardship that gives users brand a positive sustainability image	
Potential for natural gas supply to add "recycled," renewable landfill gas	
Improved indoor air quality and cleanliness in garages as result of upgrades for use of CNG versus diesel fuel	

[33] Sources: Gasoline prices acquired from annual average of U.S. Governmental Energy Information Administration's Weekly California Regular Reformulated Retail gasoline prices. Diesel prices acquired from annual average of U.S. Government Energy Information Administration's Monthly California No. 2 Diesel Retail Sales. CNG prices acquired from annual average of Southern California Gas monthly public CNG station prices.

The emission and fuel cost benefits appeal to fleet operators, and the fact that 95 percent of the natural gas used in the U.S. is domestically produced is an advantage over conventional fuels.

Table 10
Technological Advantages and Disadvantages of CNG and NGVs

Technological Advantages	Technological Disadvantages
Safety benefit due to tank ruggedness	Potential payload penalty due to tank size and weight
Safety benefit due to fuel dispersion and narrow flammability range	Power decreased slightly unless engine is designed for CNG
Potential for fueling at home for general public	Garage facilities generally not designed for CNG (overhead open-flame heaters are not inherently safe without methane detection)
130 octane rating allows use of efficient, higher-compression engines[34]	Reduced driving range (gaseous fuel storage)
As a gaseous fuel, CNG does not tend to contaminate engine oil	Limited number of trained service mechanics and service facilities

CNG has technological advantages over gasoline and diesel, which can be significant to both fleet operators and the general public. In some cases, these advantages were not available to early adopters of the fuel, due to the necessity that NGV engines were originally designed to run on gasoline or diesel, and were merely "converted" to run on CNG.

For example, CNG is a high-octane fuel, which allows spark-ignition engines to operate at very high compression ratios, increasing efficiency (power and fuel economy). However, this advantage is only available if the engine has been designed from the outset to run with high octane. A NGV driving range depends on the size and number of natural gas storage cylinders and on driving conditions. In a passenger car, two cylinders of natural gas can provide the equivalent of about eight-and-one-half gallons of gasoline. Trucks and other larger vehicles can be equipped with more cylinders as required.[35]

NGVs are also safer than gasoline and diesel due to the ruggedness of the storage tanks, which gives them a high resistance to puncture or crush events. Moreover, when a leak occurs during an accident, natural gas disperses in the atmosphere rather than "puddling" as is the case with conventional fuels.

[34] Southern California Gas Company. Comparing natural gas vs. other fuels. http://www.socalgas.com/ngv/residential/fuelcomparison.html.

[35] Washington Gas. Frequently Asked Questions. http://www.washgas.com/pages/NaturalGasVehicles.

Generally, due to engineering costs, a significant market share of NGVs will need to be gained before vehicles can be fully designed to take advantage the beneficial aspects of the fuel, involving use of structural tanks, high-compression engines, etc.

Proposal for Pilot Program

As indicated in the Methodology section of this report, we conducted a SWOT analysis as a strategic planning method to evaluate the strengths, weaknesses, opportunities, and threats involved in assessing the feasibility of CNG as a viable alternative fuel for the Alaskan market. Listed below are five leading barriers and opportunities for the State to achieve its objectives towards implementing a successful CNG Program. We will revisit these factors as well as output from the SWOT in the Phase II section of this report.

Barriers and Opportunities for State of Alaska CNG Program

- Some key fleets are skeptical—Refuse, Transit, and Airport
- No local air quality issues In Anchorage to drive change
- Many existing NGV capabilities from past efforts
- Hunger for a clean, domestic fuel
- Strong political interest and support

Table 11
SWOT Objective: Feasibility of CNG for State Fleet

	Strengths	Weaknesses
Internal Origin (Attributes of the organization)	School, Railroad, SEF are supportive	Transit, Waste, Airport tepid towards CNG
	Positive experience with NGV operational performance	Previous technical glitches still remembered
	Desire for sustainability	Limited natural gas supply in many areas
	Existing, albeit limited, infrastructure	Issues with refueling nozzles during winter
	Willingness to appropriate additional funds	Perception of garage modification requirements
	Opportunities	**Threats**
External Origin (Attributes of the environment)	Various natural gas pipeline and storage facility proposals	Timeframe to build
	Alaska has 15% of U.S. natural gas reserves	Peak demand supply shortages in Cook Inlet area during January and February
	Jobs	Abundance of natural gas in Lower 48; shale expansion
	Reduce dependence on imported oil, as prices rise	Lack of Clean Cities program
	Political support for sustainability initiatives	Limited sources of conversion kits and M&R technicians
	Renewed interest in NGVs by OEMs	Hybrid electric and electric vehicle competition

The SWOT analysis indicates that CNG is a feasible fuel for certain Alaskan fleets and that an expansion of the CNG program would be beneficial towards Alaska's sustainability efforts. A variety of stakeholders have expressed an interest in expanding their use of CNG, providing the cost barriers are surmountable and the users can

reasonably expect an ample supply of the fuel. Consequently, we recommended proceeding to Phase II of the feasibility study.

Due to the sizable cost of expanding the current fueling infrastructure in Alaska and funding incremental NGV costs, we recommend refraining from calling the project a "pilot," but, rather, the "CNG Expansion Program" (Program). DOT&PF has experience with NGVs, having conducted a "pilot" in the 1990s. And, other fleet organizations in the region, such as Alaska Railroad and the Anchorage School District, already operate NGVs and CNG stations. It is possible that "pilot" groups—those with no experience whatsoever with NGVs (e.g., Anchorage Transit, Anchorage Solid Waste, Alaska Waste, Anchorage Airport)—may want to participate in the Program with a very small number of test NGVs. We will discuss these groups further in the Phase II section of this report.

PHASE II

Recommendation for Pilot Program Participants

In this section we will provide a recommendation for the most cost-effective and appropriate State vehicle classes and geographic locations for the Program. The most likely location is the Anchorage area, since that region already has a small CNG station infrastructure.

Fleet Organizations

Fleets with high fuel consumption are critical to the support of a financially sound fueling CNG infrastructure, and the long-term participation of such fleets will be necessary for a sustainable program. Centrally fueled and maintained fleets are ideal candidates for conversion until such time as a broad network of fueling stations and maintenance support facilities are available. Nationally, the three largest users of natural gas for transportation have been 1) transit and school buses; 2) waste collection trucks; and 3) airport support transportation vehicles. While Senate Bill 220 refers to the use of vehicles owned or operated by the State for the CNG Program (presuming the use of CNG was first found to be feasible), we believe other fleet organizations should be invited to participate due to either 1) their interest and willingness to contribute towards the mission and goals of the Program; or 2) their fleet includes the types of vehicles best suited to operate on CNG (i.e., transit, waste, airport support, high fuel consumption vehicles).

Several Anchorage-area public sector fleet organizations have already expressed interest in participating in the program, including the Anchorage School District and the Alaska Railroad Corporation. The Anchorage School District currently has two CNG buses and has indicated interest in adding to this fleet. Likewise, the Railroad has two CNG bi-fuel vans and plans to increase the number of NGVs in its fleet.

From the private sector, Enstar Natural Gas Company (Enstar) is the most viable and logical participant, since they share a common interest in increasing the supply of natural gas to the Cook Inlet region.

Alaska Waste would also be a potential participant since they have internal maintenance facilities and would be excellent candidate to evaluate new CNG trash compactor trucks, which have seen success, especially in California. Although we did not interview Alaska Waste, we did interview the Municipality's Solid Waste agency and they provided us with information about the Alaska Waste fleet, which has 75 refuse trucks and recently opened a commercial biodiesel plant in Anchorage, without use of government funding.[36] With an interest in sustainability, Alaska Waste could be a potential private-public sector partner for the CNG Program. Even if the refuse company

[36] Alaska Waste. http://www.alaskawaste.net/news.htm.

does not elect to test NGVs, it could assist in other ways, such as supporting efforts to start a Clean Cities organization in Anchorage.

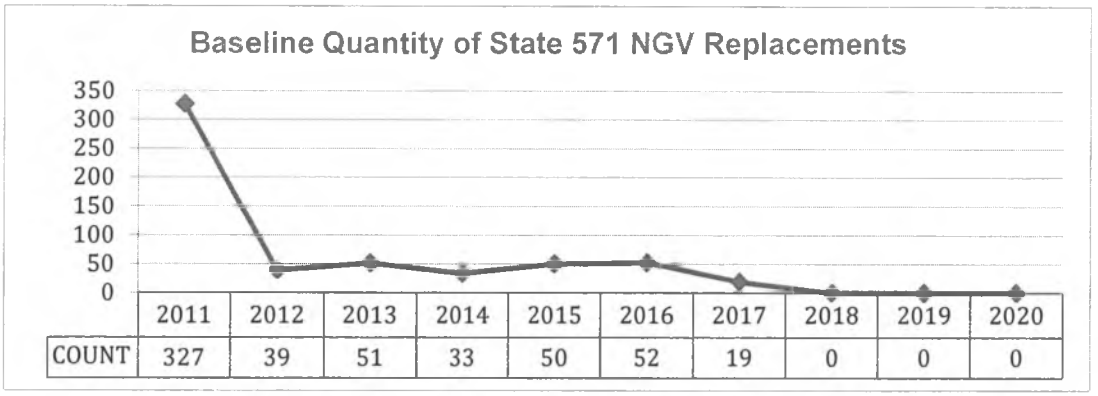
We have identified a total of 24 vehicle classes within the State fleet, which would be suitable candidates for NGV applications. A list of the vehicle classes is provided in the table below along with the replacement and incremental costs (today's dollars) for the NGV, the weight class, GHG type, planned replacement cycle, meter type, and current fuel type.

Table 12
State Vehicle Class Codes for NGV Program

Class	Description	ATA GVWR Class	GHG Type	Replacement Cost	CNG Cost	Replacement Cycle	Meter Type	Fuel Type
164	PU 1T 4X2 DRW	Medium Duty	Medium and Heavy Duty	$28,958	$24,000	84	Odometer	Gasoline
204	BUS PASS	Medium Duty	Medium and Heavy Duty	$93,446	$24,000	84	Odometer	Diesel
104	SEDAN SCOM	Light Duty	Passenger Car	$16,639	$16,000	84	Odometer	Gasoline
108	SEDAN MID	Light Duty	Passenger Car	$18,567	$16,000	84	Odometer	Gasoline
109	SEDAN STD	Light Duty	Passenger Car	$22,582	$16,000	84	Odometer	Gasoline
121	PU MID RCAB 4X2 1/2T	Light Duty	Light Duty	$18,597	$16,000	84	Odometer	Gasoline
122	PU RCAB 4X2 1/2T	Light Duty	Light Duty	$18,922	$16,000	84	Odometer	Gasoline
123	PU XCAB 4X2 1/2T	Light Duty	Light Duty	$24,180	$16,000	84	Odometer	Gasoline
131	PU RCAB 4X2 3/4T	Light Duty	Light Duty	$22,186	$16,000	84	Odometer	Gasoline
132	PU XCAB 4X2 3/4T	Light Duty	Light Duty	$22,238	$16,000	84	Odometer	Gasoline
137	VAN, FULLSIZE 4X2	Light Duty	Light Duty	$27,239	$16,000	84	Odometer	Gasoline
143	TRK FLATBED 4X2 1T	Light Duty	Light Duty	$28,454	$16,000	84	Odometer	Gasoline
144	PU CCAB 4X4 1/2T	Light Duty	Light Duty	$26,990	$16,000	84	Odometer	Gasoline
146	PU XCAB 4X4 1T SRW	Light Duty	Light Duty	$29,975	$16,000	84	Odometer	Gasoline
147	PU CCAB 4X4 1T SRW	Light Duty	Light Duty	$34,688	$16,000	84	Odometer	Gasoline
149	PU XCAB 4X4 1/2T	Light Duty	Light Duty	$26,183	$16,000	84	Odometer	Gasoline
151	PU RCAB 4X4 1/2T	Light Duty	Light Duty	$21,507	$16,000	84	Odometer	Gasoline
154	PU RCAB 4X4 3/4T	Light Duty	Light Duty	$27,823	$16,000	84	Odometer	Gasoline
155	PU XCAB 4X4 3/4T	Light Duty	Light Duty	$29,399	$16,000	84	Odometer	Gasoline
156	PU CCAB 4X4 3/4T	Light Duty	Light Duty	$29,128	$16,000	84	Odometer	Gasoline
158	FULLSIZE SUV4X4 3/4T	Light Duty	Light Duty	$39,912	$16,000	84	Odometer	Gasoline
159	VAN, FULLSIZE 4X4	Light Duty	Light Duty	$33,552	$16,000	84	Odometer	Gasoline
162	PU RCAB 4X4 1T SRW	Light Duty	Light Duty	$32,819	$16,000	84	Odometer	Gasoline
163	PU 1T 4X4 DRW	Light Duty	Light Duty	$44,315	$16,000	84	Odometer	Gasoline

As discussed during the first Phase of this report, we have identified a total of 571 potential State vehicles, which are due for replacement over the next 10 years that would be suitable for operational use as NGVs. A complete list of the vehicles is provided in a separate *Excel* workbook, which contains the *Eco Fuel-Tool* database as well as NGV incremental replacement costs, fuel costs, and GHG emission reductions by each of pollutant category. In the following Exhibit, we have provided the number of potential vehicles by calendar year. Again, only vehicles located in the Anchorage region have been considered for the Program.

Exhibit 8
Recommended Quantity of State NGVs for CNG Program



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
COUNT	327	39	51	33	50	52	19	0	0	0

The spike of 327 vehicles due for replacement in 2011 indicates a large backlog of vehicles in the State fleet that have not been replaced within the normal SEF parameters provided to us for each vehicle class. For the most part, these vehicles are in their "secondary" life as State agency vehicles after completing their useful life within the SEF organization. This portion of the fleet represents amongst the highest polluters within the State fleet due to the age of the vehicles. The agencies cannot afford to replace the assets, a problem which would remain with NGVs since they could not afford to pay the incremental costs. This is not an unusual situation for government fleets and is even more commonplace as a result of the poor economic conditions over the past several years. Needless to say, even if the State had sufficient funds to replace all of the 327 vehicles in one year, we would not recommend doing so, since future spikes in replacement due date would occur in the future. Instead, we recommend "smoothing" the plan so that mission critical, obsolete, poorly functioning, and other undesirable vehicles are replaced first while the remaining vehicles are scheduled for replacement in future years. Mercury Associates has a number of analytical tools, which can assist the State with this process if, in fact, the CNG Program is adopted.

A summary of other fleet organizations and types of vehicles, which we recommend for participation in the Program are provided below.

- Municipality of Anchorage
  - Transit
  - Solid Waste
  - School District
  - Public Works
- Vehicle Types
  - Street sweepers

- Dump trucks
- Bucket trucks
- Shuttles/paratransit
- Construction equipment
- Vanpools
- Other high-idling vehicles and/or equipment

- Alaska Railroad
- Alaska Waste
- Enstar Natural Gas Company

We recommend the Transit staff visit the Los Angeles MTA to learn why they decided to acquire 1,800 CNG buses since 2009, tour their garage facilities, and become acquainted with the steps taken for implementing one of the largest CNG transit bus operations in the nation.

We recommend development of a memorandum of understanding (MOU) between the various agencies that will participate in the Program so each may use available CNG stations while the infrastructure is further developed and capacity increases.

We recommend SEF identify the "secondary" portion of the State fleet and the extent of its growth over recent years in order to possibly pursue additional State funding to replace these vehicles with NGVs (i.e., provide 100 percent of the cost to replace the vehicles rather than incremental costs).

Next Steps After A Successful Pilot Program

In the event the Program is successful, it will most likely be expanded in order to increase the number of NGVs in the State by reaching out to additional fleet organizations as well as to private citizens. A successful program is expected to result in several fleet organizations *wishing* to initiate use of NGVs due to the benefits experienced, including fuel cost reduction, operational success, and environmental gains. The Program will result in a working coalition of interested participants, who can join together in agreements for fueling infrastructure design, driver and mechanic training, grant applications, problem resolution, and mutual ongoing support.

The Program will create a nascent fueling infrastructure in the Anchorage area that will need to be expanded significantly in order to accommodate a number of vehicles with high daily fuel consumption. Existing fueling facilities, upgraded as part of the Program, will eventually need to increase their capacity by adding or replacing natural gas compressors and high-pressure storage at each location. Costs for this will range from $100,000 (for LDVs) to $500,000 (for HDVs) per station.

The promise of a large and stable natural gas demand for fleet NGVs could help justify and support various solutions to the State's problems in providing a sufficient natural gas supply in the Cook Inlet area during the peak usage months of January and February when the demand rate is five to six times that in the summer months.

Ultimately, the "macro" advantages of NGVs, including GHG reduction, fuel security, and stable pricing, will continue to garner public and legislative support; however, interest in NGVs among fleet managers is naturally accelerated by high costs of the conventional fuels being replaced: unleaded gasoline and diesel. Alternative fuel vehicle products initially funded and engineered during the high fuel cost interval in 2008 are reaching the market today, and promise unprecedented operator acceptance. Still, fleet managers and other NGV supporters have a "wait and see" attitude due to past fits and starts with CNG, and their skepticism will need to be turned around during the Program.

Recommended Fleet Organizations After Initial Program Success

- Airport on-site work vehicles
- Airport private shuttles and taxis
- Airport Federal Express and United Parcel Service
- Port of Anchorage
- City of Fairbanks
- U.S. Postal Service
- Comcast Cable
- Time Warner Cable
- AT&T
- Verizon
- Carlile Transportation Systems
- Lynden Logistics
- Totem Ocean Trailer Express

Recent CNG-Related Activities with the Recommended Fleets

The following recent developments involve a number of the organizations we have recommended and provide an indication as to the likelihood of their interest in converting their Alaska fleets to CNG.

- AT&T and Verizon announced in 2010 that they were buying or converting a sizable number of existing vehicles to run on CNG.
- UPS, which has more than 1,100 CNG vehicles, has been using the fuel for 20 years. The company's West Coast alternative fuel fleet also includes 11 LNG tractors, which travel daily from California to Nevada

- In December 2010, car and equipment rental company Hertz Global Holdings Inc.'s subsidiary, Hertz Corp., announced a partnership with Clean Energy Fuels Corp. to build, operate, and supply CNG fueling stations at Hertz's Los Angeles Airport (LAX) facility. The Hertz/Clean Energy compressed natural gas fueling station will be built adjacent to LAX and will include public access fueling islands for local fleets of CNG taxis and shared-ride vans, plus hotel, parking, and rental car buses. Station construction is expected to begin in March and be completed by the third quarter of 2011. By 2015, Hertz expects to have transitioned its entire LAX transit bus fleet to CNG power. The table below lists 10 major airports that utilize NGVs either on or off-site.

Table 13
Major Airports Operating CNG Vehicles On- and/or Off-site

Airports		
Chicago O'Hare	Dallas Fort Worth	Denver
Houston	Las Vegas	Los Angeles
Oakland	Phoenix	San Francisco
San Jose		

- In August 2010, the City of Nashua, NH and UPS entered into an innovative sharing partnership to build a permanent CNG fueling station. The Nashua Department of Public Works is replacing seven diesel-fueled refuse trucks with CNG models. More businesses with large fleets may get involved, according to The Nashua Telegraph.
- Since Fairbanks is a non-attainment area for air quality under the Clean Air Act Amendments, it is a logical choice for further expansion of the State's CNG efforts. While, the city is no longer in non-attainment for carbon monoxide (CO_2) it has been designated as a non-attainment area for $PM_{2.5}$ since December 2009 and must develop an air quality control plan by 2012. Attainment is required y 2014.[37] As noted in Table 3, *NREL and UWV Field Test of NGV Emissions*, heavy-duty NGVs have significant reductions in the amount of PM, UPS delivery trucks experienced a 95 percent reduction.

Program Timeline

The following timeline provides an overview of the activities and tasks that should be accomplished over the first 24 months of the Program.

[37] Fairbanks Metropolitan Area Transportation System (FMATS). Donna Gardino, MPO Coordinator. http://www.fmats.alaska.gov/files/fmats101.pdf.

Table 14
Program Timeline

Months	Activities
1	Contract with or designate a Program Coordinator
2	Determine/Design CNG Fueling Station Upgrades Designate and Order NGVs
3	Apply for Clean Cities Status Determine Contractor for CNG Fueling Site Upgrades Build Data Accumulation Database Determine/Arrange Technical Training for support personnel
4	Apply for Federal Grant/External Financial Support Coordinate CNG Fueling Site Upgrades First Progress Report
5	Begin Receiving/Deploying NGVs Arrange CNG Driver Training
6	Continue Receiving/Deploying NGVs Ongoing Program Administration
7	Continue Receiving/Deploying NGVs Second Progress Report
8-12	Ongoing Program Administration and Problem Solving Develop Concepts for Pilot Expansion Ongoing Reporting
13-24	Conclude Receiving/Deploying transit and school bus NGVs (currently ~210 days from order through delivery dates)

Recommendations and Action Items

CNG Program Phase I

1. Implement Program timeline as provided in Table 10.
2. Assign full-time responsibilities to a CNG Program Coordinator. We believe the State would be best served if this individual works for the State in the capacity of an inter-government coordinator who could assist local government entities as well as the State. We recommend the individual report to SEF, since they manage the largest number of government vehicles in the State.
3. Assign grant-writing responsibilities either to the CNG Program Coordinator or utilize private sector grant writing services.
4. Determine funding amount in order to develop budget for State fleet incremental costs (i.e., number of NGVs that may be ordered in year-one). We recommend SEF identify the "secondary" portion of the State fleet and the extent of its growth over recent years in order to possibly pursue additional State funding to replace these vehicles with NGVs (i.e., provide 100 percent of the cost to replace the vehicles rather than incremental costs).
5. Determine incremental funding for additional participants:
    - Municipality of Anchorage

- Transit
- Solid Waste
- School District
- Public Works

- Vehicle Types
  - Street sweepers
  - Dump trucks
  - Bucket trucks
  - Shuttles/paratransit
  - Construction equipment
  - Other high-idling vehicles and/or equipment

6. Conduct meetings with the Alaska Railroad and Alaska Waste to bring both organizations into the Program.
7. Determine and contract for required upgrade to existing CNG stations.
8. Initiate planning for a minimum of two time fill CNG stations for SEF (ideally three-stations); contract with provider.
9. Develop a memorandum of understanding (MOU) between the various agencies that will participate in the Program so each may use available CNG stations while the infrastructure is further developed and capacity increases.
10. Initiate establishment of a Clean Cities coalition in Anchorage.
11. Initiate meetings with Enstar and other NGV business partners.
12. Arrange field site visits for Anchorage Transit staff visit the Los Angeles MTA to understand their rationale for acquiring 1,800 CNG buses since 2009, as well as to tour their garage facilities, and become acquainted with the steps taken for implementing one of the largest CNG transit bus operations in the nation.
13. Engage with Clean Energy (or similar providers) to encourage participation in the Program as well as funding partnership relationship for development of a public fuel infrastructure.
14. Consider a similar field trip by the Anchorage airport fleet manager in order to understand modifications to garages at other airports.
15. Modify current practice of decentralized bulk and fuel card management so as all State-purchased fuel is centralized under SEF who should continue to pursue acquisition of a centralized fuel management system. While the fuel system is not required for implementation of the CNG Program, it is necessary to accurately calculate the amount of liquid fuels used by the State and to calculate the amount

of GHG emission reduction based on actual fuel consumption (versus the MPG methodology used for this study).

CNG Program Phase II

16. Identify and contact potential fleet operators in both the public and private sector that may have an interest in using CNG after successful implementation of the Program.
17. Enact incentives to encourage use of CNG and NGVs.
18. Consider a State-sponsored, Governor-led, single-messaging communication program that would collaborate, support, and complement efforts and raise public awareness and understanding about the importance and cost-effectiveness of CNG efficiency, and thereby accelerate the deployment of NGVs.
19. Consider K-12 funding for NGV educational programs.
20. With the Governor's leadership, educate industry and the commercial sector that NGVs are also a risk-management opportunity when considering the volatile price of conventional fuels.
21. Encourage utilities and their regulators to expand NGV programs.
22. Consider job-creation tax incentives for hiring NGV resource efficiency/energy managers at private businesses.
23. Consider tax incentives to draw NGV-related businesses to Alaska.

Estimate of Costs

We estimate overall incremental State fleet costs will increase 7.6 percent over the next nine years (2011 to 2020), presuming the most appropriate candidate vehicles for conversions are replaced with NGVs when due for replacement. The *Eco Fuel-Tool* model projects an increase in capital costs while fuel costs will decrease; the overall increase of seven percent does not include costs to build, operate or maintain a fueling infrastructure, which will be examined later in this report.

NGV Incremental Acquisition Costs

The incremental costs for the State fleet are provided in the following Exhibit; however, as previously stated, the large backlog of overdue vehicle replacements must be smoothed so that a large spike of vehicles are not replaced in one given year. The *Eco Fuel-Tool* model projects total existing conventionally fueled vehicle replacements to cost $140.5 million over the next 10 years whereas the costs of replacing 571 of the vehicles with NGVs costing $151.1 million. This results in an overall incremental cost of $10.6 million or 7.6 percent.

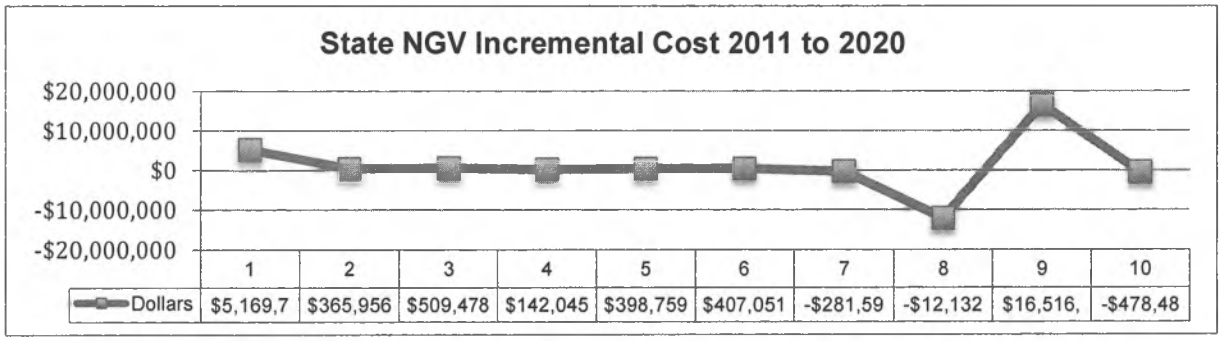
Since the plan has not yet been smoothed, negative costs occur in the outlying years 2017, 2018, and 2020. Negative costs are a result of the longer lifecycle forecast for NGVs, fuel savings, and vehicle replacement costs being "top heavy" in 2011 while

greatly diminishing in the outlying years. A complete summary of all costs is provided on the following two pages.

Table 15
Summary of State CNG Program Costs and Emission Reductions

Total Costs											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Existing	$40,924,431	$7,353,608	$7,977,008	$7,976,581	$9,613,482	$6,670,336	$3,754,406	$25,439,874	$14,862,635	$15,953,538	$140,525,898
Converted	$46,094,219	$7,719,564	$8,486,486	$8,118,626	$10,012,241	$7,077,387	$3,472,810	$13,307,603	$31,379,344	$15,475,055	$151,143,335
Increase	$5,169,789	$365,956	$509,478	$142,045	$398,759	$407,051	-$281,596	-$12,132,271	$16,516,709	-$478,483	$10,617,437
% Increase	12.63%	4.98%	6.39%	1.78%	4.15%	6.10%	-7.50%	-47.69%	111.13%	-3.00%	7.56%
GHG Reduction											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Existing	6,061,072	5,975,436	5,981,998	6,021,327	6,017,993	6,021,217	6,014,876	6,031,238	5,959,283	5,968,143	60,052,583
Converted	5,824,022	5,701,683	5,621,173	5,601,295	5,512,304	5,483,635	5,444,358	5,457,039	5,447,292	5,406,870	55,499,671
Reduction	237,049	273,754	360,825	420,032	505,689	537,581	570,518	574,199	511,992	561,272	4,552,912
% Reduction	3.91%	4.58%	6.03%	6.98%	8.40%	8.93%	9.49%	9.52%	8.59%	9.40%	7.58%
Replacement Costs											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Existing	$38,793,169	$5,252,425	$5,873,529	$5,859,267	$7,497,341	$4,553,059	$1,639,364	$23,319,086	$12,767,136	$13,854,930	
Converted	$44,243,641	$5,939,663	$6,802,236	$6,488,983	$8,473,380	$5,575,343	$2,012,597	$11,845,743	$29,925,456	$14,025,036	
Increase	$5,450,472	$687,238	$928,707	$629,716	$976,039	$1,022,284	$373,233	-$11,473,343	$17,158,320	$170,105	
% Increase	14.05%	13.08%	15.81%	10.75%	13.02%	22.45%	22.77%	-49.20%	134.39%	1.23%	
Fuel Costs											
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Existing	$2,131,261	$2,101,183	$2,103,479	$2,117,314	$2,116,141	$2,117,277	$2,115,042	$2,120,787	$2,095,499	$2,098,608	
Converted	$1,850,578	$1,779,901	$1,684,250	$1,629,643	$1,538,862	$1,502,044	$1,460,212	$1,461,859	$1,453,888	$1,450,020	
Reduction	$280,683	$321,283	$419,229	$487,670	$577,280	$615,233	$654,830	$658,928	$641,611	$648,588	
% Reduction	13.17%	15.29%	19.93%	23.03%	27.28%	29.06%	30.96%	31.07%	30.62%	30.91%	

Exhibit 9
State NGV Incremental Funding Costs



Costs Associated with Other Recommended Program Participants

Transit and refuse vehicles and buses are overwhelmingly accepted as having the most success relative to economic, operational, and environmental considerations. To this end, we have recommended an extension of the Program beyond SEF vehicles to include these groups to the extent funding is available. Table 12 provides our estimated incremental costs for the NGVs. We have provided the cost with and without the federal Alternative Motor Vehicle Credit, which expired December 31, 2010. This credit was equal to 80 percent of the incremental cost of a NGV to a maximum of $32,000 per vehicle.

Table 16
Recommended Program Participants NGV Incremental Acquisition Costs

Fleet Organization	Type Vehicles	Cost Each w/ Expired Fed Disc.	Cost Each w/o Fed Disc.
School District	School Buses	$31,376[38]	$60,000
Solid Waste	Trash Compactor Trucks	$30,295[39]	$60,000
Transit	Transit Buses	$50,502[40]	$80,000

We anticipate that other recommended Program participants, the Alaska Railroad, Enstar, and Alaska Waste, will fund their own incremental costs of NGVs.

[38] Incremental cost for a CNG school bus is $31,376 (average of four sources—Linder 2009, Leonard et al. 2001, Cohen 2005, and USCS 2003—where the latter three sources have been adjusted for inflation).

[39] Incremental cost of a CNG refuse truck is $30,295 (average of three sources: Lemmons 2009, Andrews 2009), and San Antonio 2009).

[40] Incremental cost of a CNG transit bus is $50,502 is an average of the incremental costs found in Chandler et al. 2006 (adjusted for inflation) and from an interview with Bob Antila (Antila 2009).

NGV Maintenance and Repair Facility Upgrade Costs

The cost of maintaining the NGVs by all estimations should be very similar to that of maintaining the equivalent liquid fuel vehicle, especially during the vehicle's warranty period. In fact, while there is an expectation that some vehicle mechanics will need NGV training, the CNG systems themselves will come with a warranty that will either allow the vehicle to be repaired for free or that will provide reimbursement for mechanic labor costs in addition to free parts. There is a potential savings opportunity for NGV maintenance cost through extended service intervals. As a gaseous fuel, CNG is less prone to engine lubricating oil contamination, and oil change intervals can be increased significantly. It remains to be seen what the recommended interval for oil changes will be with upcoming OEM vehicle offerings; however, past recommendations and field findings were that the life of the oil and filter could be doubled on dedicated CNG vehicles, such as found with the State of Oklahoma as cited earlier in this report.

In the NREL study for municipal school, refuse, and transit fleets, facility upgrade costs associated with upgrading a fleet from diesel to CNG were considered zero. NREL based this conclusion on the fact that the incremental cost of making a new garage and maintenance facility compatible with CNG is minimal (Marathon 2006). Therefore, NREL modeling assumed the fleet already had well-ventilated facilities or that they are building new facilities that would be the same cost regardless of fuel type. It should be noted, however, that NREL will further explore the economics of garage upgrade costs in a second part of the study.[41] While the NREL study predicts no incremental costs for transit and refuse fleets, the payback time for school fleets increased from 1.8 years to 2.3 years depending on the size of the school bus fleet.

Estimating the extent and cost of modifications needed to safely convert older diesel garages to CNG is made uncertain by the absence of definitive codes applicable to CNG. Certain National Fire Protection Agency (NPA) and the National Electric Code may be broadly applied to CNG garages. A partial list of various codes commonly applied to CNG garage improvements is provided in the Appendix. In a separate study conducted by NREL for a survey of transit fleets, respondents were unable to provide building upgrade costs either because the work was managed by others and/or may not have been exclusively performed to address CNG upgrades (i.e., improvements were required anyway). At any rate, the most common improvements cited were for use of sloped roofs, ventilation and heating system alternations, gas detection systems, various different electrical upgrades, standby generators to maintain ventilation, and fall-arrest systems to enhance safety of works on the roof of the bus during cylinder inspections.[42]

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[41] National Renewable Energy Laboratory (NREL). Business Case for Compressed Natural Gas in Municipal Fleets. Caley Johnson. NREL/TP-7A2-47919. June 2010.

[42] National Renewable Energy Laboratory (NREL). Compressed Natural Gas (CNG) Transit Bus Experience Survey. R. Adams, Marathon Technical Services and D.B. Horne, Clean Vehicle Education Foundation. April 2009 – April 2010. NREL/SR-7A2-48814. September 2010.

Training Costs

While training costs will vary greatly depending on the type vehicle and wages, we have provided best practices related to CNG training as compiled by NREL in their *CNG Transit Bus Experience Survey* results released in September 2010.

Table 17
Summary of Training Requirements for Transit Fleet

Vehicle	Station[43]	Emergency Responder
Typically provided by OEM and includes:	Typically provided initially by station manufacturer:	Typically provided by the fleet organization:
o 160-200 hours per order (includes 40-60 engine related hours) o Two-days cylinder inspection o Driver training: NGV operation and emergency response	o Safe fueling for affected staff o Emergency situations: emergency shutdown procedures, fire response, gas leak response, etc.	o Orientation for local fire departments, including location of shutoffs, hydrants, etc. o Possible additional fire department orientation with different vehicle models (e.g., location of cylinders) o Police department orientation

Upgrade of Existing Anchorage CNG Fueling Infrastructure

Most existing CNG stations in the Anchorage area are underutilized and require updating, especially with fuel dispensing equipment. These stations were built 10 to 25 years ago in support of prior CNG efforts, and still support a few remaining NGVs. The Anchorage School District's time fill system should have additional fueling hoses added to support overnight fueling of the recommended four additional buses, which are discussed later in this report. There are several advantages to continuing use of the existing infrastructure. These sites are already established as CNG fueling centers, each supporting a small group of NGVs, and use of the existing sites will allow the widest network of stations with the smallest capital investment funded via this pilot.

The proposed fuel facility upgrades of $380,000 will decrease time required for fueling and allow fuel cards to be issued to track usage (a recommended best practice). An engineering analysis of the individual stations will need to be performed to determine what equipment in addition to the dispensers will require upgrading, rebuilding or replacement. There are several enterprises in the U.S. and Canada who will be interested in bidding on this project. It should be noted that the Railroad recently rebuilt

[43] The amount of CNG station training required should be linked to the degree of involvement that the fleet organization has with the maintenance of the fuel facility. The organization providing the greatest degree of maintenance work should be responsible for a greater degree of training.

their station, converting it from a fast fill to a time fill, and are capable to share expertise relating to this endeavor.

Table 18
Estimated Costs for Upgrading Existing CNG Fuel Infrastructure

Owner/Location	Type	Improvements	Total Cost
Anchorage/Downtown (Health & Human Services	Private	Upgrade dispensers	See below
Anchorage Public Works	Private	Upgrade dispensers	See below
Anchorage/Tudor Garage	Private	Upgrade dispensers	See below
Anchorage/School District	Private	Upgrade dispensers	See below
Alaska Railroad	Private	Site already upgraded	$0
Elmendorf Air Force Base	Private	Not included in Program	$0
Ditch Witch of AK	Public	Establish partnership	$0
Sub-total for Dispensers		*Upgrade 5 @ $60,000 ea.*	*$300,000*
Sub-total for Miscellaneous[44]		*Upgrade 2 @ $40,000 ea.*	*$80,000*
TOTAL COSTS			**$380,000**

New CNG Station Design

At this point in time, we do not know a number of factors related to the building of new CNG stations. For example, we do not know where the stations would be built and who the users will be and, therefore, if the requirements would be fast fill or time fill. To this end, we are refraining from providing specific cost estimates at this time.

Transit agencies responding to the NREL survey, reported the importance of providing room for expansion, but to do so carefully because compressor equipment that is too large will tend to cycle more, causing reliability problems. Planners may also elect to "rough in" an additional pad and services and sizing the dryer, piping, and electrical systems for future additional compressors as well as providing space for additional dispensers and compressors to be installed at some later date.

The following are typical steps recommended for selection of the proper CNG station. Sources for this information include Energy International, Marathon,[45] and NREL.

1. Identify Fleet Users

- Project fill time and quantity of fuel required in the present and for future growth

[44] Miscellaneous site improvements for curbs, routing of traffic, fuel card booths, etc.

[45] CNG Station Design Primer. Presented at Waste-to-Wheels: Building for Success Workshop on December 1, 2010, in Columbus, OH.
http://www1.eere.energy.gov/cleancities/pdfs/ngv_wkshp_adams.pdf.

- Collect fleet data to determine highest demand fuel window to govern sizing
- Use average fuel consumption per vehicle rather than maximum since the latter will oversize the station
- Convert gasoline and diesel gallons to standard cubic feet (SCF)[46]

2. Station Type

Type	Description
Time Fill	Useful for fleets such as school buses that return to base and are parked for an extended period of time; fill entire fleet directly from the compressor over a period of six to eight hours; least expensive alternative; requires no full-time attendant.
Cascade Fast Fill	Suitable for fueling light-duty vehicles at public access stations where use patterns are random and for fleets such as police or taxis that require fast fill during peak hours. Used where fueling requirements are needed in short (one to two hour) peak periods; fill each vehicle in five to 20 minutes primarily from gas stored in vessels arranged in cascades for use during peak time; compressors refill cascades during off-peak time. Not appropriate for continuous high-volume fueling.
Buffer Fast Fill	Used where many large vehicles such as transit buses must be fast filled back to back for several hours; fill each (large) vehicle in five to 20 minutes primarily from the compressor(s); provides high-volume fueling with relatively large compressors and a CNG storage buffer.

3. Gas Supply

- Meet with Enstar to determine available gas:
    - Minimum, maximum, and typical pressure in service line with new station load imposed
    - (Medium to large scale) CNG stations can be designed to accept (higher) floating gas service pressure rather than (lower) regulated gas pressure
    - Floating service pressure can significantly reduce size, complexity, initial and operating cost of the station
    - It may be necessary to discuss this need with Enstar as they may have policies to supply only (low) regulated pressures
    - Gas composition and moisture content is required

4. Dryer

- Inlet drying recommended
- Regeneration equipment recommended

[46] Gasoline gallons x 120 = SCF. Diesel gallons x 137 = SCF (possible add 10 percent for diesel efficiency).

- Virtually all stations will require a dryer to be code compliant for gas quality and prevent condensation problems that would impact fueling and vehicle performance

5. Compressors

- Raise gas pressure from utility service pressure to 4500 psig:
    - Reciprocating compressor; usually electric motor powered
    - Electric-drive compressors are smaller, quieter, more reliable, durable, have lower capital and maintenance costs, and require no special environmental permit than natural-gas-engine-driven compressors
    - Given the trend towards electric-drive compressors, inclusion of a diesel or natural gas powered standby generator should be considered to address power outage situations that would prevent fueling
    - Redundancy through multiple compressors or portable standby compressor
    - Equip with enough compressors so that the flow can be "scaled" to the fueling demand
    - Having multiple smaller compressors versus one large compressor reduces the cycle (load and unload), which increases compressor reliability as well as electrical demand charges

6. Filtration System

- Gas-filtration system design should prevent excess oil used to lubricate compressor parts leak downstream of the compressor
- Presence of oil is commonly cited by engine manufacturers in refusing warranty claims
- Various different methodologies (e.g., drainage systems, oversize filters)

7. Storage

- Required for Cascade and Buffer Stations:
    - ASME design code
    - 5500 psig design-4500 psig operating pressure
    - Tubes or spheres

8. Dispensing System Design

- Several different dispensing-control systems are available
- Specifications should clearly require a system that ensures independent and simultaneous fueling of each vehicle and avoids batching of vehicles

9. Remote Support and Troubleshooting

- Internet access to monitor and control analog instrumentation
- Includes critical pressures and temperatures in the dryer, compressors, storage, and dispensers with a controller
- Particularly important when station maintenance is performed in-house

CNG Station Maintenance

The cost of maintaining the CNG fueling stations may increase over current levels with the expanded throughput associated with the Program. This only pertains to existing compressors and storage systems: as will be the case with the vehicles, any new fuel dispensing equipment purchased for the Program will be under warranty during the duration of the Program. CNG dispensing equipment is reliable and should not require high-cost maintenance for several years. Training for local technicians should be included as part of the contract to install the dispensing equipment.

Maintenance of CNG fueling station will vary depending on the decision to use in-house personnel or contract with an outside provider. In the NREL CNG Transit Survey, researchers found that small to medium-sized transit agencies tended to take on more maintenance in-house to reduce costs whereas larger agencies tended to outsource based on fuel-throughput. Since the transit agencies surveyed had five to 20 years of CNG station ownership experience, responders had time to develop and stabilize their maintenance approach. The following four maintenance methodologies were practiced by the 10 transit agencies interviewed by NREL:

1. Provide all or most CNG station maintenance using in-house personnel;
2. Provide light maintenance (walk-around inspections and possibly oil changes) using in-house personnel and contract specialized or more invasive maintenance and repair tasks on a fee-for-service basis;
3. Contract out most or all maintenance based on a fee-for-service or annual contract, which may include what amounts to an extended warranty on equipment; or
4. Contract out all maintenance based on a fuel-throughput charge, with minimum throughputs guaranteed by the transit agency; this contract typically includes what amounts to an extended warranty on equipment.

A NREL transit survey concluded that the comprehensive station maintenance cost unweighted average equaled $0.18/DGE, which is in line with other studies that show maintenance contracts generally in the $0.20-$0.30/DGE range. Note that the average is not adjusted for the number of buses in various fleets and thus is unweighted, meaning that a 50-bus fleet is given the same weight as a 2,000-bus fleet.

CNG versus Gasoline and Diesel Cost

Fuel costs will be lower during the first phase of the Program since CNG costs less per mile than gasoline or diesel. Program participants will need to work using the base natural gas system fuel cost from Enstar to develop a reasonable markup per gallon to provide funds for the station owner, depending on how the station usage contracts are written. State fuel cost projections are provided in the *Eco Fuel Tool Excel* file.

If 35 additional NGVs are included in the Program (25 light-duty and 10 medium-duty), CNG consumption should approach 4,030 GGE (gasoline gallon equivalent) per month. Assuming a CNG cost advantage of a minimum of $1.25 per GGE (estimated $2.25/CNG GGE vs. $3.50/gallon for the liquid fuels), a savings of approximately $5,000 per month will result for the participants.

Note if gasoline engines are used to power the CNG compressors, their fuel consumption must be either backed out of the total or separately metered. Not accounting for this could increase the apparent vehicle fuel consumption. In the NREL survey of transit fleets, the consumption amounted to approximately five to 10 percent of total fuel consumption.

Other Costs or Savings that can be Reasonably Expected to Accompany the Pilot Program

Finally, when considering the number of "moving pieces" in the Program as envisioned and detailed herein, we recommend the State designate one individual or a consultant to manage the Program. This Program Coordinator would be responsible for the details such as working with participating agencies on vehicle selection, site evaluations, getting multiple competitive bids and time estimates from suppliers, problem solving and intervention, monitoring progress, and ultimately communicating results. Without a dedicated individual, the diverse aspects of the pilot would be left to those who have other responsibilities, resulting in a Program, which at a minimum is less timely and coordinated, and the chance for success would be diminished. We estimate the fully burdened cost of this individual to be $150,000 for a one-year period.

Summary of Estimated Program Total Costs for Year-One

Table 19
Estimated Program Cost

Type Expense	Total Cost
25 State NGVs	$400,000
4 NGV School Buses	$240,000
4 NGV Trash Compactor Trucks	$240,000
2 Transit Buses	$160,000
2-Time Fill CNG Stations for DOT&PF	$800,000
Upgrading Existing CNG Fuel Infrastructure	$380,000
Estimated Fuel Cost Savings	-$60,000
Other Costs (staff, consultants, etc.)	$150,000
SUBTOTAL	**$2,310,000**
100% NGV Cost "Secondary Use Vehicles"	To be Determined
Fuel Management System Data Collection for Bulk Diesel and Gasoline Fuels	$3,000,000
TOTAL COSTS	**To be Determined**

APPENDICES

Resources and Citations

U.S. EPA

- Climate Leaders. Mobile Source Guidance. May 2008.
- Clean Diesel Program. http://epa.gov/cleandiesel/prgnational.htm
- School Bus Program. http://epa.gov/cleanschoolbus/funding.htm

U.S. Department of Energy Vehicle Technologies Program / Clean Cities

- www.cleancities.energy.gov
- What is Clean Cities? http://www1.eere.energy.gov/cleancities/pdfs/48384.pdf
- CNG Station Design Primer. Presented at Waste-to-Wheels: Building for Success Workshop on December 1, 2010, in Columbus, OH. http://www1.eere.energy.gov/cleancities/pdfs/ngv_wkshp_adams.pdf
- Federal Fleet Requirements
- http://.eere.energy.gov/femp/program/fedfleet_requirements.html
- http://eere.energy.gov/vehiclesandfuels/epact/index.html
- FuelEconomy.gov

U.S. Department of Energy Alternative Fuels Data Center (AFDC)

- http://afdc.energy.gov
- Alternative Fuel Excise Tax Credit. http://www.afdc.energy.gov/afdc/laws/laws/US/user/3264
- Alternative Fuel Infrastructure Tax Credit. http://www.afdc.energy.gov/afdc/laws/laws/US/incentive/3234
- Natural Gas Emissions. http://www.afdc.energy.gov/afdc/vehicles/emissions_natural_gas.html
- All Incentives and Laws http://www.afdc.energy.gov/afdc/laws/matrix/incentive

MIT

- The Future of Natural Gas, An Interdisciplinary MIT Study. Interim Report. June 2010. ISBN (978-0-9828008-0-5).

National Renewable Energy Laboratory (NREL)

- Business Case for Compressed Natural Gas in Municipal Fleets. Caley Johnson. NREL/TP-7A2-47919. June 2010.
- Business Case for Compressed Natural Gas in Municipal Fleets. Caley Johnson. NREL/TP-7A2-47919. June 2010.

- Compressed Natural Gas (CNG) Transit Bus Experience Survey. R. Adams, Marathon Technical Services and D.B. Horne, Clean Vehicle Education Foundation. April 2009 – April 2010. NREL/SR-7A2-48814. September 2010.
- Adams, R. and Horne, D.B. Compressed Natural Gas (CNG) Transit Bus Experience Survey. Golden: National Renewable Energy Laboratory. September 2010. afdc.energy.gov/afdc/pdfs/48814.pdf

Utah Energy Initiative

- Governor Herbert's 10-Year Strategic Energy Plan draft dated November 3, 1010.

http://utah.gov/emp/energydata/renewenergydata.htm

National School Bus Equity Investment Lease Program

- http://schoolbusmoney.org/. http://operationupcycle.org/

Argonne National Laboratory Transportation Technology R&D Center

- A Full Fuel-Cycle Analysis of Energy and Emissions Impacts of Transportation Fuels Produced from Natural Gas. December 1999.

Fairbanks Metropolitan Area Transportation System (FMATS)

- Donna Gardino, MPO Coordinator. http://www.fmats.alaska.gov/files/fmats101.pdf.

National Governors Association

- Lead by Example. Alternative Fuel and Vehicle Fleets. 2010 Update.

California Energy Commission

Clean Energy Fuels Corp.

- www.cleanenergyfuels.com
- Pickens Plan, Andrew Littlefair, Clean Energy
- NGV R&D Demonstration Deployment Recommendations, Michael Eaves, Clean Energy
- Market Development for Natural Gas, Mitchel Pratt, Clean Energy

Natural Gas Vehicles for America (NGVAmerica)

- www.ngvc.org
- Potential of Renewable Natural Gas, R. Kolodziej, NGV America

- NGV Journal. Fiat's CEO bets on CNG technology. June 12, 2010. http://www.ngvjournal.com/en/markets/item/3518
- NGV America Fact Sheet: Tax Incentives for Conversion. March 17, 2009.

North American Natural Gas Supply, American Clean Skies Foundation
- http://www.cleanskies.org/resources-supply.html

Southern California Gas Company
- Comparing natural gas vs. other fuels. http://www.socalgas.com/ngv/residential/fuelcomparison.html.

Washington Gas
- Frequently Asked Questions. http://www.washgas.com/pages/NaturalGasVehicles

Chesapeake Energy
- Natural Gas: Today's Abundant American Energy Solution

Alaska Waste
http://www.alaskawaste.net/news.htm

NGV Global News
- U.S. Congress Continues Incentives for NGVs. December 21, 2010. http://www.ngvglobal.com/us-congress-continues-incentives-for-ngvs-1221

Examiner
- President Obama signs H.R. 4853, extends several employee benefits set to expire. December 27, 2010. https://www.examiner.com/employee-benefits-in-philadelphia/president-obama-signs-h-r-4853-extends-several-employee-benefits-set-to-expire

Table 20
Summary of Interviews

Organization	Contacts	Overview of Fleet / NGV Experience
SEF	Diana Rotkis	■ Has one Honda Civic NGV left from 1990s ■ Time fill station would work ■ Needs AWD models ■ Express vans to transport elderly to doctors ■ Dept. of Corrections vehicles ■ Building maintenance ~15 vans
ENSTAR	Mark Slaughter, Inna Johansen, Nick Szymoniak	■ They have no NGVs in their fleet ■ Supportive of any project that will bring more natural gas to Cook Inlet market ■ They have concerns about natural gas shortages during peak demand for winter 2010-2011
Anchorage School District	Steven Kalmes, Director Transportation Vehicle Maintenance	■ 239 school buses o 1/3 are run in-house o 2/3 run by contractor, Forsythe Transportation ■ Very happy with 2-Bluebird CNG buses ■ Satisfied with current slow fill station ■ No major issues ■ Would like more NGVs if funding is available ■ Very supportive of CNG Program
Anchorage Airport	Marc Luiken, Deputy Commission of Aviation, Dan Frisby, Mgr, Airfield Maint, Richard Swoboda, Asst Facilities Mgr, and about 7 others	■ Fleet Manager has no interest in CNG for sweepers, plows, tugs, etc. ■ Fleet manager has issue with garage retrofit cost ■ Due to use of federal grants, ANC must get FTA approval to use its land for non-aviation fuel. Mr. Luiken believes a CNG station could be shared with potentially UPS and FedEx and within FTA guidelines

Organization	Contacts	Overview of Fleet / NGV Experience
Alaska RR	Dave Thompson (265-2544) Paul Farnsworth (265-2540) FarnsworthP@akrr.com	■ The Railroad has two E350 bi-fuel vans that were converted in Utah ■ They scrapped the 12-year-old municipal fast fill CNG facility and replaced it with a Fuelmaker time fill system ■ Railroad is planning a transportation hub, which could be a potential fast fill public facility ■ Mr. Farnsworth is very knowledgeable about NGVs ■ Railroad is very supportive of the CNG Program
Municipality of Anchorage, Mayor's Office	Mayor Dan Sullivan	■ Concerns that limited OEM NGVs are available ■ High cost of conversion ■ Potentially shortage of natural gas (no pipeline) ■ They have hydro-electric project so maybe EVs might work better for Anchorage
Municipality of Anchorage, Public Works Fleet	Mark Warfield, Principal Admin Officer (343-4826) warfieldmh@muni.org	■ They have 21 light-duty NGVs ■ All conversions that were done before he took over ■ Issues getting parts ■ Doesn't know if garage was retrofitted ■ They want OEM NGVs; no retrofits
Municipality of Anchorage, Transit	Gary Taylor (907) 343-8228 taylorga@muni.org	■ City Transit, Ops and Maintenance Superintendent ■ Retiring next Sept after 31 years ■ 31 total staff: 3 leads, 6 journeymen, 4 apprentices, 3 body techs, 3 PM techs, 3 partsmen, and wash/shag and office ■ Run 3 shifts ■ 52 buses ■ Likes to keep things simple, i.e. lease with Goodyear to standardize tires ■ 540k fuel gallons projected in 2010 ■ Can't see spending this much extra for an experiment o Basic bus $400k o CNG bus $600k o Hybrid Electric bus $800k ■ Would entertain the idea with $ support, but they typically are not an "early adopter" for technology due to harsh environment and the need to keep the buses on the road

Organization	Contacts	Overview of Fleet / NGV Experience
Compressor Dealer, Ditch Witch	Charlie Bussell Charlie.bussell@alaska.net (907) 248-0010	■ Owner of DitchWitch of AK, also DW of HI ■ Just back from HI, spending more time there (he is in his upper 70's) ■ "Another Study?" ■ Has been involved in CNG since 1974 ■ Has invested over $260k ■ Hundreds of vehicles run, and has worked on just about every CNG station in the area ■ Extensive knowledge of stations from tiny 1.5 cfm to 25 cfm ■ Has run 5 cfm Ajax compressors extensively, to destruction, and this isn't a bad size for a small station for a small fleet ■ Built 25 cfm station for AK bus in Barrow ■ Built 2 skid-mount compressors for ARCO ■ Ran new 1981 Ford LTD over 400k miles on NG ■ The city ran some shuttle vans, about 12, back in the day ■ Thinks Enstar is ultimately concerned about opening discussion about their tariff to serve if it has to be modified for vehicles. ■ Enstar is also concerned about gas supply ■ He believes the pipeline will be built by Quanta/Price Gregory eventually ■ He led the Alaska Energy Authority and built two big Bureau of Reclamation projects, which were then turned over to the state, including the Bradley Hydro facility ■ Has some interest but these ventures always seem to go nowhere in the end
Municipality of Anchorage, Solid Waste	Mark Magden 1111 E 56th Avenue, Anchorage, AK 99518 907 343-6262	■ Landfill Operations/Solid Waste ■ They have 20% of the city and compete with AK Waste ■ Fleet is 100 vehicles, including tractors, compactors, a few support trucks ■ No alt fuel experience in their vehicles ■ On-site diesel fuel facility ■ Has 2 garages, 1 focused on garbage and 1 over-the-road ■ 8 mechanics ■ Not very interested, lots on their plate already just keeping things going with tight times and small staff

Organization	Contacts	Overview of Fleet / NGV Experience
Truckwell	Arnie Swanson (349-8845)	■ Owner of Truckwell, a vehicle upfitter ■ Ship-through upfitter for Ford and GM ■ 4-acre site, large 18k sq ft facility ■ Has been on the vehicle side of CNG since 1984 ■ Still has 4 of the 6 original techs he trained up on CNG from the peak period ■ Is still betting this could make a comeback with the right support ■ Failed in the past due to poor vehicle performance and the drivers could select gasoline. They did. ■ Lack of education with drivers, heavy tanks, gasoline was cheap ■ Involved in building the station at Tudor in the 80's ■ Built a cascade as well ■ MoGas was the old provider of the conversion kits for vehicles: poor ■ Has been talking to folks in TX about their progress ■ Has discussed a gas scrubber needed to reduce sulphur in the slope at the Kapanic field (Conoco/Phillips) ■ Has strong interest and would like to participate!

Table 21
User Incentives
Number of Clean Transportation Laws, Regulations, and Funding Opportunities By Jurisdiction[47]

Jurisdiction	Vehicle Owner or Driver	Fleet Purchaser or Manager	Fueling or TSE Infrastructure Owner	Alternative Fuel Producer	Alternative Fuel Dealer	Alternative Fuel Purchaser	AFV Manufacturer or Retrofitter	Other
Alabama	2	5	1	3	1	2		2
Alaska	1	1			1	1		5
Arizona	11	13	3		1	1	1	5
Arkansas	4	8	1	2	3	2	1	
California	24	28	6	2		7	9	15
Colorado	7	1	6	2	3	3	1	1
Connecticut	2	11	4	2	2		3	3
Delaware	5	9	2		1	2		
Dist. of Columbia	5	5					1	1
Florida	8	11	4	9	4	3	4	7
Georgia	4	7	4	4	4	2		1
Hawaii	4	6	4	4	1	1	1	8
Idaho	1	3	1	3	3	5		
Illinois	1	19	7	6	5	5	1	5
Indiana	4	12	4	8	7	6	3	5
Iowa	4	8	8	5	7	1		4
Kansas	3	7	3	7	7	3		1
Kentucky	1	4	2	6	4	2	1	2
Louisiana	6	13	8	7	4	2	3	1
Maine	5	9	2	5	3	4	1	2
Maryland	8	8		1			1	2
Massachusetts	2	9	2	2	3	2	1	3
Michigan	2	4	3	4	5	1	3	8
Minnesota	4	9	6	4	4	2		7
Mississippi	3	6	2	2	4	3	2	
Missouri	5	9	4	2	2	2		1
Montana	3	4	2	5	4	3		3
Nebraska	4	5	1	4	3	3		1
Nevada	5	8		1	1	1		4
New Hampshire	3	6	1	2	2	2		2
New Jersey	7	8				1	1	1
New Mexico	3	1	3	4	3	3	2	4
New York	8	17	8	2	3	2	5	3
North Carolina	2	9	5	7	6	4	1	
North Dakota	2	1	5	4	8	1		3
Ohio	1	4	1	2	1		3	2
Oklahoma	7	1	9	5	2	2	2	5
Oregon	1	11	4	4	3	2	1	5
Pennsylvania	5	6	2	4	1	3	2	3
Rhode Island	3	5		1	1	1	1	
South Carolina	6	9	5	5	7	4	1	3
South Dakota		2	1	8	4	8		4
Tennessee	5	6	6	5	6	4		3
Texas	9	16	4	4	3	3		4
Utah	7	11	2		1	1	2	2
Vermont	3	7	1	1		1	2	2
Virginia	9	11	4	7	2	4	3	4
Washington	1	15	9	8	8	4	2	11
West Virginia	3	5	1	2	1	1		2
Wisconsin	4	9	3	1	6	4	1	4
Wyoming		1			1			
Totals	**26**	**461**	**172**	**189**	**167**	**128**	**74**	**171**
Count	**49**	**51**	**44**	**44**	**46**	**46**	**32**	**44**

Table 22
Technology and Fuel Incentives
Number of Clean Transportation Laws, Regulations, and Funding Opportunities
By Jurisdiction[48]

Jurisdiction	Biodiesel	Ethanol	Natural Gas	Propane (LPG)	Hydrogen Fuel Cells	EVs	HEVs or PHEVs	NEVs	Aftermarket Conversions	Fuel Economy or Efficiency	Idle Reduction	Other
Alabama	7	5	4	4	3	3	1			1	2	
Alaska	2	3	4	2	2	2		1	2	2		
Arizona	7	6	13	13	11	13	1	1			2	2
Arkansas	4	3	5	3	2	2			1	1	2	
California	13	1	25	16	22	3	23	3	5	5	4	8
Colorado	8	9	12	9	8	7	3	1	4	1	4	
Connecticut	5	4	7	5	7	6	5		3	2	3	3
Delaware	3	3	3	5	2	3	2	1		2	3	
Dist. of Columbia	1	2	4	3	3	5	3			2	1	1
Florida	12	13	3	3	7	7	3	1		1	2	1
Georgia	6	6	7	3	3	5			2	1	2	1
Hawaii	8	1	5	5	6	9	1	1		1	1	
Idaho	4	2	3	3	2		1	1		1		
Illinois	2	18	1	9	9	1	6	2	4	3	3	
Indiana	12	17	9	6	5	5	4	1	3	1	1	
Iowa	13	18	6	5	5	7		1	1	1		
Kansas	9	14	5	4	1	1		1	1	1	1	
Kentucky	8	8	6	4	1	1	1	1		1		
Louisiana	6	1	11	5	1	4	2	1	2	1		
Maine	7	7	4	4	3	4	1	1		1	2	1
Maryland	2	3	1	1		4	3	2			1	2
Massachusetts	9	9	7	5	5	6	5				1	1
Michigan	9	9	4	4	5	6	7			2	1	
Minnesota	9	11	3	2	4	5	2	2		1	2	1
Mississippi	4	4	7	5	2	2	1		1	1		
Missouri	8	6	7	6	5	4		1			1	
Montana	8	7	4	4	2	2		1	1	1		
Nebraska	5	6	4	3	2	2			1		1	
Nevada	6	5	7	7	6	6	5	1			1	
New Hampshire	7	3	3	3	3	3	2	1		1	3	
New Jersey	2	2	4	4	2	3	2	1		1	1	1
New Mexico	14	12	7	6	9	7	2	1	1	1	1	1
New York	9	1	13	8	9	9	4	1		1	3	2
North Carolina	13	11	6	6	5	6	3		1	1	3	
North Dakota	12	9	3	2	3			1				
Ohio	5	6	3	3	3	2			1		2	
Oklahoma	11	12	12	9	8	9	3	1	5		1	
Oregon	11	11	6	5	5	9	3	1	2	3	4	5
Pennsylvania	6	5	5	3	3	3	1		1	1	5	1
Rhode Island	2	1	2	1	2	2	1	1		1	1	3
South Carolina	11	9	3	4	7	2	3	1			2	
South Dakota	9	1	1	2								
Tennessee	11	1	5	4	2	4	4	1		2		
Texas	9	9	13	1	6	8	6	1	3		4	1
Utah	1	1	1	5	4	5	2		2		2	
Vermont	5	5	6	4	4	4	3	1	1	3	2	1
Virginia	14	1	12	9	1	1	3	1	3	3	2	1
Washington	18	14	9	8	6	19	6	1	4	2	3	3
West Virginia	5	5	5	5	5	5	1	1		1	2	
Wisconsin	11	8	7	7	6	5	3	2	1	1	3	
Wyoming		1	1									
Totals	**435**	**421**	**353**	**283**	**263**	**298**	**14**	**44**	**62**	**69**	**91**	**49**
Count	**50**	**51**	**51**	**50**	**48**	**47**	**39**	**36**	**26**	**37**	**40**	**20**

[48] U.S. Department of Energy Alternative Fuels Data Center. All Incentives and Laws Sorted by Type. http://www.afdc.energy.gov/afdc/laws/matrix/incentive.

Table 23
Type Incentives
Number of Clean Transportation Laws, Regulations, and Funding Opportunities By Jurisdiction[49]

Jurisdiction	Grants	Tax Incentives	Loans and Leases	Rebates	Exemptions	Other
Alabama	1	1			1	1
Alaska						
Arizona	1	3			3	1
Arkansas	1		1		1	1
California	11		2	5	2	12
Colorado	3	2		1	2	2
Connecticut	5				2	2
Delaware		1		1	1	3
Dist. of Columbia					3	3
Florida	2	2	1		2	1
Georgia		5			1	3
Hawaii	1	2		1		
Idaho		2			1	1
Illinois	4			2	5	2
Indiana	4	6		2	1	1
Iowa	3	4	2			1
Kansas		6	1	2	3	
Kentucky	1	4				2
Louisiana	1	3	1			3
Maine		1			2	
Maryland		4			1	2
Massachusetts	1	1			1	1
Michigan	2	6			2	1
Minnesota	3	1	1		1	1
Mississippi	2			1		2
Missouri	3	1		1	2	2
Montana		7			1	
Nebraska		3	1	1	2	
Nevada					2	
New Hampshire	1				1	
New Jersey		2			1	1
New Mexico	1	3	1		1	2
New York	6	2		1	2	5
North Carolina	5	2	1		3	
North Dakota	2	6	1		2	
Ohio	4	1	2			
Oklahoma		6	2		2	1
Oregon		6	2		2	2
Pennsylvania	4	1	1	2	1	1
Rhode Island		2				
South Carolina	1	8		1	2	
South Dakota		3		1		
Tennessee	3			1	1	2
Texas	7	1		2		7
Utah	1	1	1		2	1
Vermont	1	1	1			2
Virginia	2	3	2		3	4
Washington	2	7	1		6	4
West Virginia				1	1	
Wisconsin	2	2		1	2	1
Wyoming						1
Totals	**113**	**139**	**29**	**27**	**76**	**85**
Count	**33**	**39**	**19**	**18**	**39**	**36**

[49] U.S. Department of Energy Alternative Fuels Data Center. All Incentives and Laws Sorted by Type. http://www.afdc.energy.gov/afdc/laws/matrix/incentive.

Table 24
Codes, Standards, and Advisories Applicable to NGVs[50]

Document	Applicability	Comments
NFPA 52 – Compressed Natural Gas Vehicular Fuel Systems Code – 1998	**CNG vehicles (incl. marine) and fueling facilities**	**Probably the single best source of guidance for CNG vehicles and fueling facilities.**
NFPA 57 – Liquefied Natural Gas Vehicular Fuel System Code – 1999	LNG and L/CNG vehicles (incl. marine) and fueling facilities	Single best source of guidance for LNG vehicles and fueling facilities.
NFPA 88B – Standard for Repair Garages – 1997	All garages used for major repair and maintenance of motorized vehicles	Has some specific requirements for garages working with NGVs, such as ventilation, electrical requirements near the ceiling, temperature of exposed surfaces on heaters.
NFPA 88A – Standard for Parking Structures – 1998	Open, enclosed, basement and underground parking structures	No special requirements for NGVs other than reference to NFPA 52 and 57.
NFPA 30A – Code for Motor Fuel Dispensing Facilities and Repair Garages – 2000	Facilities dispensing **both** gaseous **and** liquid fuels at the same facility	Includes requirements of 88B.
NFPA 59A – Standard for the Production, Storage, and Handling of Liquefied Natural Gas – 1996	Site selection, design, construction, and fire protection for LNG facilities.	
SAE J1616 – Recommended Practice for Compressed Natural Gas Vehicle Fuel	CNG motor vehicle fuel	Recommendations on vehicular fuel composition.
SAE J2323 – Recommended Practices for LNG Powered Heavy Duty Trucks	LNG powered heavy duty trucks	Primarily heavy truck recommendations but some maintenance facility equipment and procedures.
SAE J2406 – Recommended Practices for CNG Powered Medium and Heavy Duty Trucks	CNG powered medium and heavy duty trucks (>14,000 GVWR)	Should be approved and published in 2002.
Design Guidelines for Bus Transit Systems Using Liquefied Natural Gas (LNG) as an Alternative Fuel (3/97)	Transit Facilities but useful reference for other fleets	FTA Report – Not only references required codes (e.g., NFPA) but also suggests additional precautions and provides general information.

[50] NexGen Fueling. List is not complete.

Document	Applicability	Comments
Design Guidelines for Bus Transit Systems Using Compressed Natural Gas as an Alternative Fuel (6/96)	Transit Facilities but useful reference for other fleets	FTA Report – Not only references required codes (e.g., NFPA) but also suggests additional precautions and provides general information.
Compressed Natural Gas Safety in Transit Operations (10/95)	Transit Facilities but useful reference for other fleets	FTA Report – Not only references required codes (e.g., NFPA) but also suggests additional precautions and provides general information.
Liquefied Natural Gas Safety in Transit Operations (3/96)	Transit Facilities but useful reference for other fleets	FTA Report – Not only references required codes (e.g., NFPA) but also suggests additional precautions and provides general information.
Uniform Fire Code – 1997	"The most widely adopted model building code in the US"	May be the fire code used in your area. Check with local fire marshal.
International Fire Code – 2000	"New" fire code	Check with local fire marshal on applicability.
CSA B108 99 Natural Gas Fuelling Stations Installation Code	Canadian Standard applicable to fleet and public stations	
CSA B108 99 Appendix B – Indoor Fuelling of Natural Gas Vehicles	Canadian Standard. Fueling facilities within a building that has primary functions other than fueling. Does not cover public stations.	Published August 2001.
CSA B109 01 – Natural Gas for Vehicles Installation Code	Canadian Standard. Applies to "installation, servicing and repair of NG fuel systems on self propelled vehicles."	
ANSI NGV1 1994 (with 1997 and 1998 addenda) – Compressed Natural Gas Vehicle Fueling Connection Devices	CNG vehicular fueling connection devices	Assures standardized nozzles and receptacles.
ANSI NGV2 2000 – Basic Requirements for Compressed Natural Gas Vehicle Fuel Containers	CNG fuel containers	Container requirements in addition to FMVSS 304.
ANSI NGV3.1 1995 – Fuel System Components for Natural Gas Powered Vehicles	Fuel system components for NGVs (excludes LNG components upstream of vaporizer)	Primarily for converted vehicles.

Document	Applicability	Comments
ANSI NGV4.1/ CSA 12.5 1999 – NGV Dispensing Systems	CNG vehicular fuel dispensing systems	
ANSI NGV4.2/CSA 12.52 1999 – Hoses for NGVs and Dispensing Systems	CNG dispenser and vehicular hose assemblies	
ANSI NGV4.4/CSA 12.54 1999 – Breakaway Devices for Natural Gas Dispensing Hoses and Systems	CNG dispenser shear valves and fueling hose emergency breakaway shutoff devices	
ANSI NGV4.6/CSA 12.56 1999 – Manually Operated Valves for Natural Gas Dispensing Systems	Manually operated CNG valves, excluding cylinder shut-off valves	
ANSI NGV4.8/CSA 12.8 2002 – Natural Gas Vehicle Fueling Station Reciprocating Compressor Guidelines	Compressor packages containing reciprocating compressors used in CNG fueling station service.	
ANSI PRD1 1998 (with 1999 addendum) – Basic Requirements for Pressure Relief Devices for Natural Gas Vehicle Fuel Containers	Pressure Relief Devices for CNG Fuel Containers	
CGA C 6.4 1998 – Methods for External Visual Inspection of Natural Gas Vehicle Fuel Containers and Their Installations	CNG vehicular fuel containers	Referenced in ANSI NGV2
49 CFR 178.56 – Specification 4AA welded steel cylinders	CNG cylinders for fueling stations.	Generally not used for new CNG fueling stations. ASME vessels now generally used.

2/08/11 Office of Governor Energy Report to the Legislature

<TARGET><BILL></BILL><SUBJECT>2-08-11 Office of Governor Energy Report to the Legislature</SUBJECT><COMM>HENE27</COMM></TARGET>

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Governor Sean Parnell
STATE OF ALASKA

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1/31/11 6pm
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January 31, 2011

The Honorable Mike Chenault
Speaker of the House
Alaska State Legislature
State Capitol, Room 208
Juneau, AK 99801-1182

Dear Speaker Chenault,

In accordance with Ch. 83, SLA 10, Sec. 40, Page 25, Line 8, I am submitting the enclosed report to the Legislature regarding State energy programs and increasing coordination and efficiency of the State's energy programs and services.

To reach the State's energy policy goal of 50 percent electricity generated via renewable resources by 2025, our energy efforts and investments must be targeted and strategic. Conservation, weatherization, and energy efficiency are key components of our energy strategy as is our proposal to advance a large hydroelectric project in south central Alaska to supply much needed energy and jobs. Renewable energy fund grants will lower the cost of energy in rural Alaska and the integrated resources planning efforts will create the energy road map for south east Alaska.

I look forward to working with the Legislature to reach our energy policy goals.

Sincerely,

Sean Parnell
Governor

Energy Report to the Legislature

OFFICE OF THE GOVERNOR ENERGY REPORT. Not later than January 31, 2011, the Governor shall submit a report to the Legislature providing recommendations for how best to structure State energy programs and offices to increase the coordination and efficiency of the State's efforts and describing State energy services and programs in their entirety. The report must also include an examination of existing powers and duties and the structure of the Alaska Energy Authority and its board of directors, specifically analyzing the relationship between the Alaska Energy Authority and the Alaska Industrial Development and Export Authority.

Executive Summary

The State of Alaska has a variety of energy programs and initiatives. State and federal funding for both formula driven and competitive award programs has increased significantly in recent years. Several State departments and State corporations have roles to play in the coordination and delivery of energy related programs. Some State agencies' programs have a secondary focus on energy – primarily in the realm of resource management but also in infrastructure development and maintenance. It is in the State's interest for the Executive Branch to clarify and further define each agency's role and responsibility for certain Alaska energy programs and services.

Alaska's Constitution directs that natural resources be developed for the maximum benefit of the people. The 49th state is blessed with abundant resources – oil, gas, coal, timber, water, and wind. Necessarily, agencies with primary responsibility for the management of those resources must play a role in the provision of energy supplies where it is consistent with the larger constitutional and legislative direction. The roles and responsibilities of each agency need to be well understood and coordinated.

In recent years, the Alaska Energy Authority (AEA) has become a key agency for the planning of energy infrastructure and financing. While key improvements to AEA's authorizing statute are necessary at this time, there remains a need for continued coordination across multiple State agencies, corporations, and funding streams.

Policy development, legislative action, and implementation will need to be coordinated across departments if Alaska's energy future is to remain focused.

Recommendations to Change Structure

Changes to Services and Programs

Services and programs should be evaluated on their effectiveness in providing value to communities and residents of the state of Alaska. Reorganization of reporting structure should be implemented only if there is evidence supporting a reasonable expectation that program effectiveness will be improved.

AEA's powers should be changed to allow AEA to own new energy projects and to hire staff. The introduction of House Bill 103 and Senate Bill 42 allow the Legislature to consider these changes and accomplish the changes through passage of a bill.

House Bill 103 and Senate Bill 42 would authorize and allow AEA to move aggressively to pursue a large hydroelectric project (Susitna Dam) that would supply needed renewable energy to Interior and Southcentral Alaska. AEA could further the design, permitting, construction, and operation of the Susitna Dam project. This project is critical to Alaska reaching its energy policy target of generating 50 percent of its electricity through renewable energy by 2025.

The AEA managed Bulk Fuel Revolving Loan Fund and the Department of Commerce, Community and Economic Development (DCCED) managed Bridge Loan Fund should be merged into one program with two levels of service. Currently, the zero-percent Bridge Loan Program provides a disincentive for borrowers to increase their creditworthiness. AEA and DCCED are working to accomplish this merger.

A Commercial Energy Efficiency Loan program should be developed. Currently, the State has addressed needed energy efficiency programs for public buildings and residential homes. However, commercial buildings have energy efficiency upgrade needs as well, often in lighting. Providing loan funds specific to this need should be explored. DCCED, AEA, and the Alaska Industrial Development and Export Authority are developing options for an appropriate program.

Changes to Current Coordination Efforts

Currently, coordination efforts occur through meetings between agency personnel and the Office of the Governor, including, but not limited to, guidance from the Office of Management and Budget (OMB). Energy policy encompasses more than the annual budget and needs to be coordinated among the commissioners of the various agencies involved, the Governor's office, and the Legislature. The Energy Policy Coordinator (EPC) will provide additional focus and coordination for energy programs and policies that cross lines of several State agencies. The EPC will be the spokesperson for energy issues on behalf of the Governor and will work with commissioners, agency personnel, etc., to communicate with the Legislature.

The mission of the EPC is to help commissioners, staff, OMB, and the Governor's office ensure the State's energy resources and energy programs are devoted in a way that produce results which advance the State's energy policy priorities.

The EPC should further evaluate energy services and programs, measure their results, and make recommendations for any necessary changes beyond the recommended changes provided in this report. The EPC is an effective way to provide coordination between the various State energy programs and to communicate with the Legislature. The EPC will also be the mediator between agencies that have conflicting points of view or the appearance of duplicating efforts.

State Energy Programs and Offices

Description of Agency Coordination Efforts

For new policy initiatives in energy programs, the Office of the Governor plays a key role in the development of the new programs and planning. Agency personnel are, of course, charged with implementing authorized programs and efficiently using funds appropriated by the Legislature for programs.

Background and History of State Energy Office

In 1996, at the request of the United States Department of Energy (USDOE), the Governor designated AHFC as the lead agency for the USDOE State Energy Program (SEP). The SEP was the result of the USDOE's consolidation of two formula grant programs: 1) the State Energy Conservation Program managed by AHFC, and 2) the Institutional Conservation Program, managed by the former Department of Community and Regional Affairs, Division of Energy. In 1996, AHFC and Division of Energy, entered into a Memorandum of Agreement that delineated how SEP funds were to be managed and shared by AHFC and Division of Energy. The agreement stated that 60 percent of SEP funds would be transferred to the Division of Energy.

In 1999, the Department of Community and Regional Affairs was statutorily eliminated and the Division of Energy programs became the responsibility of AEA. After AHFC informed AEA that it would transfer no funds to AEA for the former Division of Energy programs, a new Memorandum of Agreement was signed by AHFC and AEA. The 2001 agreement delineated how SEP funds were to be managed and shared by AHFC and AEA. The agreement stated that 50 percent of SEP funds would be transferred to AEA.

During the 2008 Legislative Session and each subsequent session, the State of Alaska has created new energy programs and provided significant funds for various energy programs and initiatives. The federal government has also provided substantial funds, both formula driven and competitive awards, for energy programs.

Recent Coordination Efforts

The annual SEP allocation to Alaska has been approximately $300,000 during the past few years, although the allocation in FY2008 was $250,000. Half of the money is directly transferred from AHFC to AEA through a Memorandum of Agreement. Energy audits on schools and community buildings are the primary use of that funding. The other half of the money is used for educational programs sponsored by AHFC. These programs include workshops on energy efficiency for real estate professionals, builders, and homeowners, as well as paying for printing of various publications on energy efficiency and renewable energy. Additionally, funds supplement the Weatherization Assistance Program to reduce electrical use in eligible homes.

ARRA funds for 2009 totaled $28.232 million for the State energy program. Performance contracting on schools, State owned public buildings, and municipal buildings will use about two-thirds of the funding, with improvements to BEES, ARIS and AkWarm also being upgraded.

AHFC and AEA should, and are, updating their Memorandum of Agreement to memorialize both AHFC's and AEA's role in managing certain Alaska energy programs and to confirm the distribution of SEP funds. Similar to the process followed with ARRA funds, when circumstances arise that necessitate additional input, AHFC and AEA will coordinate efforts with the Office of the Governor to ensure the administration's priorities are carried out by the agencies.

Alaska Energy Authority

Examination of AEA Structure and Board of Directors

AEA was created by the Alaska State Legislature in 1976. AEA is a public corporation and a component unit of the State of Alaska. AEA's mission is to reduce the cost of energy in Alaska. The Board of Directors of the Alaska Industrial Development and Export Authority (AIDEA) is also the AEA Board of Directors. The AEA board of directors has seven members: five public members and the Commissioner of Revenue and the Commissioner of Commerce, Community and Economic Development. The five public members are appointed by the Governor, each of whom has expertise in private sector business or industry, or both, and possesses demonstrated leadership skills. The public members serve at the pleasure of the Governor for two-year terms.

AEA History

Throughout the 1980's, AEA worked to develop the State's energy resources as a key element in diversifying Alaska's economy. A number of large-scale projects were constructed; four of those projects were sold in 2002, and one was transferred to the City of Larsen Bay in the fall of 2010. The Bradley Lake Hydroelectric project together with the Alaska Intertie's 170 miles of transmission line help provide Interior Alaska with cheaper energy available in the Southcentral portion of the state. Pursuant to statute, on August 12, 1993, the board of directors of AIDEA, a public corporation and a political subdivision of the State, became the board of directors of AEA. AEA continues to exist as a separate legal entity. The corporate structure and operating assets of AEA were retained but the ability to have employees, and construct or acquire energy projects was eliminated. Among other things, AIDEA provides personnel services for AEA. On April 10, 2008, the board appointed a separate and independent AEA executive director who is an employee of AIDEA, but is not subject to supervision by AIDEA's executive director. Previously, the AEA and AIDEA executive directors were the same. There is no commingling of funds, assets, or liabilities between AIDEA and AEA and there is not responsibility of one of these entities for the debts or obligations of the other.

The 1993 legislation required AEA, to the maximum extent feasible, to enter into contracts with public utilities and other entities to carry out AEA duties respecting the ongoing operation and maintenance of the AEA owned operating assets; this has occurred with oversight responsibility retained by AEA.

Pursuant to legislation effective July 1, 1999, rural energy programs previously administered by the former Department of Community and Regional Affairs, Division of Energy, were transferred to AEA for administration, as part of a larger reorganization of State agencies. Several general energy programs primarily focused on rural energy issues moved to AEA. Rural energy programs were originally part of AEA prior to the reorganization that occurred in 1993.

During fiscal year 2008, legislation added energy development programs to AEA. AEA has developed the *Alaska Energy Pathway*, a guide for Alaskan communities to utilize local energy resources. AEA has also established the Renewable Energy Fund and Grant Recommendation Program.

AEA Current Programs and Projects

AEA - Rural Energy Infrastructure

Traditionally, State agencies will grant funds to a community or utility to build a project. However, many rural communities lack the necessary financial resources and technical expertise to manage and construct energy infrastructure upgrades. AEA's rural energy infrastructure program provides direct project management support to design and construct rural powerhouses and bulk fuel storage facilities. Under this project management model, AEA manages the federal grant or State appropriated project, hires a construction manager, provides project oversight, and bookkeeping services for locally hired labor.

Rural Power System Upgrades

Electricity provides for lighting, communications, heat, and power necessary to operate infrastructure that supports all other elements needed in any community to permit safe and healthy living conditions. In rural communities throughout Alaska, electricity is generated by a small local "system" (generation and distribution) using diesel fuel at a cost that is three to five times higher than that in urban parts of the state. Of 200 rural communities, approximately half are served by cooperatives or another form of utility that performs under a well-established organization. Others are served by very small entities, many which experience technical and administrative problems due to lack of economies of scale and/or lack of specialized skills in the community.

AEA manages powerhouse and electrical distribution upgrades that may include efficiency improvements, powerhouse upgrades or replacements, line assessments, lines to new customers, demand-side improvements, and repairs to generation and distribution systems. System upgrades to be funded may be identified through a variety of ways, including via technical assistance, advanced by the local community or directed by the Legislature.

Bulk Fuel Upgrades

Most rural Alaska communities receive fuel for heating, generation of electricity, vehicles, and other uses only during summer months when coastal areas and rivers are ice free. These communities typically store enough fuel to meet their needs for an entire winter. Many rural bulk fuel tank farms were constructed more than 20 years ago and are in poor condition. With substantial contributions from the Denali Commission, the bulk fuel upgrades program provides funding for the design/engineering, business planning, and construction management services to build code-compliant bulk fuel tank farms in rural communities.

In the early 1990's, many rural communities faced the very real threat that they would no longer be allowed to take delivery of fuel in bulk quantities because of the condition of their bulk fuel storage tank farms. The most common problems were the piping systems to, from, and within the tank farms. The AEA bulk fuel upgrade retrofit and revision program is funded with grants from the Denali Commission and State appropriations.

AEA Alternative and Renewable Energy Program and Projects

AEA's alternative and renewable energy program promotes the use of renewable resources as alternatives to fossil fuel-based power and heat, and measures to improve energy production and end use efficiency. In rural areas, the program may support developing local sources of coal and natural gas as diesel alternatives. The Alaska State Legislature created the Renewable Energy Fund

(REFund) in 2008, with the intent to appropriate $50 million annually for five years. The Legislature authorized AEA to manage the REF project application process, project evaluations, recommendations, completion of grant agreements, and disbursement of funds to grantees. In addition to managing the Renewable Energy Grant Fund and Recommendation Program, AEA is a technical resource for entities wanting to develop alternative and renewable resources. AEA staff is frequently called upon to participate in conferences, make public presentations regarding program areas, and provide technical advice and assistance.

Renewable Energy Program Areas

The Alaska Energy Inventory (cooperative project of AEA and Alaska DNR) consists of renewable and fossil resource data, energy supply and usage data, and other information useful for energy planning and development.

The Biomass Energy Program develops projects using wood, sawmill residue, and municipal wastes for energy; tests air emissions and performance of fish oil and diesel blends as fuel; assesses the viability of recovering fish oil from fish processing wastes.

The Geothermal Program supports projects such as the Chena Hot Springs power plant; organizes workshops and training sessions; coordinates State assistance in developing other potential projects such as Mt. Spurr on the Railbelt and Makushin in Unalaska.

The Small-scale Hydroelectric Program provides technical assistance through staff and contractors for hydro feasibility assessment; manages public funding for project construction.

The Ocean and River Energy Program evaluates technology and feasibility of converting wave motion, tidal and river flow into power in partnership with Alaska utilities and the Electric Power Research Institute.

The Wind Program assists utilities and communities in resource evaluation, training, environmental assessment, regional development, conceptual design and economic feasibility of rural wind-diesel systems; assists with Railbelt wind integration studies.

The Emerging Energy Technology Fund under AS 42.45.375 was established in 2010. AEA may make grants to eligible applicants for demonstration projects of technologies that have a reasonable expectation to be commercially viable within five years and that are designed to: 1) Test emerging energy technologies or methods of conserving energy; 2) Improve an existing energy technology; or 3) Deploy an existing technology that has not previously been demonstrated in Alaska. The statute provides for an advisory committee to assist AEA in the development of the program and review of potential projects to be funded. AEA is in the process of soliciting the first round of grant applications for this new program.

Examination of AEA and AIDEA Relationship

Since 1993, AIDEA staff members are responsible for administering AEA programs. In 1999, when the Department of Community and Regional Affairs (DCRA) was dissolved, AEA became responsible for former DCRA Division of Energy programs and certain DCRA staff became AIDEA employees. In 2008, the AIDEA and AEA by-laws were changed to allow the board of directors to hire an AIDEA employee as an AEA executive director who is a different person than

the AIDEA executive director. The AEA executive director serves at the direction of the AEA board of directors.

As mentioned earlier, Governor Parnell has introduced legislation (SB 42 and HB 103) to allow AEA to hire staff. The legislation allows for the transfer of certain AIDEA employees to AEA. AIDEA's and AEA's relationship has existed for over 17 years, and many employees have shared responsibilities to both organizations. For efficiency purposes, AIDEA and AEA will continue to share certain services and be located in the same building. A complete split of the two corporations is estimated to cost at least $2 million and certain staff expertise would be difficult to duplicate. SB 42 and HB 103 provide the most cost effective way for both agencies to continue to pursue their distinct missions and to benefit from shared services and staff.

Other State Programs

Oil and Gas – DNR, Revenue, Multi-Agency Gasline Team, ANGDA
The Department of Natural Resources (DNR) is the State agency charged with primary responsibility for the management of resources on State lands. Resources managed by the agency that have an impact on energy supplies and demands include oil and gas, forestry, minerals (especially coal), water (tides and rivers), geothermal, and the land below many areas with significant wind.

The management of these resources is guided by the Constitution and enabling statutes. Development of these resources provides contributions to the public, usually in the form of revenue to the treasury and funds being deposited in the Alaska Permanent Fund.

Many of these resources can provide energy when they are developed. However, most population centers in Alaska are not large enough to achieve the efficiencies of scale required to provide that energy at a low cost to the consumer. Often, an export market of some sort is required to achieve that efficiency, which energy is then also available to the local population in proximity to the development. A key focus of work for AEA has been, and will continue to be, to find ways for local populations to share in energy development.

Interests in development of State resources must be ordered and harmonized. This is done through the legislative process, which establishes the statutory and budgetary boundaries by which DNR may operate. The development of State policy as it relates to an Alaska North Slope (ANS) natural gas pipeline illustrates the principles involved.

The Alaska Gasline Inducement Act (AGIA) spells out statutorily what the Constitution requires. It seeks to maximize the chances that ANS natural gas resources are commercialized while minimizing the fiscal concessions achieved by lessees. It does so by advancing the development stage of the project with monetary incentives, but in return for commitments that the project be developed with particular State priorities in mind.

The original AGIA structure was developed and proposed by multiple State agencies with guidance and coordination provided by the Office of the Governor; it was adopted and approved by the

Legislature in 2007. The AGIA License provides for the delivery of gas within the state to be provided at reasonably low rates at destinations along the project's route.

The Alaska Natural Gas Development Authority (ANGDA) was created by the voters of Alaska through a 2002 General Election Ballot Initiative and is a public corporation. ANGDA is focused on getting North Slope natural gas to Alaskan communities as well as identifying feasible LNG opportunities for the State. With the support of the Legislature and the Administration, ANGDA started work in 2003 within the Alaska Department of Revenue (Revenue). Alaska Statute 41.41 contains the law for the establishment and functioning of the authority.

The Alaska Stand Alone Gas Pipeline (the "bullet line") is being planned as an in-state gas pipeline designed to provide long-term, stable supplies of natural gas from the North Slope to Fairbanks and the Cook Inlet areas, as well as other communities where practicable. In the spring of 2010, the Alaska Legislature and the Governor mandated that a group of industry professionals convene under the corporate banner of the Alaska Housing Finance Corporation for the specific purpose of developing, refining, and producing an in-state natural gas pipeline project plan by July 1, 2011. The focus of the pipeline project is to supply gas to Southcentral Alaska by 2016 to offset the projected supply decline.

The design of the Alaska Stand Alone Gas Pipeline addresses current market demand with the capacity to expand for future growth. The project design accommodates initial capacity of 500 million standard cubic feet per day (MMscfd) of clean-burning natural gas. The initial flow rate will be 250 to 500 MMScfd, and the line can be expandable to 1,000 MMscfd if needed. The project plan includes opportunity and options to export liquefied natural gas (LNG) and marked natural gas liquids (NGL) to the West Coast of the United States and/or Pacific Rim markets.

The Alaska Stand Alone Gas Pipeline Project is an independent project and is not contingent on any of the other projects under consideration and currently moving forward in Alaska. The Alaska Stand Alone Gas Pipeline Project was conceived as a smaller-diameter "bullet line" that could be built on a shorter timeline to specifically address the urgent needs in Alaska, particularly in the heavily populated areas in Fairbanks and the Cook Inlet region. In the event the large-diameter gas pipeline projects do not move forward, the project plan for the Alaska Stand Alone Gas Pipeline Project positions the State of Alaska for timely response to the energy issues presently facing the Interior and Southcentral areas of Alaska. Relative to larger projects, the "bullet line" is designed to advance quickly to construction on a shorter timeline.

Energy Efficiency – AHFC and AEA

AHFC

Meeting Alaska Building Energy Efficiency Standard (BEES) is required for all new residential homes built since 1992 in the state, and for community-owned buildings receiving AHFC financing. AHFC is responsible for BEES, provides technical assistance to the businesses in the housing industry, and maintains a list of individuals who are qualified to certify compliance with BEES.

AkWarm Energy Modeling Software – AkWarm software is trademarked and has been used by AHFC since 1996. This technology is an integral part of developing and improving AHFC's energy

programs. The software is continuously updated. Scheduled upgrades include electrical ratings, estimating electrical use from appliances, equipment, and lighting. An air conditioning component and improved user interface and reporting are planned improvements.

Alaska Retrofit Information System (ARIS) – ARIS collects data from AkWarm including: commercial benchmarking information; the Home Energy Rebate Program; census records; weatherization program; grants; zip codes; legislative districts; and borough and city tax records. ARIS is a required data input/collection and retention system for all AHFC programs. The program further allows program staff and researchers access to much of building/construction data, including location, size, type, fuel sources and costs, owner, and operators, and conveniently provides all of the data in one place, with table links between datasets established. ARIS will also now track information for public and commercial facilities receiving State lending or grant funding for all AHFC Programs.

Energy Ratings – AkWarm Certified Energy Raters are individuals who measure energy efficiency in a home using AkWarm and other diagnostic tools. For new construction, the home's energy rating may be used to help verify compliance with BEES and benefit the homebuilder or owner by qualifying Five Star and Five Star Plus homes, or existing homes requiring energy improvements, for a reduced interest rate reduction (see "Energy Efficiency Interest Rate Reduction Program" or "EEIRR," below). Energy ratings are also required for the Home Energy Rebate Program and Second Mortgage Program for Energy Conservation. With the AkWarm software improvements mentioned above, AHFC is working toward the addition of a sixth star for green building. AHFC maintains a list of energy raters by community. Over 60,000 home energy ratings have been completed in Alaska, one of the highest in actual number for any state in the country, regardless of population. Approximately 36,000 of those ratings were performed since April 2008. More than 100 raters are qualified in the state of Alaska.

Energy Efficiency Interest Rate Reduction Program (EEIRR) – AHFC offers interest rate reductions to homebuyers purchasing new homes with Five Star and Five Star Plus energy ratings. These ratings exceed BEES requirements. AHFC also offers rate reductions for energy improvements to older, existing home purchases. To date, AHFC has issued more than 10,000 loans under this program with a total value of nearly $1.8 billion.

Energy Efficiency Education and Workshops – There has been tremendous growth in the Weatherization Assistance Program, from 600 homes weatherized pre-2008 to now an average of 3,200 homes per year. Coupled with the addition of the Home Energy Rebate Program for up to 20,000 homes, energy-efficiency education has become a top priority for AHFC.

AHFC provides energy-related workshops, classes and seminars for homeowners, homebuyers, renters, builders, lenders, real estate professionals, and others. In FY2009, more than 5,000 Alaskans attended energy-efficiency classes offered through or funded by AHFC.

AHFC has embarked on training programs to bring up to 2,000 green jobs into energy-efficiency programs. Energy raters, weatherization assessors, crews, contractors, do-it-yourself homeowners, and the general public are being trained in weatherization installation techniques, building science, building auditing, energy modeling, combustion safety, moisture control and ventilation, and more. Training programs such as these are essential to achieving long-term energy efficiency goals.

With the implementation of the Alaska Energy Efficiency Revolving Loan Fund (AEERLF), new public facility energy audits and retrofits are being performed, requiring even more education for contractors, engineers, architects, and others. AHFC is developing education programs to fit these needs.

Home Energy Rebate Program – On April 5, 2008, legislation was signed authorizing the addition of $100 million to the Home Energy Rebate Program. This program is designed to rebate homeowners some of the costs of making energy-efficiency improvements to their home, regardless of income. An AkWarm energy rating performs both before and after improvement audits to determine eligible measures and maximum rebate amounts. Depending on the rating increase and actual receipts, a rebate of up to $10,000 is available for consumers. The program is further supplemented with other financial incentives, including the Second Mortgage Program (see below for description) for Energy Conservation. A $7,500 rebate is available for newly constructed Five Star Plus homes. Demand for the rebate program was sufficient for the Legislature to add an additional $60 million in September 2008. Since April 2008, AHFC has doubled the number of energy raters. Estimated average energy savings are about $1,500 per home per year, and more than 12,000 pounds of carbon dioxide per home has been prevented from entering the atmosphere.

Second Mortgage Program for Energy Conservation – The Second Mortgage Program for Energy Conservation was initiated in April 2008. Potential borrowers may apply to AHFC for financing to make cost-effective energy improvements on owner-occupied properties. Borrowers select from the list of energy upgrades included with the energy audit of their home, performed by an AkWarm-certified rater. All improvements must be completed within 365 days of loan closing.

Small Building Material Loan – AHFC provides direct financing for the renovation or completion of residential properties located in designated small communities; however, the project may include energy-efficient upgrades and renewable-energy systems and, therefore, would be eligible for these loans.

Energy Efficiency Conservation Block Grant (EECBG) – The EECBG is a new program to Alaska, launched in 2009. It will supplement the Energy Efficiency Education Program, ARIS, and AkWarm, aid in the development of a commercial audit program, establish a Village Waste Heat Recovery Project, and a municipal block grant for energy efficient retrofits.

Research Information Center – The Research Information Center (RIC) provides information, presentations, and technical assistance for AHFC energy programs. The RIC Library has thousands of online resources, books, fact sheets, videos, reports, catalogs, etc., available to all Alaskan residents on topics such as northern building, innovative housing construction, energy efficiency, renewable energy, sustainable technology, and much more. Information requests, library visits, educational presentations and web visits total approximately 20,000 annually.

Weatherization – The Low-Income Weatherization Assistance Program allows eligible low-income Alaskans to lower the cost of heating their homes. AHFC provides funds to nonprofit organizations and municipalities. To apply for the program, Alaskans contact the program provider for their area. The Weatherization Program has been in effect in Alaska for about 30 years using funding from a variety of sources. It has a highly developed, functioning infrastructure for effective delivery and is one of the most successful programs the State has ever offered to clients, providing immediate,

tangible benefits that are documented in energy savings and reductions in threats to health and safety commonly found in the home.

The Weatherization Program has a long history of performance in building a skilled workforce, processing applications, working with other agencies to provide needed services, identifying high priority clients and families, introducing new and effective products to the market, increasing the awareness of the HVAC industry, providing critical client education, assisting low- and moderate-income families to curb unnecessary expenditures in heating and utilities, and in providing healthy, safe living environments to the highest priority clients, including those with young children, the disabled, and senior citizens.

AEA
Diesel Generation Efficiency Program provides assistance in developing projects that use high efficiency generators and recover "waste heat" from diesel generators.

Energy Efficiency and Conservation Program focuses on reducing energy use in larger facilities such as schools, community buildings, water treatment plants, and commercial buildings. Current initiatives include the federally funded Energy Efficiency and Conservation Block Grants, the Village End Use Efficiency program, a building energy monitoring, pilot projects, and a statewide public education and outreach program.

AEA has recently launched a commercial energy audit program. Owners of eligible commercial buildings throughout Alaska may be reimbursed up to $6,500 for a qualifying energy audit. The program is funded by the American Recovery and Reinvestment Act, and is expected to provide up to 150 commercial energy audits. The Alaska Commercial Energy Audit Program will reimburse eligible applicants the cost of an energy audit up to a specified dollar limit on a per square foot basis. Eligible buildings are commercial buildings, including nonprofit owned, up to 125,000 square feet. Building tenants are not eligible, but may refer the building owner to the program.

Public Assistance – AEA, DHHS

The State of Alaska has energy assistance programs to help qualified Alaskan residents and community facility owners help defray high energy costs.

AEA Power Cost Equalization Program
AEA Power Cost Equalization (PCE) program provides economic assistance to electrical customers in rural areas of Alaska where the kilowatt-hour (kWh) charge for electricity can be three to five times higher than the charge in more urban areas of the state. PCE only pays a portion of approximately 30 percent of all kWh's sold by the participating utilities. Community facilities and residential customers are eligible for PCE reimbursements. PCE fundamentally improves Alaska's standard of living by helping small rural areas maintain the availability of communications and the operation of basic infrastructure and systems, including water and sewer, incinerators, heat, and light. AEA determines ratepayer and community facility eligibility, manages the program, and reimburses utilities for eligible PCE costs.

The Regulatory Commission of Alaska (RCA) determines utility eligibility and establishes the PCE rates that are used to calculate eligible PCE payments. PCE rates have a fuel cost and non-fuel cost component. The fluctuation in the PCE levels are primarily due to the change in a utilities fuel cost to produce electricity. Participating utilities are required to reduce each eligible customer's bill by the amount that the State pays for PCE.

Department of Health and Social Services (DHSS) – LIHEAP and AAHP

The Low-Income Home Energy Assistance Program (LIHEAP) is a federally-funded heating assistance program that helps households pay a portion of their winter heating costs. The program is limited to households with incomes at or below 150 percent of the federal poverty income guidelines. Several factors affect final eligibility and the household's benefit amount. These factors include the community the applicant resides in, how they heat their home, what type of dwelling they live in, the number of people living in the house, all residents' gross monthly income, and whether or not an elder, disabled individual, or child five years of age or younger lives in the home.

The Alaska Affordable Heating Program, a State-funded program for households with income between 151 percent and 225 percent of the federal poverty income guidelines, mirrors LIHEAP. Both programs use the same application form and eligibility criteria.

Qualified applicants receive one grant per year, payable to their fuel vendor. Applicants are notified about the status of their case through a notice of action. Applicants may designate a portion of their award be sent to their electric company. Applications are accepted from October 1 through April 30. Both programs are open to renters as well as homeowners.

Office of Management and Budget / Standardized Methodology to Collect and Store Energy Consumption and Expense Data (SB 220, Section 39)

The State of Alaska's facilities energy cost and consumption data will be collected and stored in a new web-based module in Alaska Housing Finance Corporation's Alaska Retrofit Information System (ARIS). The new module, estimated to cost $42,000, will be paid for with ARRA energy funds and will allow State employees to access the system via the internet.

State facility users will be able to enter basic data about their buildings. It will include electrical and other space/water heating fuel costs and usage, and demand charges. Also included will be size, type of building, occupancy, schedule, facility owner, contact, and other data. The system's reporting function will summarize data by such features as building, building type, energy usage, history, department, and geographic locations, allowing for the capability to prioritize facility energy efficiency retrofit opportunities.

2/08/11 Presentation by Department of Revenue: Creating a Municipal Energy Improvements Financing Program

<TARGET><BILL></BILL><SUBJECT>2-08-11 Presentation by Department of Revenue Creating a Municipal Energy Improvements Financing Program</SUBJECT><COMM>HENE27</COMM></TARGET>

State of Alaska
Department of Revenue

Commissioner Bryan Butcher

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333 Willoughby Avenue, 11th Floor
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Alaska Department of Revenue
Municipal Energy Improvements Financing Report
January 31, 2011

Chapter 83, SLA 10, Section 43

MUNICIPAL ENERGY IMPROVEMENTS FINANCING PROGRAM RECOMMENDATION. Not later than January 31, 2011, the Department of Revenue shall submit to the legislature a report and recommendations regarding the feasibility of a municipal energy improvements financing program. The report must
(1) address financing programs for energy efficiency and renewable energy projects on residential, commercial, and industrial property through property tax assessments; and
(2) identify the costs and benefits of a municipal energy improvements financing program in the state.

Background:

The first program for municipal financing of energy improvements through the use of tax assessments was created in Berkeley, California in 2008. As of the end of 2010, twenty states: Arizona, California, Colorado, Florida, Hawaii, Illinois, Louisiana, Maryland, Missouri, Nevada, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Texas, Vermont, Virginia and Wisconsin have adopted programs that allow for municipal financing of energy efficiency and renewable energy projects on privately owned property through the use of voluntary property tax assessments. The common acronym for this type of financing approach is PACE (Property Assessed Clean Energy).

In areas with PACE legislation in place, municipal governments offer bonds to investors that are backed by municipally implemented priority property tax liens on properties and then loan the money to residential or commercial property owners to pay for an energy retrofit project. The loans are repaid over the assigned term (typically 15 or 20 years) via an annual assessment on the property tax bill. PACE bonds can be issued by municipal financing districts or finance companies and the proceeds can be used to retrofit either commercial or residential properties. One of the most notable characteristics of PACE programs is that the loan is attached to the property rather than an individual. PACE enables individuals and businesses to avoid the upfront costs that are the most common barrier to installation of alternative energy projects and energy efficiency upgrades. The PACE loans are paid with property taxes over a period of years

while energy costs are simultaneously lower, providing the consumer with net gains. Because this type of financing is attached to the property, and collected as part of the property tax assessment, it is not necessary to consider the individual credit of borrowers, but rather only the value of the property and the energy savings from the project.

Financing capital projects with municipal tax assessments on the property that directly benefits from the capital projects is not in any way a new concept in Alaska. It is very typical for projects such as sidewalks, water and sewer, and street improvements to be financed in this way through the establishment of a local improvement district with special tax assessments established against each of the properties that benefit. The difference between PACE financing and the typical local improvement district is that with PACE financing the individual property owner voluntarily agrees to a property tax assessment in return for money to make improvements to their property. Regardless of how the assessment is created, it gives the municipal government a priority lien on the property and payment is assured. Thus the municipal government can sell bonds or other financing instruments that are secured by the payment of the tax assessment. When the property is sold the PACE loan stays with the property and only the current portion owed must be cleared at closing.

Most PACE financing programs in the United States were put on hold in July 2010 when the Federal Housing Finance Agency issued a statement (attached to this report) that says in part:

"FHFA urged state and local governments to reconsider these programs and continues to call for a pause in such programs so concerns can be addressed. First liens for such loans represent a key alteration of traditional mortgage lending practice. They present significant risk to lenders and secondary market entities may alter valuations for mortgage-backed securities and are not essential for successful programs to spur energy conservation. "

Until and unless the Federal Housing Finance Agency changes their position on PACE financing, or national standards are adopted, financing programs for energy efficiency and renewable energy project through tax assessments will not be practical.

Specific Alaska Challenges:

PACE programs are typically administered at the local government level. Alaska has a population of approximately 700,000 persons according to the 2010 census. There are 162 local governments in Alaska, however only 38 have a property tax implemented at this time. Many of these governments are simply too small to operate an energy financing program on their own. Thus, if this type of program is to operate effectively throughout Alaska, it will require statewide standards and administration and a method for pooling revenues for financing. Some parts of the state, in the unorganized borough, have no taxing authority and this type of program cannot be used in these areas.

Alaska Advantages:

Energy standards and expertise: With the funding of the weatherization and energy rebate programs over the past several years though Alaska Housing Finance Corporation, Alaska has

developed a basis for understanding the energy needs of both residential and commercial consumers. Through 2010, over 30,000 ratings have been dispatched through the Home Energy Rebate program with over 9,000 rebates paid. Based on the information from this program, these 9,000 plus homeowners are saving an average of $1,580 annually on energy from the work done in this program with an average cost of $10,800 up front. Based on this, it is clear that the cost of these improvements could have been financed and amortized if a PACE type program were in place. Data is lacking on how many improvements have not been done because people lack the capital upfront. Alaska has qualified energy raters, a trained workforce and standards upon which gauge probable energy savings.

Access to capital: Nationwide, both the real estate market and the finances of local governments are weak. Alaska has not experienced a collapse in the real estate market or downgrades to municipal ratings. If a municipal financing program for energy efficiency and renewable energy projects through tax assessments again becomes practical at the national level, we would expect it to benefit from Alaska's general financial strength.

Recommendations:

- If a PACE or similar financing program is established in Alaska, qualifications should require:
    - Local governments to create PACE districts to participate.
    - Local government ongoing administration for property tax collection and lien implementation.
    - A statewide issuer of bonds to provide for local government financing need, ensuring accessibility to smaller communities and efficiency to all.
    - Uniform statewide standards, like those used by AHFC for the Home Energy Rebate program, for determining energy savings and allowable costs.

- That if creating a PACE program is a priority that consideration be given to providing a capital appropriation for a revolving loan fund, eliminating the need to borrow from third parties in the short term.

- Work with the Federal Housing Finance Agency to establish whether a PACE type program can be constructed that can conform to national mortgage underwriting standards.

FEDERAL HOUSING FINANCE AGENCY

STATEMENT

For Immediate Release
July 6, 2010

Contact: Corinne Russell (202) 414-6921
Stefanie Mullin (202) 414-6376

FHFA Statement on Certain Energy Retrofit Loan Programs

After careful review and over a year of working with federal and state government agencies, the Federal Housing Finance Agency (FHFA) has determined that certain energy retrofit lending programs present significant safety and soundness concerns that must be addressed by Fannie Mae, Freddie Mac and the Federal Home Loan Banks. Specifically, programs denominated as Property Assessed Clean Energy (PACE) seek to foster lending for retrofits of residential or commercial properties through a county or city's tax assessment regime. Under most of these programs, such loans acquire a priority lien over existing mortgages, though certain states have chosen not to adopt such priority positions for their loans.

First liens established by PACE loans are unlike routine tax assessments and pose unusual and difficult risk management challenges for lenders, servicers and mortgage securities investors. The size and duration of PACE loans exceed typical local tax programs and do not have the traditional community benefits associated with taxing initiatives.

FHFA urged state and local governments to reconsider these programs and continues to call for a pause in such programs so concerns can be addressed. First liens for such loans represent a key alteration of traditional mortgage lending practice. They present significant risk to lenders and secondary market entities, may alter valuations for mortgage-backed securities and are not essential for successful programs to spur energy conservation.

While the first lien position offered in most PACE programs minimizes credit risk for investors funding the programs, it alters traditional lending priorities. Underwriting for PACE programs results in collateral-based lending rather than lending based upon ability-to-pay, the absence of Truth-in-Lending Act and other consumer protections, and uncertainty as to whether the home improvements actually produce meaningful reductions in energy consumption.

Efforts are just underway to develop underwriting and consumer protection standards as well as energy retrofit standards that are critical for homeowners and lenders to understand the risks and rewards of any energy retrofit lending program. However, first liens that disrupt a fragile housing finance market and long-standing lending priorities, the absence of robust underwriting standards to protect homeowners and the lack of energy retrofit standards to assist homeowners, appraisers, inspectors and lenders determine the value of retrofit products combine to raise safety and soundness concerns.

On May 5, 2010, Fannie Mae and Freddie Mac alerted their seller-servicers to gain an understanding of whether there are existing or prospective PACE or PACE-like programs in jurisdictions where they do business, to be aware that programs with first liens run contrary to the Fannie Mae-Freddie Mac Uniform Security Instrument and that the Enterprises would provide additional guidance should the programs move beyond the experimental stage. Those lender letters remain in effect.

Today, FHFA is directing Fannie Mae, Freddie Mac and the Federal Home Loan Banks to undertake the following prudential actions:

1. For any homeowner who obtained a PACE or PACE-like loan with a priority first lien prior to this date, FHFA is directing Fannie Mae and Freddie Mac to waive their Uniform Security Instrument prohibitions against such senior liens.

2. In addressing PACE programs with first liens, Fannie Mae and Freddie Mac should undertake actions that protect their safe and sound operations. These include, but are not limited to:

   - Adjusting loan-to-value ratios to reflect the maximum permissible PACE loan amount available to borrowers in PACE jurisdictions;

   - Ensuring that loan covenants require approval/consent for any PACE loan;

   - Tightening borrower debt-to-income ratios to account for additional obligations associated with possible future PACE loans;

   - Ensuring that mortgages on properties in a jurisdiction offering PACE-like programs satisfy all applicable federal and state lending regulations and guidance.

   Fannie Mae and Freddie Mac should issue additional guidance as needed.

3. The Federal Home Loan Banks are directed to review their collateral policies in order to assure that pledged collateral is not adversely affected by energy retrofit programs that include first liens.

Nothing in this Statement affects the normal underwriting programs of the regulated entities or their dealings with PACE programs that do not have a senior lien priority. Further, nothing in these directions to the regulated entities affects in any way underwriting related to traditional tax programs, but is focused solely on senior lien PACE lending initiatives.

FHFA recognizes that PACE and PACE-like programs pose additional lending challenges, but also represent serious efforts to reduce energy consumption. FHFA remains committed to working with federal, state, and local government agencies to develop and implement energy retrofit lending programs with appropriate underwriting guidelines and consumer protection standards. FHFA will also continue to encourage the establishment of energy efficiency standards to support such programs.

###

The Federal Housing Finance Agency regulates Fannie Mae, Freddie Mac and the 12 Federal Home Loan Banks. These government-sponsored enterprises provide more than $5.9 trillion in funding for the U.S. mortgage markets and financial institutions.

2/08/11 Presentation by Office of Management and Budget: Standardized Way to Collect Data on Energy Consumption And Costs

<TARGET><BILL></BILL><SUBJECT>2-08-11 Presentation by Office of Management and Budget Standardized Way to Collect Data on Energy Consumption And Costs</SUBJECT><COMM>HENE27</COMM></TARGET>

January 31, 2011

SB220 Alaska Sustainable Energy Act

Requirement of SB220, Sec. 39.

OFFICE OF MANAGEMENT AND BUDGET. Not later than January 31, 2011, the office of management and budget shall develop a standardized methodology to collect and store energy consumption and expense data as described in AS 37.07.040(12), as enacted by sec. 11 of this Act.

Standardized Methodology to Collect and Store Energy Consumption and Expense Data

A standardized methodology to collect and store energy consumption and expense data for the State of Alaska was developed in collaboration with the Office of Management and Budget (OMB), Department of Transportation and Public Facilities (DOT/PF), and Alaska Housing Finance Corporation (AHFC).

The State of Alaska's facilities energy cost and consumption data will be collected and stored in a new web-based module in AHFC's Alaska Retrofit Information System (ARIS). The new module is in the final stages of development and will soon allow state employees to access the system via the internet. ARRA energy funds will pay for the estimated $42,000 development cost.

State facility users will be able to enter basic data about their buildings directly into the new module. The data will include electrical and other space and water heating fuel costs and usage, and demand charges. Also included will be size, type of building, occupancy, schedule, facility owner, contact, and other data. The system's reporting function will summarize data by such features as building, building type, energy usage history, and geographic locations, allowing for setting base lines for energy consumption, prioritizing energy efficiency retrofit opportunities, and managing State facility energy costs.

The collaboration between OMB, DOT/PF, and AHFC will continue as the system is implemented. OMB will work with state agencies to begin the process of data entry. DOT/PF will monitor the data system to ensure energy cost and consumption data are being entered correctly and will query the system to assist in managing energy consumption. AHFC will act as the contact for technical information regarding the new system.

Key Contacts:
OMB – Craig Kahklen, 465-3559
DOTPF – Joel St. Aubin, 269-0823
AHFC – Scott Waterman, 330-8195

2/10/11 Presentation by Cold Climate Housing Research Center: Alaska Energy Efficiency Policy

<TARGET><BILL></BILL><SUBJECT>2-10-11 Presentation by Cold Climate Housing Research Center Alaska Energy Efficiency Policy</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska Energy Efficiency Policy

Dr. John N. Davies
Senior Researcher – Energy Policy
Cold Climate Housing Research Center

presentation to the

House Special Committee on Energy
February 10, 2011
Alaska State Capitol

CCHRC
COLD CLIMATE HOUSING RESEARCH CENTER

Presentation Outline

- 2008 Study and Report to Legislature
- 2008 Results - SB 289/330
- 2010 Results - HB 306 & SB 220
- Current Recommendations

Alaska Energy Efficiency Program & Policy Recommendations

Project managed by:
Cold Climate Housing Research Center

Project funded by:
Alaska Energy Authority
Alaska Housing Finance Corporation

Project staffed by:
Information Insights

CCHRC COLD CLIMATE HOUSING RESEARCH CENTER · Alaska Housing FINANCE CORPORATION · ALASKA ENERGY AUTHORITY · information insights



Energy Efficiency Edge

We can do it now!

Same output for less input

Efficiency relies on advancing *technologies, which are becoming more plentiful, rather than fossil fuels, which are being depleted*

Saving energy usually *costs less than buying it*

Pollution and CO_2 reduction



The 2008 Project

- Literature review: Alaska energy programs (current and past)
- Key informant interviews: Alaska energy programs (expert perspectives)
- Literature review: best practices (US, Canada, other northern counties – Rocky Mountain Institute)
- Energy efficiency work session (January 16, 2008, about 30 professionals)



The 2008 Project

- Data collection and cleaning
- Interim recommendations for adoption 2008 legislative session
- Extensive feedback from 20+ energy and policy professionals
- Final recommendations

Best practices – policy mandates

	Policy Description	States
Building energy codes	Require a minimum level of efficiency from new construction of residential and commercial buildings. Build a trigger into the code so that it is frequently updated.	39 states
Appliance standards	Minimum efficiency standards for certain appliances. Federal appliance standards preempt state standard, but states may petition the feds for exemption.	12 states so far
EE Funding	There are a few kinds of efficiency funding including public benefits funds and mandatory utility spending on efficiency	Majority of states spend more than $0.50/person
EE in State facilities	Building, transportation or other energy standards set for public vehicles, buildings and other purchasing habits.	36 states

Best practices – finance & incentives

	Policy Description	States
Tax incentives	Tax credits, reductions on property or sales tax for purchase of specific equipment, tax deductions, etc.	Many states
PAYS	A third party, or utility, purchases efficient or distributed renewable energy property upfront and customers finance cost with on-bill payments using the energy savings.	Many states
Revolving loan fund	A fund that provides money for a specified purpose, here, energy efficiency. The fund is generally capitalized with dollars that do not need to be repaid. Loan repayment creates funds for additional projects.	AR, CT, ME, MD, MN, MS, OK, AL
Incentives	Fast track permitting, building envelope incentives, allowing agencies to keep money saved from reducing energy bills,	Hawaii has best program

Best practices – utility regulation

	Policy Description	States
Acquisition of cost-effective EE	Using the total resource cost test, utilities acquire all cost-effective energy efficiency	At least 25 states
Align utility incentives equally	Often, utility incentive programs do not align the utility's profits equally with supply and demand resources. Examples of this includes, decoupling, lost revenues, and performance incentives.	At least nine states
Align rate payers with efficiency	Create a rate structure that rewards efficiency, such as a tiered rate system with a lower rate for less consumption. I.e. critical peak pricing and time-of-use pricing	AZ, CA, CT, VT
Systems benefit fund	A non by-passable charge on a electric or gas utility bill that is used placed into a fund to be used for energy efficiency initiatives.	At least 20 states

Best practices – education opportunities

	Policy Description	States
Consumer education	Ongoing consumer education about energy efficiency and/or renewable energy	Many states and utilities
Contractor, architect engineer education	Education for contractors, architects, and engineers to promote energy efficient building techniques.	Green advantage nationwide
School curriculum	Including curriculum in schools that informs students about the value of energy efficiency.	At least eight schools Utility: GRU, BPA, PGE DoE has lesson plans

2008 Recommendations Presented in Nine Categories:

- State Leadership
- Funding Energy Efficiency
- Public Education and Outreach
- Baseline Data
- Existing Residential Buildings
- New Residential Construction
- Existing Commercial Buildings
- New Commercial Construction
- Public Buildings

State Leadership

1. The Governor should articulate an energy efficiency vision for Alaska.
2. The Governor should designate a sub-cabinet for State end-use efficiency programs.



Funding Energy Efficiency

1. The state should fund energy efficiency programs through legislative appropriation.
2. The RCA should implement a System Benefit Charge to support end-use efficiency programs,
3. The state should capitalize an end-use efficiency endowment to support end-use efficiency programs.
4. The state should offer matching grants to local governments interested in creating a local energy plan that incorporates energy efficiency and conservation.



Public Education and Outreach

1. The Legislature should fund a comprehensive public awareness campaign with at least $1,000,000 per year.



Baseline Data

1. The Alaska Housing Finance Corporation and Alaska Energy Authority should conduct an end-use survey of residential and commercial energy consumers.
2. The Alaska Energy Authority should establish and report an Energy Use Index (EUI) for all public buildings.



Existing Residential Buildings

1. The Legislature should significantly increase funding for Low-income Weatherization.
2. AHFC should create a certification and training program for energy retrofit and energy efficient new construction.
3. AHFC should subsidize up to 100 percent of costs for home energy audits for households not eligible for low-income weatherization, and offer low-interest loans for energy conservation improvements.
4. The Legislature should fund a pilot Smart Meter program through AHFC/AEA.



New Residential Construction

1. The Legislature should adopt BEES as the new state residential energy efficiency building code.
2. The State Division of Corporations, Businesses, and Professional Licensing should enforce regulations on building codes and contractor licensing to ensure quality and energy efficiency.



Existing Commercial Buildings

1. The AEA should subsidize energy audits for commercial facilities and offer loans for energy efficiency improvements.
2. The RCA should require utilities to implement Pay As You Save loan programs.



New Commercial Construction

1. AEA should contract for a stakeholder process to develop a commercial energy efficiency building code.



Public Buildings

1. The Governor should direct each state agency to reduce energy consumption in its facilities by 20 percent from 2000 levels by 2020.
2. The Board of Regents should direct the university to reduce energy consumption in its facilities by 20 percent from 2000 levels by 2020.
3. The Legislature should fund an energy audit for every school in the state.
4. The state should fund AEA to revive the Institutional Conservation Program to offer public K-12 schools energy conservation matching grants.
5. The Alaska Energy Authority should establish a low-interest loan program for public facilities to make energy efficiency improvements, with payments geared to projected savings.



Status in 2009

Legislative funding

- Weatherization - $200 million
- Rebate - $160 million
- RE - $100 million

Market driven conservation in rural AK

Broad awareness of energy issues

Supply side solutions dominate

Stimulus Bill had been signed

2009 Recommendations

- Adopt Statewide Building Code with energy conservation code
- Adopt Public Buildings Energy Standard and retrofit programs, including schools and UA
- Create R&D fund for renewables
- Sustainable Northern Communities

Statewide Building Code
(Energy Conservation Code)

- Number One Recommendation of Experts Panel
- Needed by AHFC
- Supported by ASHBA
- "Required" by Stimulus bill for SEP grants
  (Section 410: states must plan to have 90% of new construction meet IECC 2009 by 2017)

SEP Grant Requirements

Governor letter to Sec. of Energy:

- Utility Consumer Energy Efficiency Policy
- Adopt Residential & Commercial Energy Conservation Codes/Standards
- Prioritize SEP grants to EE and RE programs



Sustainable Northern Communities

A Program to:

- Use current oil wealth to transition to an economy based on renewable energy
- Use "Integrated Design Process" to develop plan for each community
- "Whole Village Retrofit" – plan energy efficiency and supply together
- Include food production as part of energy plan (green houses to use "waste heat")



House Bill 306 (2010) Establishing a State Energy Policy

Legislative Intent for Alaska State

- 15% increase in EE (per capita) between 2010 and 2020
- 50% of electric generation from RE and AE sources by 2025
- Reliable in-state gas supply
- Power Project Fund for energy projects
- Continue petroleum and natural gas production
- Become a leader in RE and AE development



House Bill 306 (2010) Establishing a State Energy Policy

Policy Preamble

Prosperity dependent on available, reliable, and affordable energy

Supply and demand for fossil fuels and concerns about climate change will affect the price of fossil fuels in Alaska and exported from the state to other markets

In establishing a state energy policy, the state recognizes the immense diversity of the state's geography, cultures, and resource availability



House Bill 306 (2010) State Energy Policy

I. Support energy efficiency and conservation by

(A) Encouraging statewide energy efficiency codes

(B) Decreasing public building energy consumption

(C) Supporting a public education program on EE and RE



House Bill 306 (2010) State Energy Policy

II. Encourage economic development by

(A) Developing RE and AE resources - geothermal, wind, solar, hydrokinetic, tidal, & biomass

(B) Efficient use of non-RE and AE resources - natural gas, coal, oil, gas hydrates, heavy oil, and nuclear energy

(C) Working with communities to identify and assist with development of the most cost-effective, long-term sources of energy

(D) Maintaining a fiscal regime and regulatory climate that encourage private-sector development of the state's energy resources

(E) Promoting the efficient use of energy for transportation



House Bill 306 (2010) State Energy Policy

III. Support energy research, education, and workforce development through

(A) Training and education programs that address energy conservation, efficiency, and availability

(B) Applied energy research and development of alternative and emerging technologies, including university programs



House Bill 306 (2010) State Energy Policy

IV. Coordinate governmental functions by

(A) Reviewing and streamlining regulatory processes while protecting the public interest

(B) Using one office to manage energy-related functions to avoid fragmentation and to increase effectiveness

(C) Collaborating with federal agencies to achieve the state's energy and emissions goals



Senate Bill 220 (2010) Sustainable Energy Act (1 of 3)

Alaska Energy Efficiency Revolving Loan Fund – energy efficiency improvements to public buildings

The Southeast Energy Fund – grants for energy projects

Emerging Energy Technology Fund – grants for demonstration projects

Alternative Energy Conservation Revolving Loan Fund – Alternative energy development and energy conservation improvements in public buildings

Alaska Affordable Heating Program – The *Alaska Heating Assistance Program* is renamed and the relationship to LIHEAP and new limits up to 225 and 250% of the federal poverty level are established.



Senate Bill 220 (2010) Sustainable Energy Act (2 of 3)

Public Facilities & Building Energy Use Database – ADOT/PF shall retrofit 25% of all public facilities. Retrofits and new construction shall meet ASHRAE 90.1. OMB shall develop methodology to collect building energy data.

Public Vehicles – The ADOT/PF shall convert vehicles to use alternative fuels or purchase energy efficient vehicles whenever practicable.

Nuclear Power may be considered as "alternative power." US & DEC licenses or permits are required. DEC may not issue a permit until the municipality with jurisdiction approves. Legislature designates site for facility, and shall act to protect the public health and safety.



Senate Bill 220 (2010) Sustainable Energy Act (3 of 3)

Public Education - AEA to promote EE & AE through training and public education.

State Land Leases - The cost of a state land lease with an electric utility may not be based on the amount of renewable energy produced by the utility.

Energy Codes and Standards - AHFC may provide technical assistance to municipalities related to residential and commercial building energy codes and energy efficiency standards.

Municipal Taxes - A municipality may exempt from taxation residential renewable (non-fossil or nuclear) energy systems.



Goals for 2011

- Statewide Building/Energy Conservation Code
- Utilities-based End-Use Electrical Efficiency Programs
- Statewide Transportation Energy Reduction
- Continued Workforce Development for EE, RE, and AE



Last slide

Cold Climate Housing Research Center
http://www.cchrc.org/

Alaska Housing Finance Corporation
http://www.ahfc.state.ak.us/home/index.cfm

Alaska Energy Authority
http://www.akenergy.org

Information Insights Inc.
http://www.iialaska.com

2/10/11 Presentation by Division of Public Assistance: Alaska Affordable Heating Program

<TARGET><BILL></BILL><SUBJECT>2-10-11 Presentation by Division of Public Assistance Alaska Affordable Heating Program</SUBJECT><COMM>HENE27</COMM></TARGET>

Fact Sheet

Alaska Affordable Heating Program

February 1, 2011

What is the Alaska Affordable Heating Program?

- AKAHP provides financial assistance in the form of one-time payments to heating vendors for qualified Alaskan households with incomes up to 225% of the federal poverty income guidelines. Under specific circumstances, the income limit may be increased to 250%. Payments are usually made directly to the applicant's heating and/or electric vendor(s).
- The same application is used for all state-administered heating assistance programs, regardless of funding source, to help ensure easier program access.
- The state legislature appropriated $5 million to finance the Alaska Affordable Heating Program for SFY 2011.
- Heating Assistance payments are based on a number of different factors such as dwelling type and heating source, family size and composition, income and Community Heating Points (CHP).
- Under AKAHP the Department sets a dollar value per CHP used statewide to calculate each household's heating assistance payment. The dollar value set for the CHP is based on the average price of a barrel of North Slope Crude Oil between September and February of the preceding fiscal year. During this period in FY10 the average price was $75.20 resulting in a CHP value of $140 for FY11.

Price NSC	*$75 or less*	*$75-$100*	*$100-$150*	*More than $150*
CHP Value	*$130*	*$140*	*$150*	*$165*

- SB 220 also allows the Department to use AKAHP funding to supplemental benefits to LIHEAP clients if the state does not receive enough federal funding to pay the price per community heating point as established in SB 220.
- AKAHP is currently administered by the State and seven tribal organizations: Aleutian Pribilof Island Association (APIA), Bristol Bay Native Association (BBNA), Kenaitze Indian Tribe (KIT), Kuskokwim Native Association (KNA), Orutsaramiut Native Council (ONC), Tanana Chief Conference (TCC), and Tlingit-Haida Regional Housing Authority (THRHA). The following tribes opted out of participating for various reasons: Association of Village Council Presidents (AVCP), Kodiak Area Native Association (KANA), Yakutat Tlingit Tribe (YTT) and Seldovia Village Tribe (SVT). The state administers for households served by these four organizations.

Recap of FY 2010

- In fiscal year 2010, a total of 2,618 households statewide received heating benefits through State and tribal organizations administering AKHAP, the predecessor to the Alaska Affordable Heating Program. More than half of these applicants (53%) had income between 151% and 175% of poverty level.
- 74 percent of households served through AKHAP by the State included a person who is over the age 60, under the age of 6, or disabled.
- The average AKHAP grant was $ 712 (this includes a supplemental payment).

FY 2011 Year-To-Date

- To date, 1,247 households have been served. This is a 31% increase over the 952 applicants served during the same time period in FY 2010.
- As of December 2010, the average AKAHP payment was approximately $549.
- The program year started October 1, with the first benefits issued on October 20, 2010. Applications are accepted until April 30, 2011 and can be found online at www.heatinghelp.alaska.gov. Applications are also available at local DPA offices, or can be mailed to individuals who contact the Heating Assistance Program at 1-800-470-3058.
- Tribal grant agreements have been updated to reflect changes to the former Alaska Heating Assistance Program. The tribal organizations have all received their grants and are paying out benefits to their respective applicants.

2/10/11 Presentation by Center for Energy and Power: Review of SB 220 and HB 306

<TARGET><BILL>SB 220</BILL><SUBJECT>2-10-11 Presentation by Center for Energy and Power Review of SB 220 and HB 306</SUBJECT><COMM>HENE27</COMM></TARGET>

Review of SB 220 and HB 306

ACEP
Alaska Center for Energy and Power

House Special Committee on Energy

February 10th, 2011

Gwen Holdmann, Director
Alaska Center for Energy and Power

UNIVERSITY OF ALASKA FAIRBANKS

UNIVERSITY of ALASKA
Many Traditions One Alaska

What is ACEP?

- Housed at UAF, with faculty, students and staff working throughout the state.
- Organized in 2008 to meet applied energy research needs of the state.
- Draws on energy-related expertise from throughout the University of Alaska system.



ACEP
Alaska Center for Energy and Power

Role of ACEP and the University of Alaska

- Produce energy-related information for decision makers.
- Produce students with experience in energy-related disciplines.

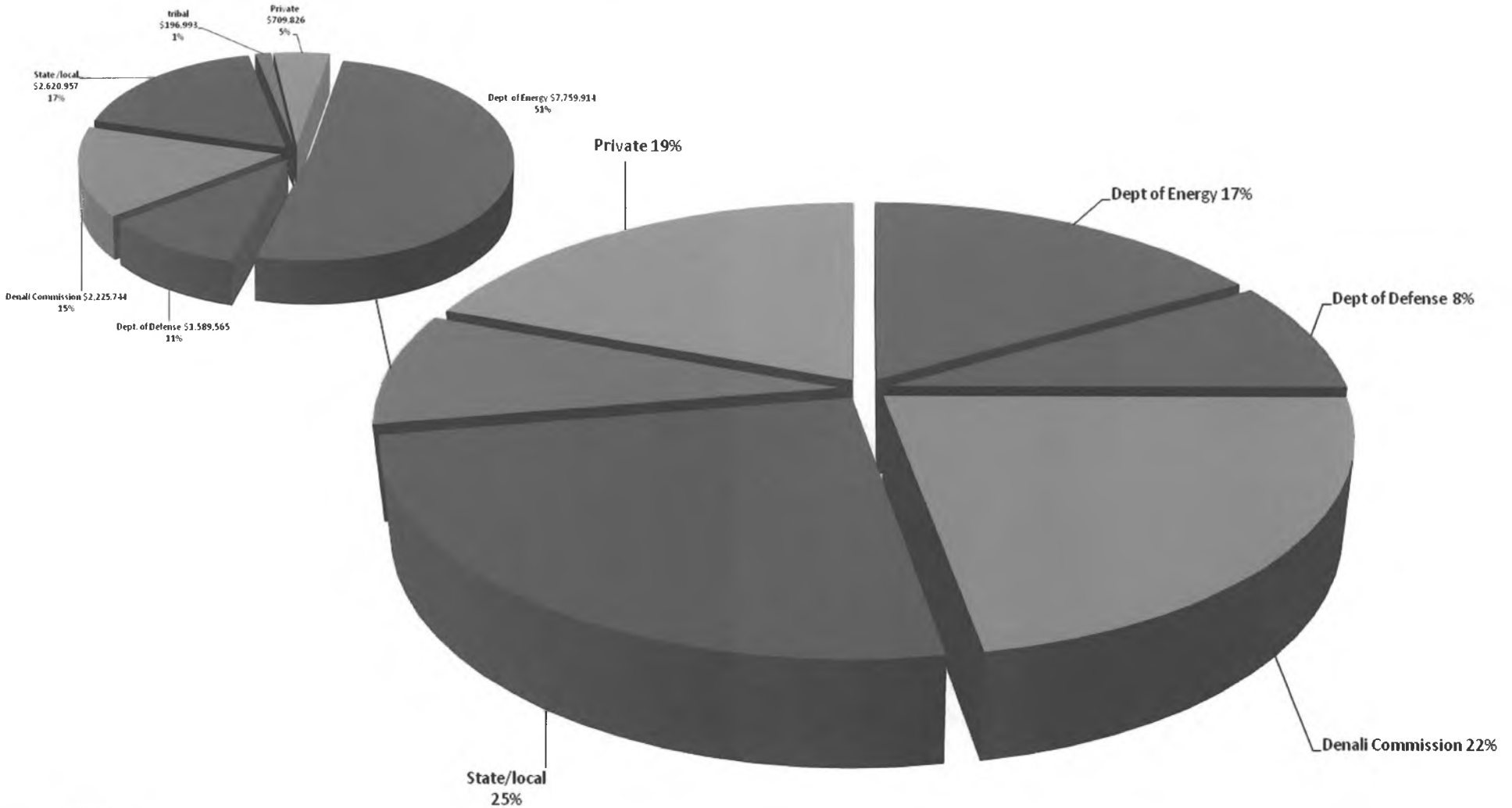






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ACEP Projects Per Funding Source



ACEP
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What did we accomplish last year?

- HB 306 formalized an overarching energy policy for the State of Alaska, included input from a wide range of stakeholders led by former committee chairs Rep. Edgmon and Rep. Millet.
- SB 220 was a first step in implementing many of these policies – energy 'omnibus' bill.

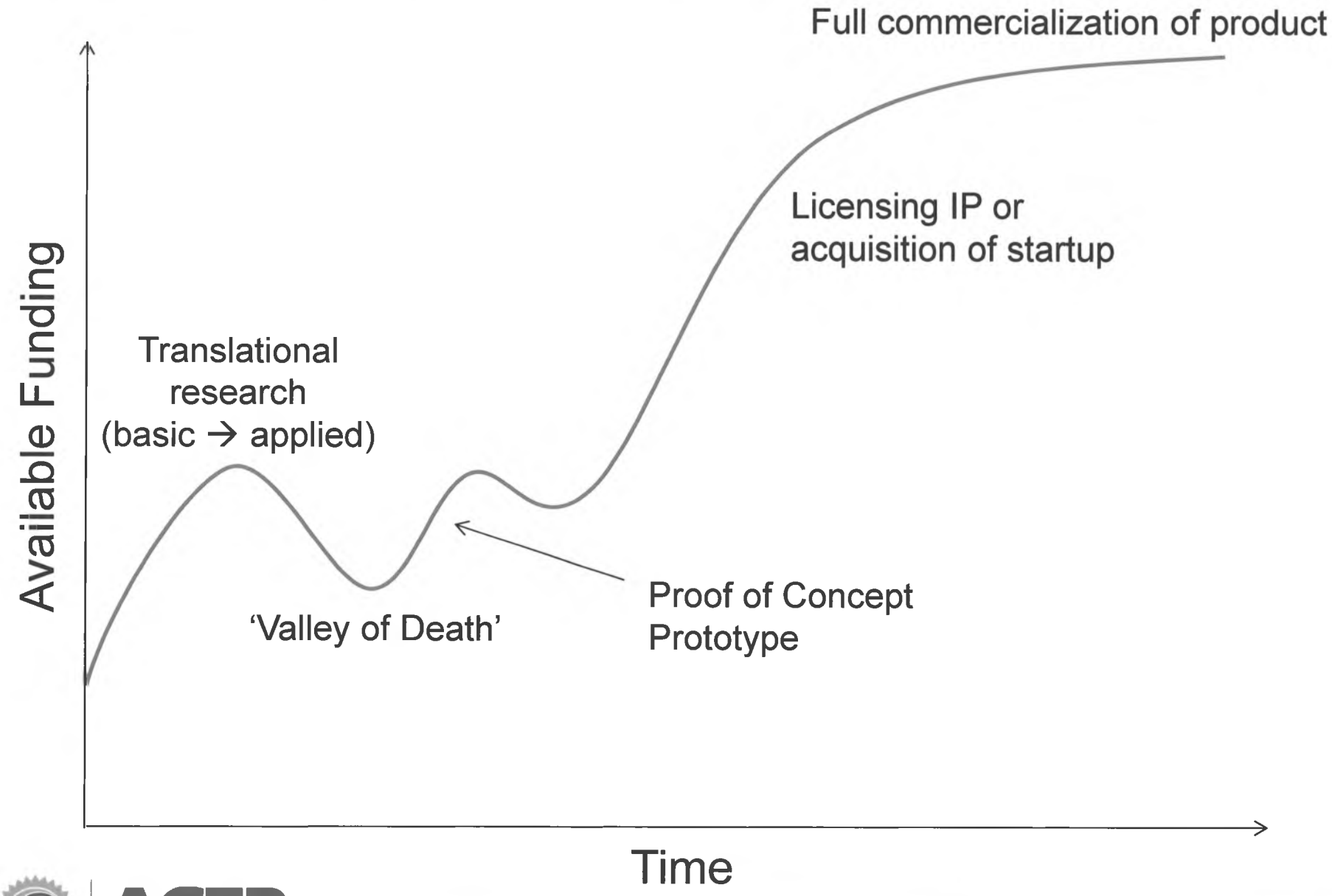
Where are we now?

- Many major energy-related agenda items for this session (oil tax structure, future of gas pipeline, Susitna, Cook Inlet gas supply)
- Need to continue to keep an eye on how SB 220 is implemented, what still needs to be addressed from HB 306, and other areas not covered.

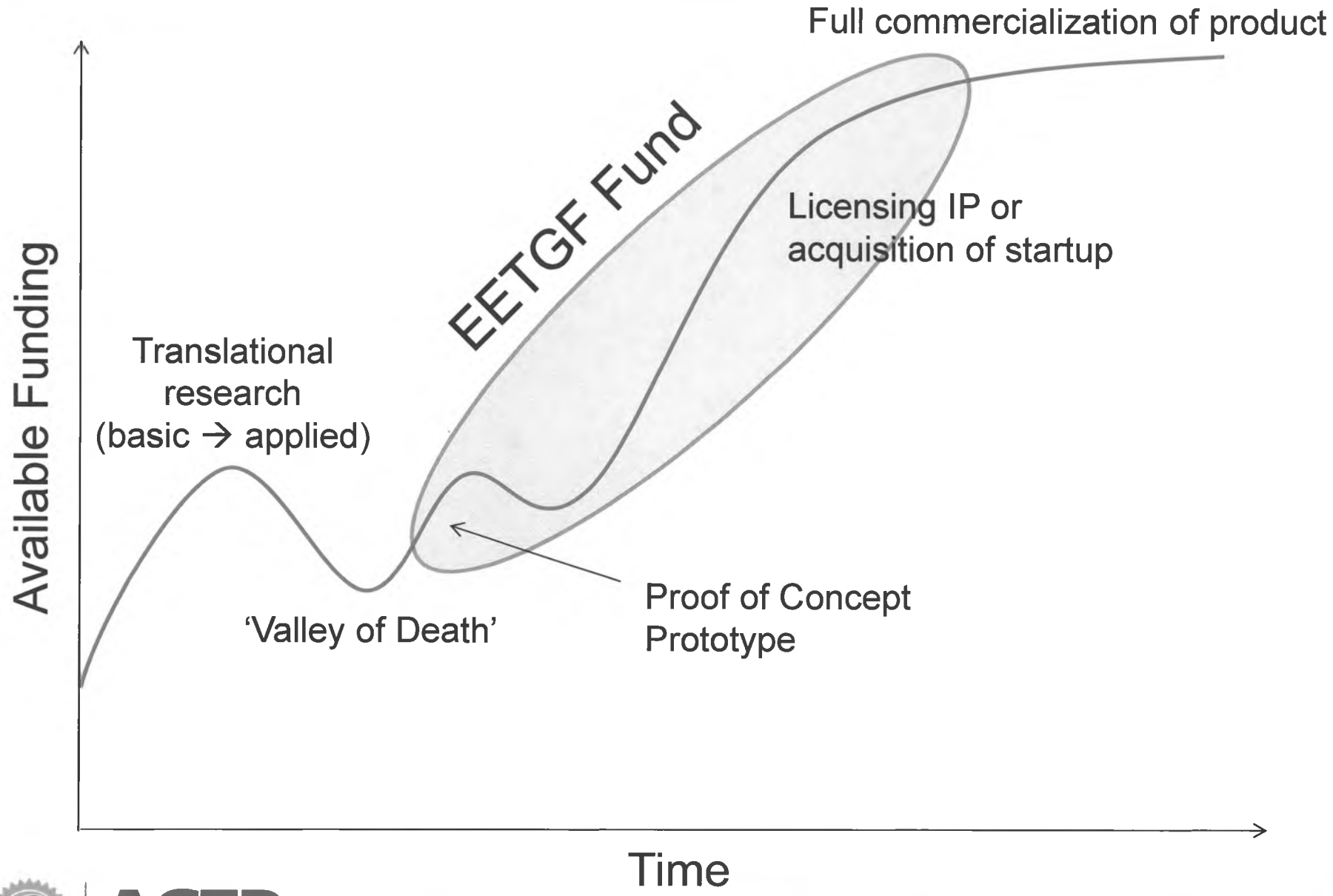
Emerging Energy Technology Grant Fund

- 'Round zero' pilot project a partnership between Denali Commission and ACEP
- 'Round 1' authorized through SB 220 and will be managed through AEA
- Round 1 first stage proposals due by March 2nd
- Round zero projects (11 total) all moving forward largely on time and budget

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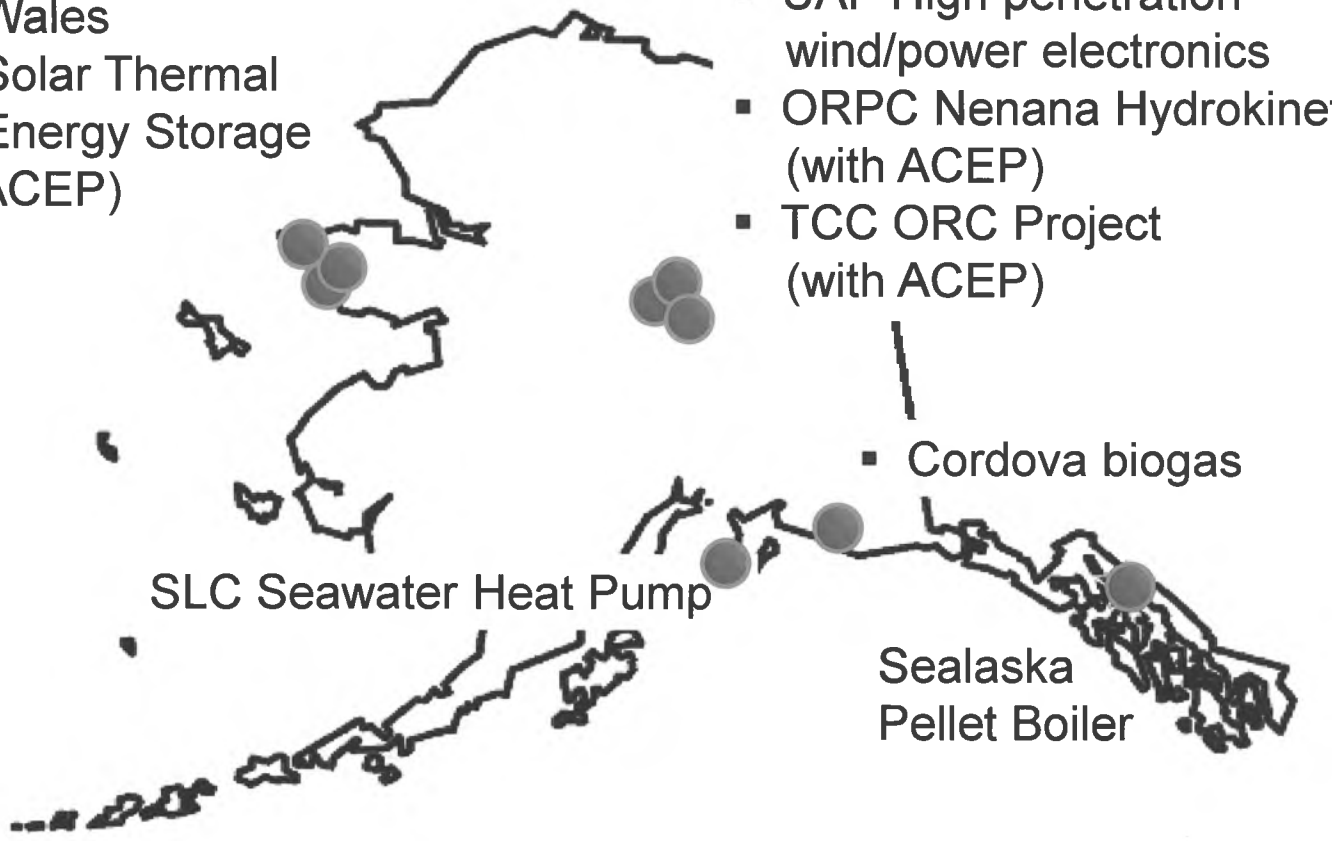


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EETGF 'Round 0' Funded Projects

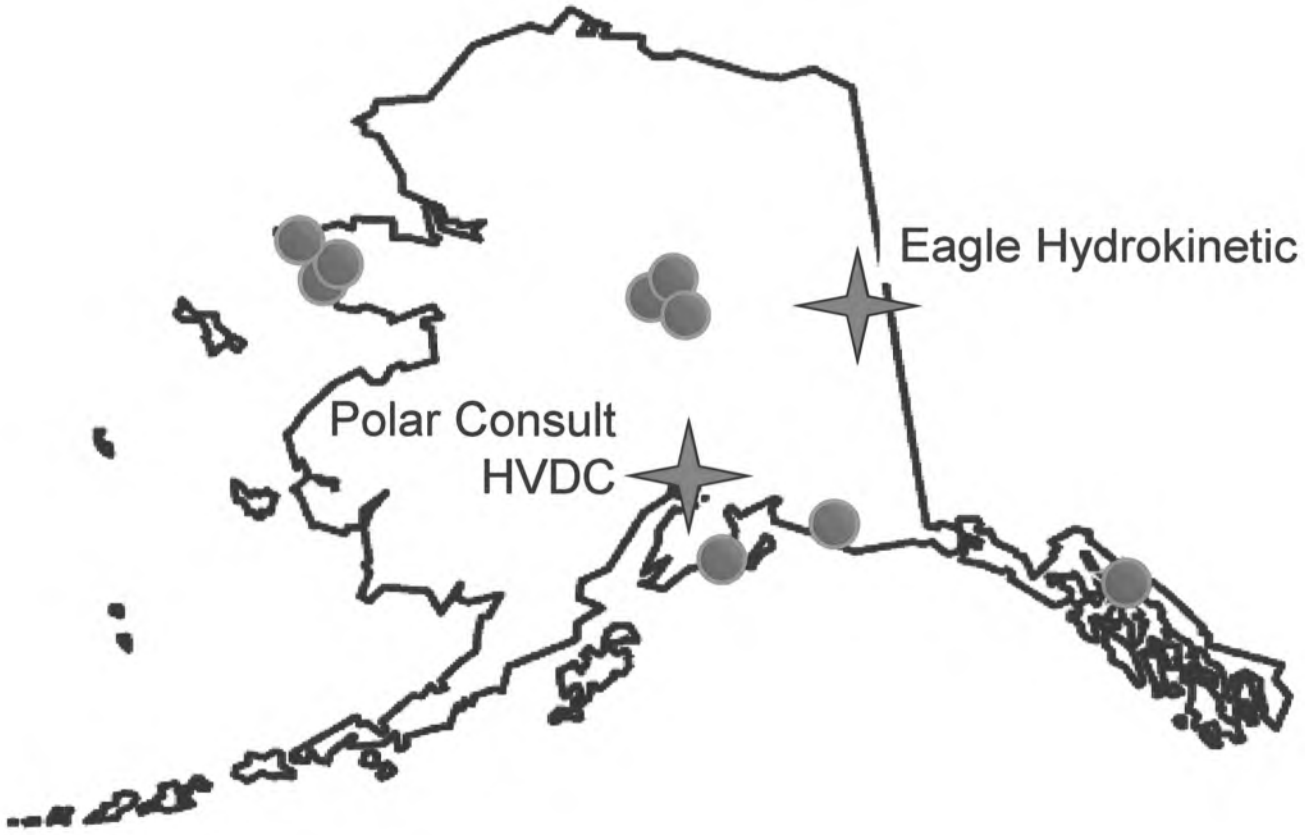
- KEA Wales
- KEA Solar Thermal
- KEA Energy Storage (with ACEP)

- UAF High penetration wind/power electronics
- ORPC Nenana Hydrokinetic (with ACEP)
- TCC ORC Project (with ACEP)



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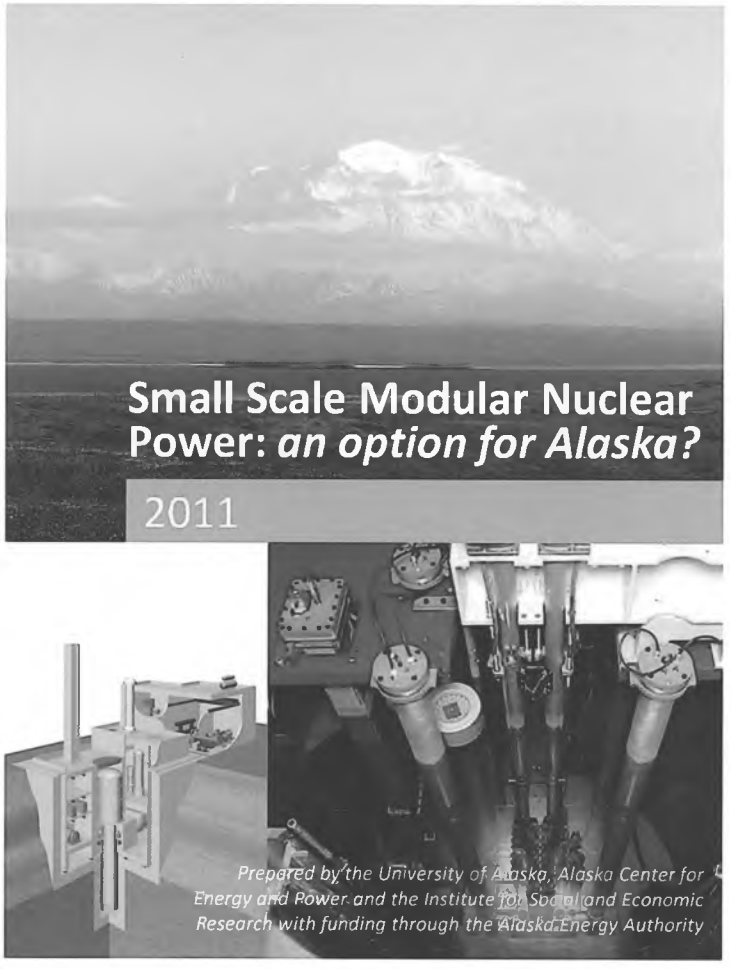
EETGF 'Round 0' Funded Projects



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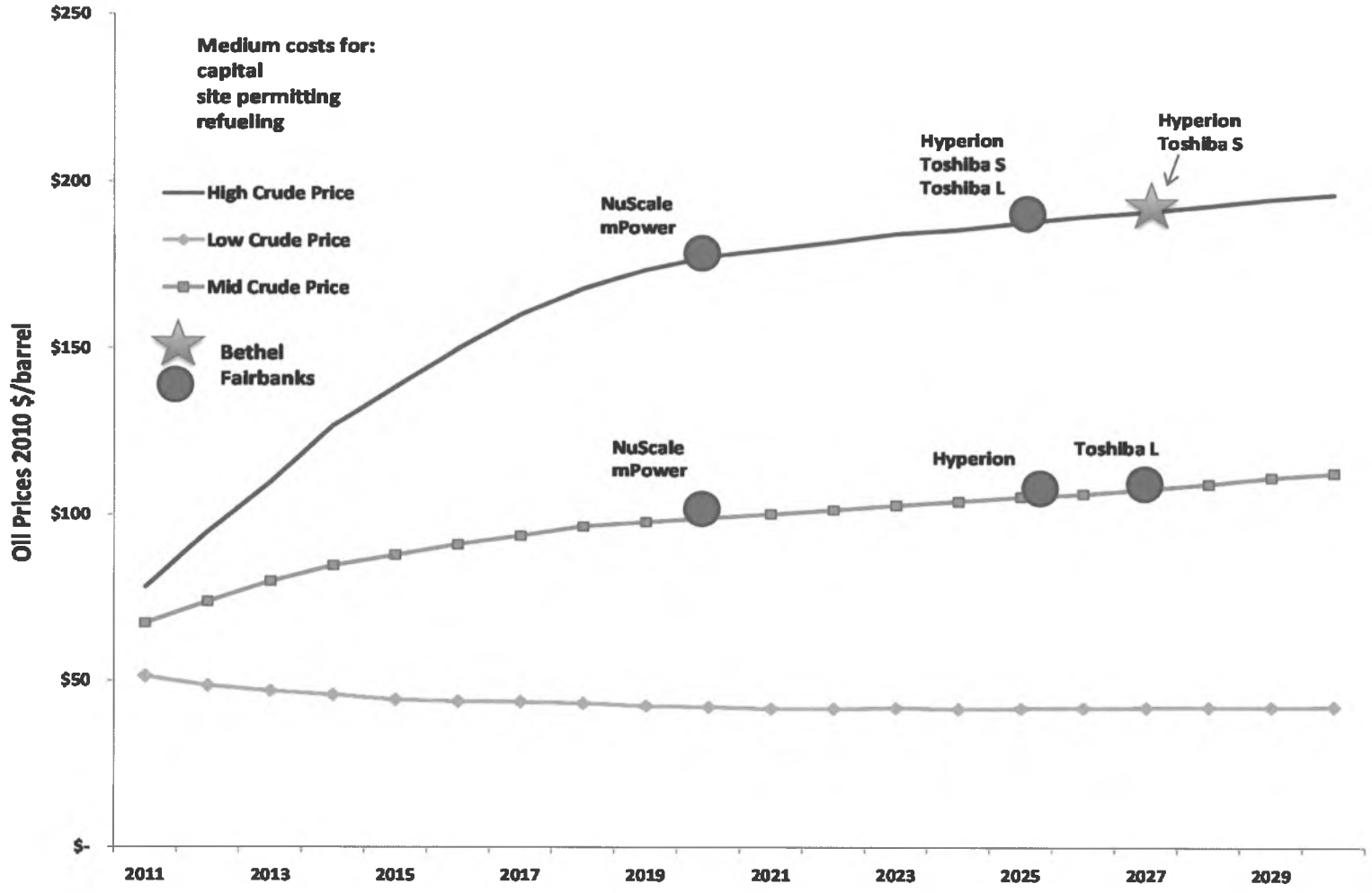
Consideration of Nuclear Energy for AK

- Interest spurred through SB 220
- Report will be released in draft form in 2 weeks



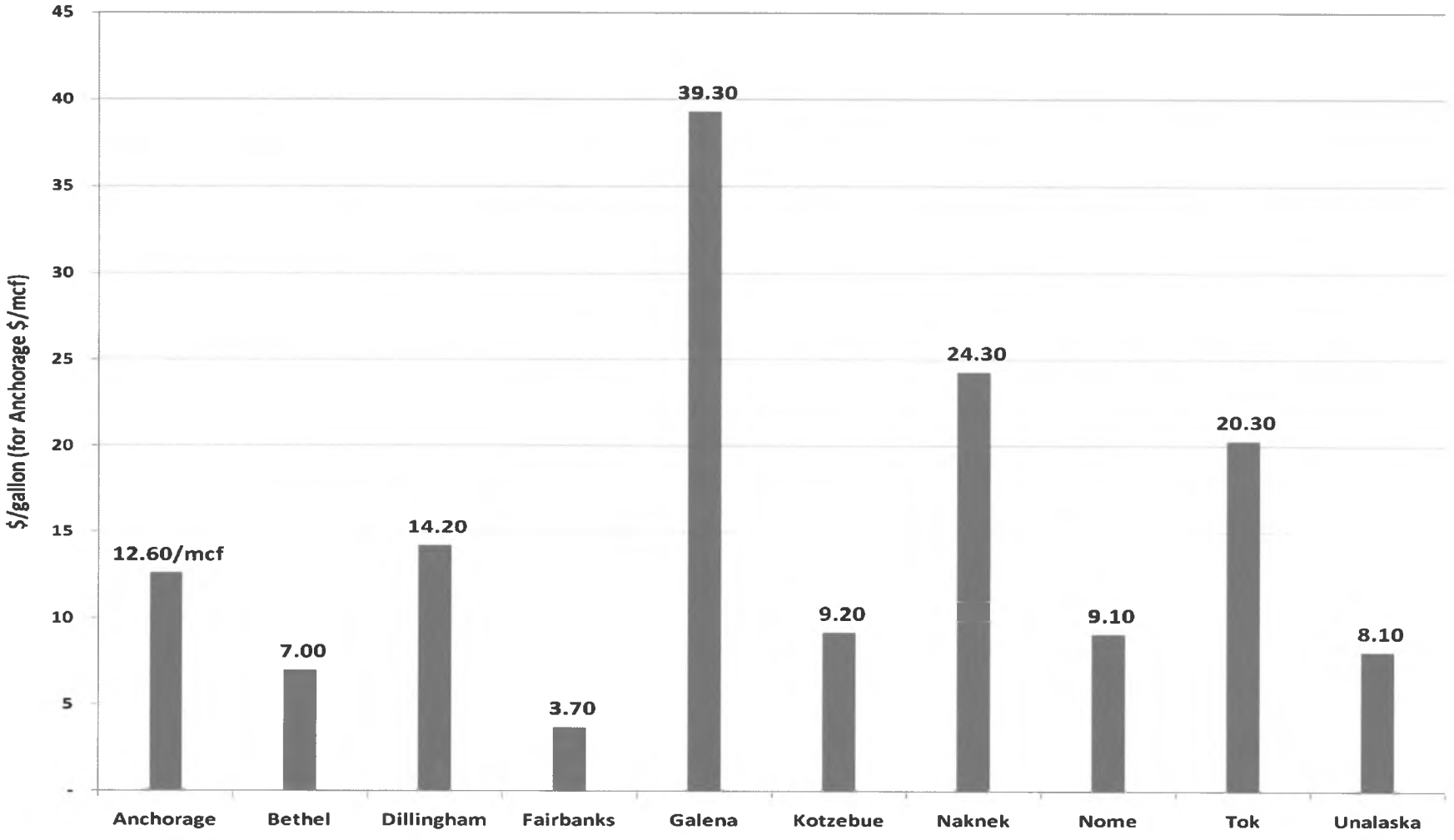
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Consideration of Nuclear Energy for AK



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When could SMR technology become viable?



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Future work?

- PCE Overhaul
- Renewable Energy Fund
  (add complimentary loan program?)
- Follow through on HB 306 policy recommendations:

  'It is the intent of the legislature that the state remain a leader in petroleum and natural gas production and become a leader in renewable and alternative energy development.'

  'The state should invest in applied energy research and development of alternative and emerging technologies, including university programs, to achieve reductions in state energy costs and stimulate industry investment in the state.'



ACEP
Alaska Center for Energy and Power

ACEP $250k Budget Request for FY12

- In Univ. of Alaska Board of Reagents budget
- Would provide funding for critical initiatives such as: addressing rural energy issues, the Wind Diesel Applications Center (WiDAC), and the Alaska Hydrokinetic Energy Research Center (AHERC)
- ACEP currently manages 30 active research projects totaling $15M

ACEP
Alaska Center for Energy and Power

For more information visit:

www.uaf.edu/acep



ACEP

2/10/11 Presentation by Alaska Power Association: Initiatives For Alaska's Energy Security

<TARGET><BILL></BILL><SUBJECT>2-10-11 Presentation by Alaska Power Association Initiatives For Alaska's Energy Security</SUBJECT><COMM>HENE27</COMM></TARGET>

Initiatives for Alaska's Energy Security

Prepared by the Alaska Power Association Managers Forum

2011 Legislative Session

Alaska's economic base is critically dependent upon energy. The export of energy is the most crucial element of State revenues, and local energy costs have dramatic impacts upon the success of local economies and the very sustainability of communities.

As North Slope oil production slows and revenues decline, the state's economic future will become more dependent on vibrant local economies. Reasonable energy cost and supply is a cornerstone of local industry, business, and household budgets. The Governor and Alaska State Legislature have worked hard at identifying and responding to the energy challenges of the last two years. Completion of an energy policy for Alaska was a notable achievement. Cooperation among the Railbelt electric utilities to form a G&T was also a milestone. It is critical to build on these successes and maintain statewide energy issues as a priority.

To adequately address the energy issues that continue to challenge Alaska's future, the Alaska Power Association urges Governor Sean Parnell and the Alaska State Legislature to continue to support immediate actions and long-term solutions to set the course for a reliable, affordable, and secure energy future for all Alaskans.

Alaska Power Association's member electric utilities recommend the following State actions:

Energy Initiatives

- Develop an implementation plan for Alaska's energy policy
- Develop large-scale hydroelectricity for the Railbelt and develop renewable energy resources – hydro, geothermal, and wind – for other regions of the state.
- Encourage the development of a Cook Inlet Gas Management Plan for continued gas delivery to Southcentral Alaska
- Fund the Renewable Energy Fund and the Power Project Loan Fund
- Fully fund the Power Cost Equalization Program
- Develop policy and legislation that expands funding for energy efficiency and conservation activities

(The initiatives are not listed in order of priority.)

Members

Alaska Electric and Energy Co-op
Alaska Electric Light & Power
Alaska Power & Telephone
Alaska Railbelt Energy Authority JAA
Alaska Village Electric Cooperative
Anchorage Municipal Light & Power
Aurora Energy
Barrow Utilities & Electric Co-op
Chugach Electric Association
Copper Valley Electric Association
Copper Valley Telephone Co-op
Cordova Electric Cooperative
Doyon Utilities
City of Galena
Golden Valley Electric Association
Homer Electric Association
INN Electric Cooperative
Inside Passage Electric Co-op
Kodiak Electric Association
Kotzebue Electric Association
Kwaan Electric Transmission Intertie Cooperative
Matanuska Electric Association
McGrath Light and Power
Metlakatla Power & Light
Middle Kuskokwim Electric Co-op
Naknek Electric Association
Nome Joint Utility System
North Slope Borough
Nushagak Cooperative
OTZ Telephone Cooperative
City of Seward, Light & Power
Southeast Alaska Power Agency
Tanalian Electric Cooperative
Tanana Power Company
TDX Power
Unalakleet Valley Electric Co-op
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alaskapower.org

2/10/11 Testimony of Hannah Gustafson, Renewable Energy Alaska Project

<TARGET><BILL></BILL><SUBJECT>2-10-11 Testimony of Hannah Gustafson, Renewable Energy Alaska Project</SUBJECT><COMM>HENE27</COMM></TARGET>

Testimony of Hannah Gustafson of the Renewable Energy Alaska Project to the House Special Committee on Energy
Thursday, 10 February 2011

Thank you Mr. Chair. For the record my name is Hannah Gustafson and I am the Deputy Director of Renewable Energy Alaska Project (REAP).

REAP is a coalition of over 70 Alaska electric utilities, businesses, consumer groups, conservation groups, Alaska Native organizations and local, state and federal entities that share the goals of increasing the production of renewable energy and promoting energy efficiency in Alaska.

REAP would like to thank both Co-Chairs and other members of the Committee for this opportunity to testify on SB 220 today.

The work of the legislature last year to pass House Bill 306 provided a landmark from which Alaska can move forward. This state is blessed with some of the best renewable and non-renewable energy resources in the world. Renewable energy, in particular, provides a hedge against the inevitable rise in fossil fuel prices that we will see in the coming decades. HB 306 has set ambitious, but attainable, goals for the state and SB 220 contains the beginning steps to meet those goals. Though it has been less than a year since its passage, REAP appreciates the fact that this Committee is committed to tracking the progress of this legislation.

I am going to focus my testimony today in two areas: First I'll talk about some of the specific provisions contained in SB 220 and then I'll end my testimony by mentioning some of the issues that REAP hopes this committee will consider as this legislative session progresses.

REAP was a great proponent of the Emerging Energy Technology Fund (EETF) that was created last year with the passage of SB 220. Because the Renewable Energy Grant Fund was NOT designed to fund immature or emerging technologies REAP and many other entities including the Denali Commission, the Alaska Center for Energy and Power and the National Renewable Energy Laboratory recognized that Alaska needed a program to take advantage of the many excellent opportunities to develop emerging technologies that utilize Alaska's biomass, river current, tidal and wave resources. Grants from the Emerging Energy Technology Fund will help demonstration projects leverage private and federal monies to accelerate technology innovation in Alaska while at the same time providing ways to sustainably provide energy to the state's communities. There is actually a meeting in Juneau next Monday, February 14th with presentation from the 11 recipients funded by the Denali Commission for emerging technologies in what is considered round zero of the program, you are all encouraged to attend. The AEA administered EETF that was a part of SB 220 is moving forward with an RFA that is currently on the street, as was mentioned by Ms. Holdmann and Ms. Enkvist, and REAP is hopeful that the legislature will commit funding to the program again this year.

REAP would like to thank the legislature for its commitment to energy efficiency measures and programs over the last several years. Since the appropriation of $360 million for home weatherization and rebate programs in 2008, this body has clearly recognized that efficiency measures result in much quicker paybacks than investments in generation resources. The legislature added to the state's energy efficiency commitment last year with the passage of SB 220. Sections 9 and 42 created the new $250 million revolving loan program for retrofitting public buildings that will help the state meet the mandate established in section 17. This mandate calls for the state to retrofit 25% of its buildings by 2020. REAP is currently working closely with AHFC to educate public building owners about the program which is important both because it will bring energy savings to the state, and because it is an innovative way to leverage state funds that the State could potentially use to finance other energy infrastructure projects.

Sections 20-28 of SB 220 deal with energy efficiency loans for commercial businesses and to date, no funds have been appropriated for this program. This is an important program that still needs attention and I was pleased to learn in Tuesday's presentation by Sara Fisher-Goad that AEA is working with the Department of Commerce to address this area.

That brings me to the last point regarding SB 220 that I would like to briefly address. There are several provisions in the bill that call for state agencies to collect data and/or provide technical assistance. These include Section 11, which requires the Office of Management and Budget to work with various agencies to collect and store energy consumption data, Section 16 which asks DOT to consider converting its fleet to alternative fueled vehicles, Section 43 which requires the Department of Revenue to make recommendations on the feasibility of a municipal energy improvements program and section 40, which requires the Governor's office to submit a report to the legislature that describes current energy programs and make recommendations on how best to structure and coordinate those programs. All of these efforts are important and I was pleased to hear status updates from the various agencies during Tuesday's committee meeting.

At this time REAP would like to make a few comments on the Governor's report that was released this past week. The report describes the state's various energy programs and makes the recommendation that an "Energy Policy Coordinator" or EPC in the Governor's office be the coordinator and mediator between various state agencies and corporations that deal with energy issues. It appears from the report that the EPC will make further recommendations about administrative structure. REAP believes such a coordinator is definitely needed. However, the consistency in application that the State of Alaska needs over the long term will require that whatever structure is deemed best be institutionalized so that it outlives individual administrations. Accordingly, REAP believes it may be beneficial for this Committee to hold informational hearings on administrative approaches that are being successfully applied in other states.

I'd like to end my testimony by mentioning some areas that REAP hopes this Committee will consider over the course of this legislative session.

Number #1, all of these energy programs and initiatives, including the ones already contained in SB 220, need adequate personnel and funding to succeed. That is why Section 40 of the bill, which refers to the Governor's report on administrative structure, is so important. If we are to meet our goals we need a long-term structure that will allow Alaska's programs to function both efficiently and without duplication of effort. Energy is the lifeblood of any economy, and designing and building a sustainable energy infrastructure that will allow Alaska to be competitive in this 21st century economy is a task that will require energy planning and implementation institutions that are fully supported by the state. If anything, we have too many energy choices in this state. A well-oiled energy administrative structure can help us understand those choices in context, and then execute on the decisions that are made.

Number #2, and related to #1, we need to develop a strategic energy focus so we can meet our goals and play to our strengths. For example, with limited resources, programs like the Renewable Energy Grant Fund may benefit from developing a strategic focus for making grants. One idea that has been discussed among the Advisory Committee is developing an RFP to develop state-of-the-art projects designed for rural applications and then asking applicants to compete for grant funds to build them. Using some of the grant money in this fashion would drive technology innovation and improvement.

Another such way to drive innovation that has been discussed is for the state to develop a production-based tax credit for renewable energy where the more energy a project generates the more the developer is rewarded with a credit on its taxes.

Finally #3, the state is going to have to keep investing money. The dollars invested in residential energy efficiency programs over the last three years are already paying dividends and more should be invested. If Alaska becomes the most energy efficient state in the nation it will in the process become one of the most attractive places for companies to invest.

The money invested through the Renewable Energy Grant Fund is also beginning to pay dividends as projects leverage private and federal dollars, get built and come on line. The Alaska Energy Authority is tracking the number of gallons of diesel that each of the projects is predicted to save over their lifetimes, and even using today's cost of fuel, those projects are projected to save communities far more in fuel costs than the state has invested.

The state should also consider developing a concurrent loan program for renewable energy projects. Indeed, HB 306 names the Power Project Loan fund as the vehicle to finance projects but that fund must be further capitalized. Particularly for large Railbelt utilities who have not seen as much of the Renewable Energy Grant Funds because of the Railbelt's comparatively lower electricity prices, low cost or zero interest loans for projects would be nearly as valuable as grants. The availability of loans and other financing mechanisms is going to be absolutely necessary to develop large-scale hydro and other large-scale renewable energy projects. The bonding mechanism that has

allowed AHFC to set up a $250 million revolving loan fund for energy efficiency retrofits for public buildings is one that could be examined for financing other projects.

The State also needs to continue to fund energy innovation programs like the Emerging Energy Technology Fund. There is literally a race around the world to find more sustainable energy systems and Alaska can use its unique situation to become a leader in such innovation. There is nowhere else in the nation that has the combination of high energy prices and abundant natural energy resources like Alaska. That combination means that while we demonstrate new technologies here we can also likely save our communities money at the same time. This program also importantly applies to heating and transportation innovations, the other two vital and often overlooked components of our energy needs.

Overall, there is a huge demand from communities across the state to diversify their energy portfolios and state assistance is going to play a very valuable role in making this happen. Energy is arguably the most important infrastructure investment we can make because without it our schools and other public infrastructure cannot function.

That concludes my testimony. Thanks again to this Committee for its efforts to help make sustainable energy for Alaskans a reality, and thanks again for the opportunity to testify today.

2/22/11 Susitna Hydroelectric Project Evaluation, March 16, 2009

<TARGET><BILL></BILL><SUBJECT>2-22-11 Susitna Hydroelectric Project Evaluation, March 16, 2009</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska Energy Authority
Estimated cost comparison from March 2009 report
vs November 2010 Preliminary Decision Document

March 2009 was an Interim Report. Costs are conceptual.
Roller Compact Concrete and Concrete faced Rockfill dams may be lower cost than embankment design.
$8.4B number in March 2009 was for the 885` high Watana Dam. The $4.5 or $4.9 (expandable) numbers are for 700` high.

	Low Watana Expand (Mar 2009) ($000)	Low Watana Expand (Nov 2009) ($000)	Difference ($000)		Low Watana Non Expand (Nov 2009) ($000)
Land and Land Rights	121,000	121,000	$ -		$ 121,000
Power Plant Structure Improvements	159,000	159,000	$ -		$ 115,000
Reservoir, Dams and tunnels	2,449,800	1,718,000	$ (731,800)	Nov used separate cost line for waterways.	$ 1,537,690
Waterways	-	677,000	$ 677,000	March has Waterways in with dam.	$ 590,000
Waterwheel, Turbines and Generators	324,700	297,000	$ (27,700)	Mar was an avg from quotes	$ 297,000
Accessory Electrcal Equipment	38,900	41,000	$ 2,100		$ 41,000
Misc Power Plant Equipment	28,500	32,000	$ 3,500		$ 21,000
Roads, Rails and Air Facilities	599,300	232,000	$ (367,300)	Removed road and bridge Devil Canyon to Watana that should not be in calc	$ 232,000
Transmission	648,374	224,000	$ (424,374)	Removed trans upgrades along intertie and substation work in Anch/Fair. Need to invest req upgrades more.	$ 224,000
Misc Equipment	9,200	16,000	$ 6,800		$ 16,000
Construction Camp	609,100	180,000	$ (429,100)	Nov est based on smaller workforce & camp const vendor feedback	$ 180,000
Mitigation	200,000		$ (200,000)	Ext hard to place a dollar on this. Left over from 1980's. Mitigation is in EE&CM in Nov Rpt	
	$ 4,987,874	$ 3,697,000	$ (1,290,874)		$ 3,374,690
Contengency (20%)	$ 997,575	$ 739,400	$ (258,175)		$ 674,938
Subtotal	$ 5,985,449	$ 4,436,400	$ (1,549,049)		$ 4,049,628
Engineering, Environmental, Const Management	$ 371,000	$ 407,000	$ 36,000		$ 371,000
Contengency (20%)	$ 74,200	$ 81,400	$ 7,200		$ 74,200
Subtotal	$ 6,430,649	$ 4,924,800	$ (1,505,849)		$ 4,494,828

Prepared by AEA 2-23-11

Susitna Hydroelectric Project

Project Evaluation

Interim Memorandum

FINAL

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March 16, 2009

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Executive Summary

A hydroelectric project on the Susitna River has been studied for more than 50 years and is again being considered by the State of Alaska as a long term source of energy. In the 1980s, the project was studied extensively and a license application was submitted to the Federal Energy Regulatory Commission (FERC). The project was cancelled in 1986 due to a variety of reasons. In 2008, the Alaska State Legislature authorized the Alaska Energy Authority (AEA) to perform an update of the project. That authorization also included an Integrated Resource Plan (IRP) to be performed by others to evaluate the ability of this project and other sources of energy to meet the long term energy demand for the Railbelt region of Alaska. Hydroelectric power is of particular interest to the IRP because it provides stable electricity rates due to renewable river flow, rather than the fluctuating rates of fossil fuel-generated electricity.

HDR was contracted by AEA to update the 1980s cost estimate, energy estimate, and schedule and to evaluate the economics of the project. This report summarizes the results of that study. Based largely on the 1986 FERC license application, the following project development alternatives have been reviewed and updated.

- **Watana.** This alternative consists of the construction of a large storage reservoir on the Susitna River at a site named Watana, with an 885-foot-high rock filled dam, and a powerhouse containing 6 turbines with a total installed capacity of 1,200 megawatts (MW).
- **Low Watana.** This alternative consists of the Watana dam constructed to a lower height of 700 feet, along with a powerhouse containing 4 turbines, with a total installed capacity of 600 MW.
- **Watana/Devil Canyon.** This alternative consists of the full-height Watana development, plus a second reservoir located downstream at a site called Devil Canyon. This downstream reservoir would re-regulate river flow and be impounded by a 646-foot-high concrete dam. The Devil Canyon powerhouse would have an installed capacity of 680 MW. After the FERC license is issued, these 2 dams and powerhouses would be constructed sequentially without delays. The combined Watana/Devil Canyon developments would have an installed capacity of 1,880 MW.
- **Staged Watana/Devil Canyon** *(low height Watana, plus Devil Canyon, plus full-height Watana).* This alternative would ultimately result in the same configuration as the previous alternative, but the Watana dam would be initially constructed to the lower height and the Watana powerhouse would only have 4 out of the 6 lower-head turbine generators installed. The Watana construction crew would demobilize and move downstream to construct the Devil Canyon dam and powerhouse, then either demobilize again, delay further construction, or return upstream to complete the Watana dam to its full height and install the remaining 2 units. The staged capacity of Watana would increase from 600 MW to 1,200 MW for a total project capacity of 1,880 MW.
- **Devil Canyon.** This alternative consists of the Devil Canyon dam, without Watana dam, with a Devil Canyon powerhouse containing 4 turbines, with a total installed capacity of 680 MW. Note that Devil Canyon was intended to be a regulating dam, paired with the

Watana reservoir. Without the larger upstream Watana reservoir, the Devil Canyon alternative would have minimal storage for providing power in winter.

Energy for each of the project alternatives was estimated. Susitna project hydrology, along with reservoir, waterway, and turbine-generator performance data were developed. Model inputs including daily flow for the period of record, reservoir capacity curves, spillway capacity, and tailwater curves were updated, based largely on the 1980's studies, license application, and amendment.

Cost estimates for each alternative were updated. These updates were based on the original 1983 FERC application, including its preliminary design, quantities and associated cost estimate, with several modifications from a 1986 license amendment. For the water-to-wire turbine-generator equipment cost estimates, budget pricing was requested directly from manufacturers. A contingency of 20 percent of direct construction costs was set, which is typical for preliminary design. Project licensing, environmental studies, engineering design and construction management, were estimated at 11 percent of direct construction costs. Cost estimates were developed using conservative assumptions and further review of existing infrastructure and industry practices may reduce costs.

The project schedule was updated to reflect changes in federal and state regulations, including several significant environmental legislation acts and modifications to the FERC licensing process. Based on the modern Integrated Licensing Process (ILP), obtaining the FERC license for Susitna is expected to require an ambitious sustained effort, with issuance of the license expected in approximately 8 years. The licensing process would involve extensive public outreach, stakeholder involvement, and coordination of fishery, botanical, wildlife, cultural resource, and other supporting studies. This approach would by necessity be much more comprehensive than the license process in the 1980's. To expedite the overall schedule to bring the project on line, environmental field studies and engineering design would be developed in parallel with the license application.

Preliminary economic analyses were also developed for each project alternative to determine the average cost of electricity per kilowatt hour. These economic analyses were based on the updated estimates of cost, energy, and schedule for each of the project alternatives, thereby identifying the economically preferred alternative. For this preliminary analysis, the following major assumptions were used to compare each alternative:

1. No inflation
2. 100 percent financing with no capital contribution by the State
3. Bond interest rate is 5 percent with a term of 50 years
4. All energy will be sold
5. Debt coverage ratio of 1.25
6. Ongoing O&M and capital expenditures costs and schedule as estimated in Section 3.3 of this report.

These assumptions provide the basis for a relative comparison between the alternatives.

The results of this study are summarized in Table 1. The Watana/Devil Canyon alternative is the most cost effective per unit of energy. The Devil Canyon alternative does not provide a stable winter energy supply although its cost per kWh is lower than the other alternatives.

Table 1 Summary

Alternative	Ultimate Capacity (MW)	Construction Cost ($billion)	Energy (billion kWh/yr)	Schedule (years)	Cost per kWh ($)	
					First 50 Years	Second 50 Years
Watana	1,200	8.4	3.1	15 – 16	0.22	0.01
Low Watana	600	6.9	2.4	14 - 15	0.20	0.01
Watana/Devil Canyon	1,880	11.7	7.2	15 - 20	0.14	0.01
Staged Watana/Devil Canyon	1,880	12.8	7.2	14 - 23	0.18	0.01
Devil Canyon	680	5.0	2.9	14-15	0.13	0.02

Hydroelectric power has many economic and environmental benefits including long-term rate stabilization. Because the cost of the water to power a hydroelectric turbine is essentially free the cost per kilowatt hour is related to the construction and maintenance costs of the dam and powerhouse facilities. As we have seen recently, the price of fossil fuels can fluctuate dramatically over time whereas the cost of hydroelectric power decreases once the initial investment has been repaid and remains low and stable for the life of the project. Consequently the economic risk associated with hydroelectric power is substantially lower than thermal power. Additionally, the life cycle carbon dioxide production of hydroelectric facilities is orders of magnitude less than thermal power plants.

1 Background

The Susitna River has its headwaters in the mountains of the Alaska Range about 90 miles south of Fairbanks. It flows generally southwards for 250 miles before discharging into Cook Inlet just west of Anchorage. Contained entirely within the south central Railbelt region, the Susitna River is situated between the two largest Alaska population centers of Anchorage and Fairbanks.

The Bureau of Reclamation first studied the Susitna River's hydroelectric potential in the early 1950s, with a subsequent review by Corps of Engineers in the 1970s. In 1980, the Alaska Power Authority (APA; now the Alaska Energy Authority) commissioned a comprehensive analysis to determine whether hydroelectric development on the Susitna River was viable. Based on those studies, the APA submitted a license application to the Federal Energy Regulatory Commission (FERC) in 1983 for the Watana/Devil Canyon project on the Susitna River. The license application was amended in 1985 for the construction of the Staged Watana/Devil Canyon project at an estimated cost of $5.9 billion (1985 dollars).

Developing a workable financing plan proved difficult for a project of this scale. When this existing difficulty was combined with the relatively low cost of gas-fired electricity in the Railbelt, the declining price of oil throughout the 1980s, and its resulting impacts upon the State budget, the Power Authority's Board of Directors terminated the project in March 1986.

At that point, the State of Alaska had appropriated approximately $227 million to the project from FY79-FY86, of which the project had expended $145 million to fund extensive field work, biological studies, and activities to support the FERC license application. Though the Power Authority concluded that project impacts were manageable, the license application was withdrawn and the project data and reports were archived to be available for reconsideration sometime in the future.

In 2008, the Alaska State Legislature, in the FY 2009 capital budget, authorized the AEA to reevaluate the Susitna Hydro Project. The authorization also included a Railbelt Integrated Resource Plan (IRP), which will evaluate various sources of electrical power to satisfy the long term energy needs for the Railbelt portion of Alaska. To date the IRP has not yet been completed.

The Susitna and other hydroelectric projects are of particular interest to the AEA and the State because hydroelectric power, unlike gas-fired electricity, is not tied to the fluctuating price of fuel, and can provide long-term rate stability, which in turn allows for long-term growth planning.

1.1 Project Scope

The scope of this new study was to collect and review pertinent information from the original studies and license application from the 1980's. Using this past work as a basis, this reevaluation estimated project energy and projects costs; developed a project schedule; and, using this

information, evaluated in 2008 dollars the economics for the development alternatives generally described in the 1983 FERC license application.

Both the initial FERC license application and this reevaluation analyzed several project alternatives:

- **Watana.** This alternative consists of the construction of a large storage reservoir on the Susitna River at a site named Watana, with a new rock filled dam 885-foot-high, with a powerhouse containing 6 turbines, with a total installed capacity of 1,200 megawatts (MW).
- **Low Watana.** This alternative consists of the Watana dam constructed to a lower height of 700 feet, along with a powerhouse containing 4 turbines, with a total installed capacity of 600 MW.
- **Watana/Devil Canyon.** This alternative consists of the full-height Watana development, plus a second reservoir located downstream to re-regulate river flow, impounded by a new 646-foot-high concrete dam, at a site named Devil Canyon. The Devil Canyon powerhouse would have an installed capacity of 680 MW. After the FERC license is issued, these 2 dams and powerhouses would be constructed sequentially without delays. The combined Watana/Devil Canyon developments would have an installed capacity of 1,880 MW.
- **Staged Watana/Devil Canyon** *(low height Watana, plus Devil Canyon, plus full-height Watana).* This alternative would be the same as the previous alternative, but the Watana dam would be initially constructed to the lower height and the Watana powerhouse would only have 4 out of the 6 lower-head turbine generators installed. The Watana construction crew would demobilize and move downstream to construct the Devil Canyon dam and powerhouse, then either demobilize again, delay further construction, or return upstream to complete the Watana dam to its full height and install the remaining 2 units. The staged capacity of Watana would increase from 600 MW to 1,200 MW for a total project capacity of 1,880 MW.
- **Devil Canyon.** This alternative consists of the Devil Canyon dam, without Watana dam, with a Devil Canyon powerhouse containing 4 turbines, with a total installed capacity of 680 MW. Note that Devil Canyon was intended to be a regulating dam, paired with the Watana reservoir. Without the larger upstream Watana reservoir, the Devil Canyon alternative would have minimal storage for providing power in winter.

A total of 7 alternatives were evaluated. Only the 5 alternatives listed above are presented in this report. A Watana alternative with 6 turbines and a Devil Canyon alternative with 6 turbines were evaluated and found to have higher construction and capital costs with only a minimal increase in energy thus resulting in higher energy costs when compared to the same alternatives with 4 turbines. Thus the 6 turbine options for these alternatives were eliminated from further consideration.

Preliminary energy, cost, and schedule estimates for the 5 analyzed alternatives are described in Sections 2 through Section 4, economic evaluation in Section 5, and regulatory and environmental issues in Section 6.

2 Preliminary Energy Estimate

2.1 Hydrologic Analysis

To develop an updated energy estimate for the Susitna hydroelectric project the existing hydrologic record was updated. At the time the original study was issued in 1983 the hydrologic record contained data from 1950 to 1981. The project team recreated that record from synthesized gage record hydrology for the Watana/Devil Canyon dam sites, transposed from raw daily flow data from United States Geological Survey (USGS) gauge 1529000 at Gold Creek using a straight drainage area proration, and found correlation between the new record and the annual average flow from the original study. Based on this hydrology, a full record was developed for the period from 1950 to 2007. The hydrology of the upper Susitna Basin is dominated by melt water from snow and glaciers in the spring and summer, and substantial freezing during the winter months. As a result, a majority of the flow occurs between mid-April and mid-October.

A review of current literature indicates a lack of consensus on the manner in which precipitation and runoff might be affected by the impacts of either natural variability and/or potential man-made global climate changes. For this report we assume that future hydrologic conditions will be similar to those of our recent past experience.

2.2 Energy Model Analysis

Energy for each of the project alternatives was estimated using Computer Hydro-Electric Operations and Planning Software (CHEOPS), a proprietary energy modeling software. Hydrology was updated in conjunction with project civil, mechanical, and electrical performance data. In addition to daily flow, model inputs included: reservoir capacity and area curves, based on the 1985 FERC amendment; tailwater curves; spillway capacity, with minimum and maximum operation; and evaporation coefficients, all based on the 1985 FERC amendment. Total reservoir evaporation was estimated between 1 and 3 inches per month in summer, with negligible evaporation during the winter when frozen.

Equipment performance was based on manufacturer data obtained in 2008 specifically for this project. Average generic turbine performance curves were then developed for the model, peaking at 95 percent range of efficiency and 92 percent at full gate. Generator performance curves were also developed, peaking at 98 percent. The six 200-MW Watana turbines were rated at a design head of 680 feet and a minimum operating head of 545 feet. The four 170-MW Devil Canyon turbines were rated at 600 feet and a minimum operating head of 450 feet.

For the Watana/Devil Canyon alternative, the target elevations from the 1985 FERC amendment were used to simulate reservoir operation. In that paired configuration, the Devil Canyon power plant provides the base load while the Watana plant is used for peaking power. Alternative scenarios were also run for the Low Watana and Watana operating without Devil Canyon. In these cases, the target elevations for the Watana reservoir were designated to maximize for

winter generation. For the Low Watana alternative, four turbine generators would be installed; each rated at about 150 MW. Other key assumptions for the model included:

- Environmental flow constraints from 1985 as a baseline, despite the fact that new environmental regulations may change requirements on minimum flow and ramping rates
- Energy demand will be sufficient to consume all the energy produced by the project
- A forced outage factor of 1.5 percent for both Devil Canyon and Watana
- Transformer losses of 2 percent of the total generation
- Sedimentation should not have a significant impact on reservoir operation, though 1985 studies indicated 12 percent of the dead storage in the Watana Reservoir will be lost due to sedimentation after 100 years of operation, and no sedimentation rates have been included in the present model
- Firm energy is based on the low water year of the 57-year hydrologic record

The resulting preliminary energy estimates are presented in Figure 2.1 and Figure 2.2 and summarized in Table 2.1. Detailed input and results of these energy analyses are provided in Appendix A.

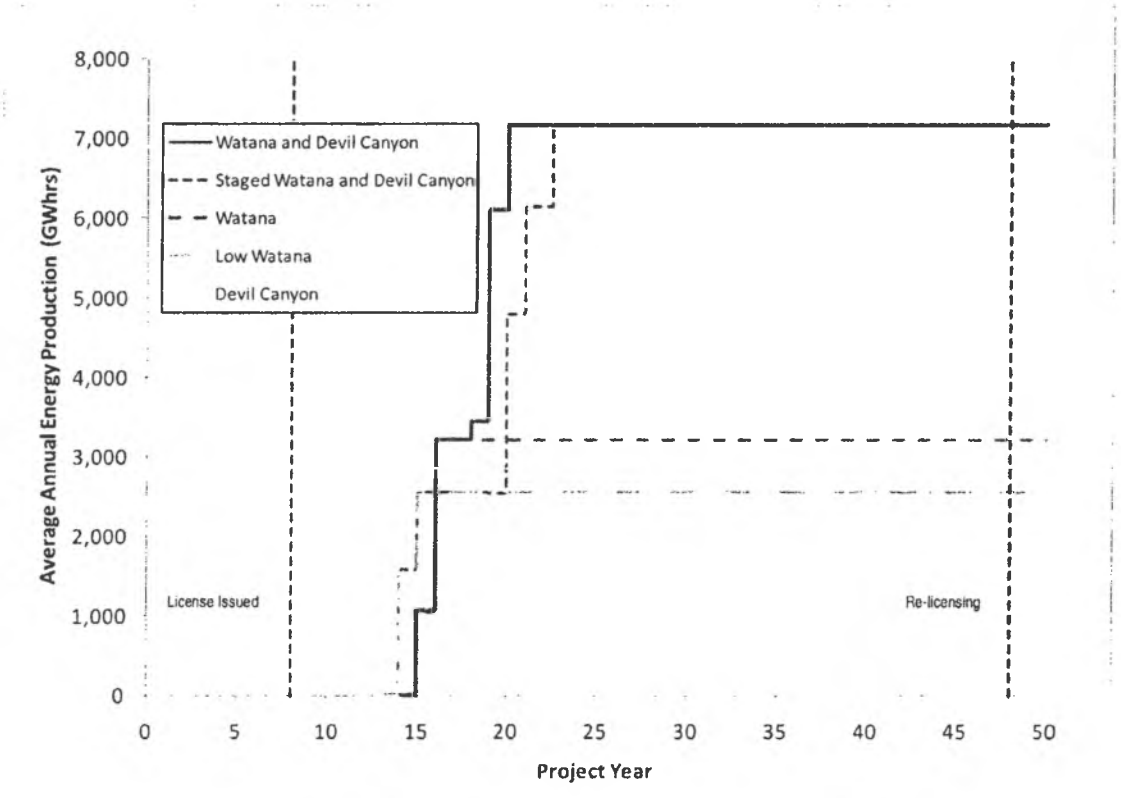


Figure 2.1 Energy Estimates for Susitna Project Alternatives

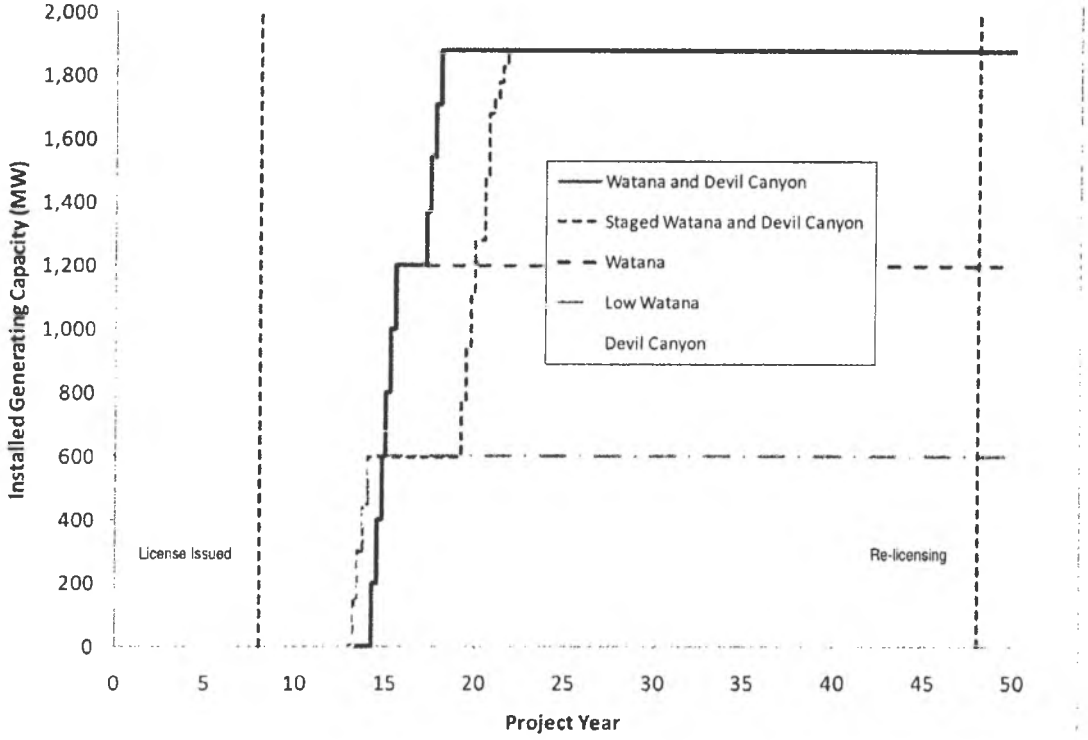


Figure 2.2 Capacity for Susitna Project Alternatives

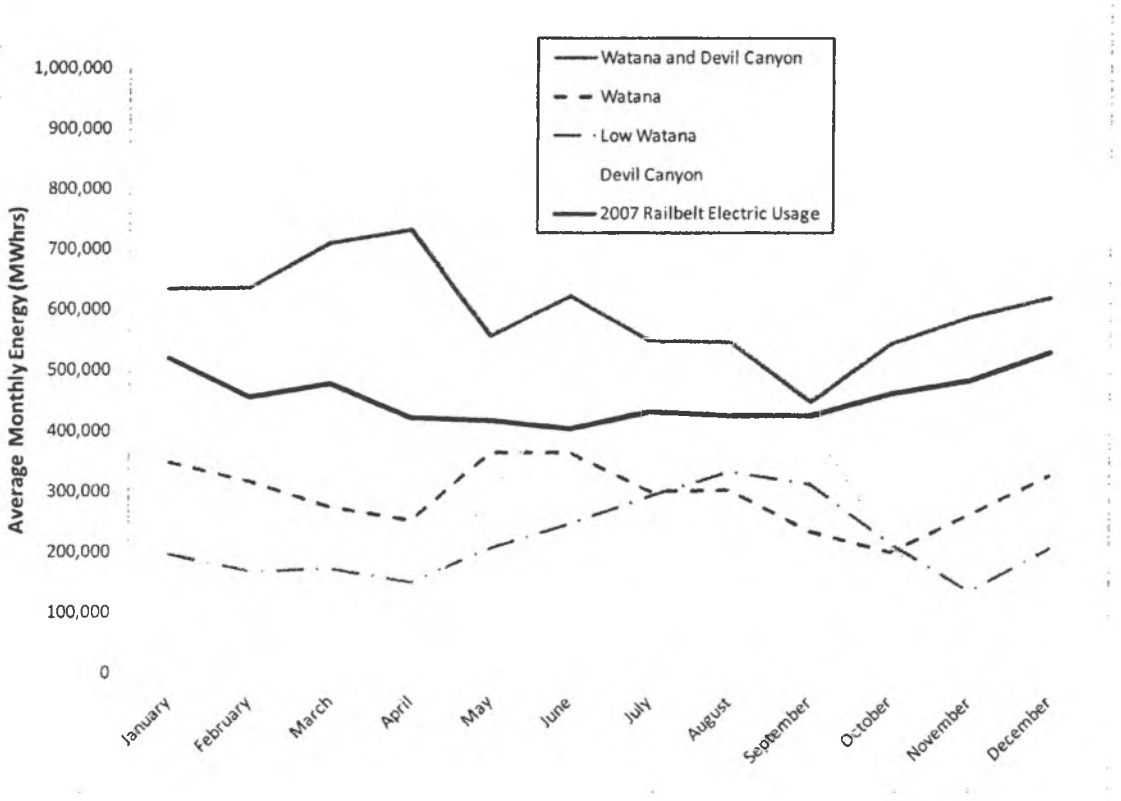
Table 2.1 Preliminary Energy Estimate

Alternative	Estimated Average Annual Energy (Billion kWh/year)	Estimated Firm Energy* (Billion kWh/year)
Watana	3.2	1.8
Low Watana	2.6	1.4
Watana/Devil Canyon	7.2	4.1
Staged Watana/Devil Canyon	7.2	4.1
Devil Canyon	2.9	2.3

*Firm energy is based on the low water year of the 57-year hydrologic record

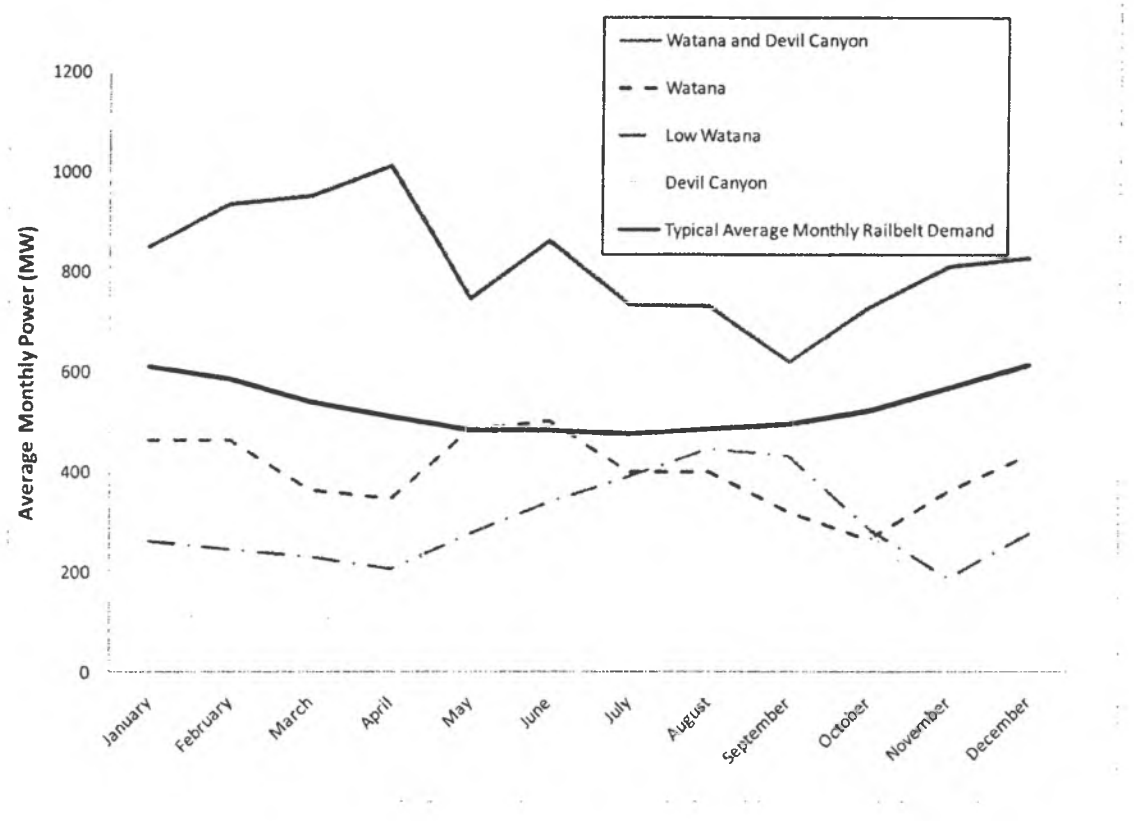
The energy production for the project alternatives will be influenced by seasonal flow variations. The Susitna development was originally designed as a cascade system to store energy for use

during the winter. The Watana reservoir provides storage capacity and peaking power with the Devil Canyon powerhouse providing base load power. This allows for water to be stored in the Watana reservoir during the spring and summer floods and run through the Devil Canyon powerhouse during the winter months. As can be seen in Figure 2.3 and Figure 2.4, the Devil Canyon reservoir alone does not provide enough storage capacity to allow for substantial energy to be generated during the winter months.



*Railbelt electricity usage obtained from the U.S. Department of Energy

Figure 2.3 Seasonal Energy for Susitna Alternatives with Rule Curve to Maximize Winter Generation



*Railbelt electricity demand obtained from the U.S. Department of Energy, 2007

Figure 2.4 Seasonal Capacities of Susitna Alternatives with Rule Curve to Maximize Winter Generation

3 Preliminary Cost Estimate

3.1 Original Cost Estimate

To develop an updated cost estimate for the Susitna hydroelectric project as conceptualized in the 1980s, project documents from that era, including project descriptions, drawings, and cost estimates were researched. A detailed cost estimate, prepared in the original feasibility study in 1982, was located. The estimate for the Watana/Devil Canyon alternative totaled $5.0 billion (in 1982 dollars). Also located was a 1986 study estimate for the staged Watana/Devil Canyon alternative at $5.5 billion (1986 dollars). These 2 original estimates were compared and found to be very similar, except for the intervening escalation and a few line-item differences; for example, an environmental mitigation line item was included in the 1986 cost estimate as part of licensing, but this item was not listed the 1982 estimate. Other changes from 1982 to 1986 included an increase in contingency from 17.5 percent to 20 percent and an increase in engineering from 12.5 percent to 15 percent.

3.2 Updated Cost Estimate

2008 cost estimates for each alternative were created based on quantities from the original 1982 estimate with a few modifications from the 1986 estimate. U.S. Cost, a company specializing in cost estimates for large projects, developed the unit prices for 2008. Cost estimates were developed using conservative assumptions; further review of existing infrastructure and industry practices may reduce costs.

For the water-to-wire turbine-generator equipment estimates, budget pricing was requested directly from manufacturers. The water-to-wire equipment includes: turbines, generators, turbine shutoff valves, and other miscellaneous mechanical/electrical equipment, and installation. A data sheet of head, flow, and power ratings was prepared for the 10 potential turbine-generators at Watana and Devils Canyon. The invitation was sent to Alstom, VA-Tech, Voith Siemens, and Toshiba; and pricing, performance, delivery, dimensions, and weights were requested. Of these, 3 budgetary offers were received, evaluated, and incorporated into the 2008 estimate. Transformer prices were also quoted from ABB.

A contingency of 20 percent of direct construction costs was used, which is typical for preliminary design. Use of this contingency was judged acceptable due to the advanced stage of the engineering studies performed in the 1980s. Project licensing, environmental studies, engineering design, and construction management were estimated at 11 percent of direct construction costs including contingency. A figure of 12 percent is typical, though due to economy of scale, the percentage has been adjusted slightly, pending more detailed design and service estimates in the future.

The unit prices in this report are typical for large projects in the United States. Variations in cost will likely be covered within the 20 percent contingency used in this estimate. The 2 largest line item construction costs are the gravel fill for the Watana dam and the concrete for the Devil Canyon. If the unit prices for these items were undervalued by as much as 25 percent each, the

effect on the total construction costs would only be 2 percent. The approach used for this report was to apply the unit prices consistently to the various alternatives. This approach allows a common platform from which to establish priority among the alternatives. Although future refinement of the estimated unit costs may affect the final economics of the project it should not affect the ranking of the alternatives amongst themselves.

The resulting preliminary construction cost estimate is shown in Table 3.1. Detailed construction cost estimates are provided in Appendix B.

In addition to construction costs, the project will incur other costs such as financing costs and interest before construction is complete. These costs are assumed to be rolled into the long term bonds that will be issued for each alternative. The sum of construction costs and financing costs, plus other related costs that are included in the debt service, are the capital costs of the project. The capital costs shown in Table 3.1 reflect the total debt that would be issued for each alternative.

Table 3.1 Preliminary Cost Estimate

Alternative	Estimated Construction Cost (billions)	Estimated Capital Cost (billions)
Watana	$8.4	$10.5
Low Watana	$6.9	$8.3
Watana/Devil Canyon	$11.7	$14.5
Staged Watana/Devil Canyon	$12.8	$15.9
Devil Canyon	$5.0	$6.0

3.3 Operations and Maintenance Cost Estimate

The economic analysis for this project will require estimates of operations and maintenance costs (O&M) and capital expenditures. The annual costs for these items are based on the following assumptions:

- Annual operation and maintenance for the power facilities is estimated at $10 million per year for each of the alternatives. This annual cost is based on other hydroelectric projects of comparable size and location. For the roads and other infrastructure, it is assumed that once the construction is completed, a portion of the maintenance would be subsidized by the project, equating to approximately $5 million per year and is the same for each of the alternatives.
- Capital expenditures will occur on the following schedule:

- Every 20 years, the turbine runners will require replacement due to cavitation. The replacement cost is estimated at approximately $5 million per turbine.
- Every 20 years, the governors will require upgrades. The replacement cost is estimated at approximately $0.5 million per turbine.
- Every 40 years, the generator rotor and stator will require rewinding. This work is estimated at approximately $10 million per turbine.
- Every 40 years, the transformers will require rehabilitation. This work is estimated at approximately $0.4 million per transformer. Watana has 9 transformers and Devil Canyon has 12, plus one spare transformer for each dam.
- Every 50 years, the spillways will require structural repairs. A total of $12.5 million is assumed for each dam or $25 for the two-dam alternatives.
- Every 50 years, the transmission lines will require rehabilitation. A total of $10 million is assumed for each project alternative.
- Every 50 years, the dam structures will require rehabilitation. A total of $25 million is assumed for each dam, or $50 million for two dams.
- The project FERC license will expire after 50 years from issuance. Five years before this expiration, a relicensing effort will begin, and both environmental and regulatory work will be required. A total of $100 million is assumed spread evenly over this 5 year period.

4 Preliminary Project Schedule

An updated schedule was developed for each of the project alternatives. These schedules extend from approval, through licensing, design, construction, and commissioning. The primary purpose of this schedule is to provide a timeline for estimated cost cash flow and estimated energy revenue to determine economic feasibility. This schedule assumes that:

- Construction times are estimated based on 1982 FERC license application.
- The licensing process from start to FERC order is estimated at 7 to 10 or more years. We have set a reasonable target of 8 years for the proposed project analysis, provided that the effort is begun immediately, ambitiously, fully funded, and conducted in parallel with environmental studies, engineering, and with active public outreach and cooperation by stakeholders.
- The FERC License Application will be based on the 1986 application, updated to reflect more than 20 years of regulatory changes and modern engineering and construction methods.
- Any environmental studies will be based on 1980 and 1986 studies, updated to reflect present site conditions, public interests, wildlife, and recreational needs.
- Construction will begin immediately upon issuance of the license.
- Roads and staging will be state permitted outside the FERC project and will begin several years before FERC license, including pioneer and permanent roads, airports, bridges, construction camps, staging areas, and towns. Building roads in this way is the quickest way to meet the projected timeline although there is some uncertainty whether permits could be obtained to construct these facilities before the project license is issued.
- Construction of diversion dams and tunnels will begin on issuance of the license, with upstream and downstream coffer dams and tunnels to divert the Susitna River during construction of main dams at Watana/Devil Canyon.
- Spillway construction will follow diversion dam and tunnel construction, and will include site preparation, approach channels, control structures, gates, stoplogs, chute, and flip buckets for main and emergency spillways.
- The full-height dam construction at Watana will require an 885-foot-high rock-fill dam following site preparation, grouting, and installation of a pressure relief system.
- The main dam construction at Devil Canyon will include a thin-arch concrete dam, preceded by site preparation, foundations, abutments, and thrust blocks. Rock-fill saddle dam construction will follow grouting and pressure relief system.
- The powerhouse and transmission will include power intake, tunnels/penstock, surge chamber, tailrace, powerhouse, turbine/generators, mechanical/electrical systems, switchyard, control buildings, and transmission lines.
- Reservoir filling will be based on the latest hydrologic data for inflow and turbine data for outflow.

- Devil Canyon construction will commence immediately upon completion of Watana for the Watana/Devil Canyon alternatives.

The resulting estimate of generation of first power and full power is shown in Table 4.1. Detailed schedules for all of the alternatives are provided in Appendix C.

Table 4.1 Power Generation Time Estimates

Alternative	Generation of first power (years)*	Generation of full power (years)*
Watana	15	16
Low Watana	14	15
Watana/Devil Canyon	15	20
Staged Watana/Devil Canyon	14	23
Devil Canyon	14	15

*From start of licensing

5 Economic Analysis

An economic analysis was developed for each of the project alternatives. This analysis used the energy, cost, and schedule information prepared in previous tasks to determine the cost of electricity per kilowatt hour (kWh) for each of the project alternatives, thereby identifying the economically preferred alternative.

For this preliminary analysis, the following major assumptions were used to compare each alternative:

7. No inflation
8. 100 percent financing with no capital contribution by the State
9. Bond interest rate is 5 percent with a term of 50 years
10. All energy will be sold
11. Debt coverage ratio of 1.25
12. Ongoing O&M and capital expenditures costs and schedule as estimated in Section 3.3 of this report.

These assumptions provide the basis for a relative comparison between the alternatives. AEA proposed the first 4 assumptions and the fifth assumption regarding debt coverage ratio is the same ratio as used in the 1980s studies. These assumptions will be modified as the study progresses so that the Susitna alternatives will be evaluated on the same basis as other power generation alternatives in the IRP.

The financial markets are currently under a great deal of stress and it is unlikely that bonds could be sold today under the assumptions noted above. However, it is anticipated that the bond market will be functioning normally at the time when substantial capital inputs are required for construction. Future analyses should consider potential financing mechanisms, such as those related to carbon markets or offset investments under a cap-and-trade program as proposed by the Obama-Biden Administration.

The assumption of no capital contribution by the State requires that construction financing or bridge loans are available until construction is complete and power generation begins. The bridge loan is assumed to roll over each year and convert into long-term debt at the beginning of the first full year of operation. The interest rate on the bridge loan is assumed to be 5 percent annually. Debt payments are assumed to start in the first full year of operation.

It is unlikely that the AEA-proposed 100 percent financing with no capital contribution by the State or another party could be achieved. The licensing and construction period for a major hydroelectric facility is very long and even if construction financing were available for these activities the lenders would in all likelihood require at least interest payments until electric generation started. Since the project would not have an income stream until generation starts, the State or another entity would be liable for the interest payments. An assumption of no capital

contributions or grants by the State of Alaska or the federal government results in a high cost of energy for a Susitna hydroelectric project. Grants from these entities could substantially reduce the cost of energy during the period when debt is being repaid.

A debt coverage ratio (DCR) of 1.25 requires that the net operating income be 1.25 times greater than the annual debt payments. A 1.25 ratio was used in the 1985 Susitna report and it is assumed that this ratio could be negotiated with the bond underwriters in the future. The surplus revenues generated by this DCR are placed in a reserve fund and the fund increases each year with accrued interest and an annual contribution from the DCR until such time as the reserve fund in year X plus the net income in year X+1 are large enough to pay off all the remaining debt. Thus the reserve fund decreases the length of time when debt payments are required.

As noted in Section 3.3 of this report, capital expenditures will be required during the life of the project following completion of construction activity for such activities as replacing turbine runners, rewinding generators, FERC relicensing, etc. These costs are assumed to be paid from a reserve fund that accrues modest amounts of surplus cash sufficient to cover the ongoing capital expenditures through the first 100 years of the project. The spreadsheet model seeks the minimum cost of energy that is sufficient to meet these capital expenditures and operations and maintenance costs. It is anticipated that through proper design and operations of the project there will be minimal loss of energy, if any, while these repair and replacement activities are ongoing. The analysis assumes no change in annual power generation for plant maintenance or repair and replacement.

Figure 5.1 shows the cost of electricity for each of the project alternatives from year 1 through year 100. The Watana-only alternatives average about $0.24 per kWh of electricity for the bond payment time interval, falling to about $0.01 per kWh after debt service is eliminated. The Low Watana alternative debt service is paid off sooner than the Watana alternative so the average cost of electricity for the first 50 years is lower for the Low Watana alternative.

The Watana/Devil Canyon alternative or the Staged Watana/Devil Canyon alternative result in higher costs for electricity than the other alternatives in the first few years of generation since much larger capital costs are incurred and there is limited power generation in the first few years compared to the capital expenditures. The DCR magnifies this peak electricity cost since net operating revenues must be 1.25 times the annual debt service and these alternatives are slowly increasing their generating capacity. A similar cost increase was identified in the 1980s studies.

When full generating capacity is achieved for the Watana/Devil Canyon alternative or the Staged Watana/Devil Canyon alternative, the cost of electricity is substantially lower than for the Watana-only alternatives at about $0.15 to $0.16 per kWh (Figure 5.1). However, for the Staged Watana/Devil Canyon alternative, the substantially-higher cost of energy during the first years of generation results in the average cost per kWh during the first 50 years being about $0.18 per kWh (Table 5.1). The Watana/Devil Canyon alternative has an average cost of electricity of about $0.14 per kWh for the first 50 years. Energy costs drop to slightly more than $0.01 per kWh for both of the multiple dam alternatives after the bonds are paid off.

The Devil Canyon alternative has a cost of power that is slightly lower ($0.13 per kWh) than the Watana/Devil Canyon alternative during the first 50 years and slightly higher cost of power after the debt is paid. As noted earlier in this report the Devil Canyon alternative has limited winter generation capacity, although the cost of energy is lower than the other alternatives.

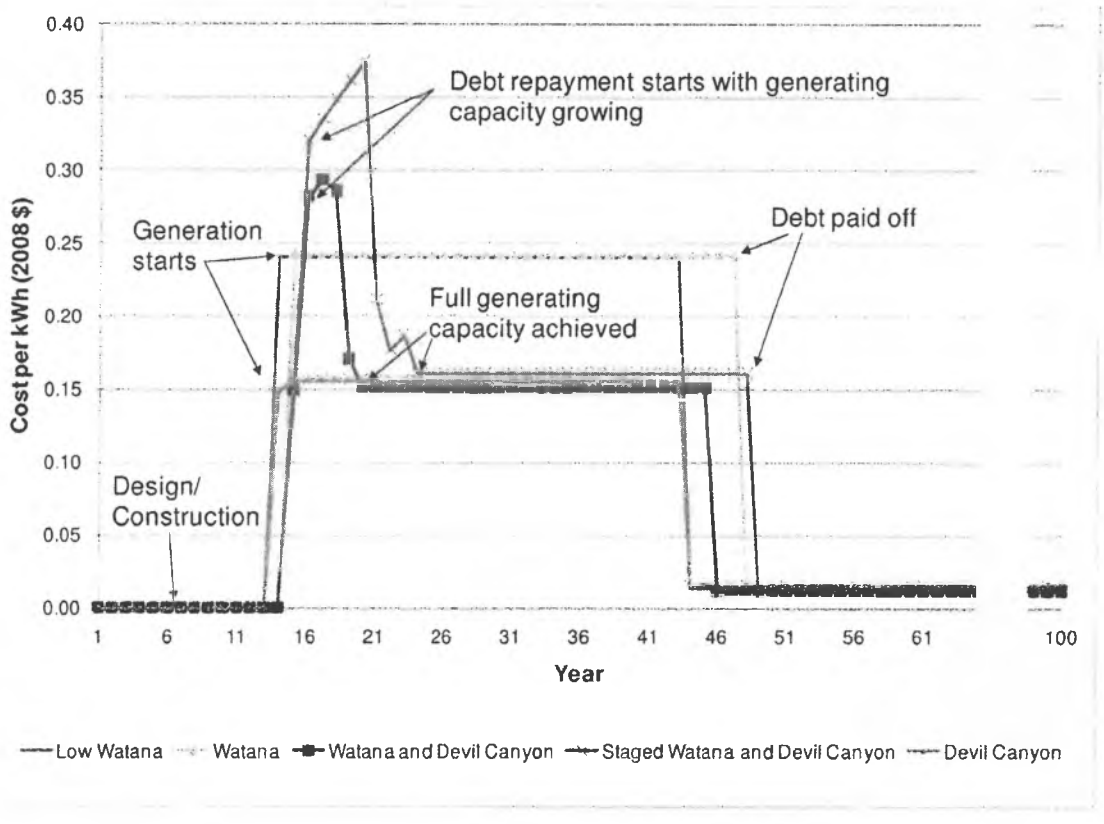


Figure 5.1 Cost of Electricity per Kilowatt Hour for Susitna Hydroelectric Alternatives

Based on the average cost of electricity during the first 50 years of the project and the second 50 years (Table 5.1), the Watana/Devil Canyon alternative or the Devil Canyon alternative would be preferred over the other alternatives, with the Watana/Devil Canyon alternative having slightly lower costs after the debt service period. If winter electricity is an objective of this project then the Watana/Devil Canyon alternative is preferable to the other alternatives. The average cost of electricity during the first 50 years is calculated as the average cost, starting with the first year of generation, and continuing through year 50. The average includes some years when the cost of electricity is very low following payment of the debt.

Table 5.1 Average Cost of Electricity Per Kilowatt Hour		
Alternative	**Cost Per Kilowatt Hour (2008 dollars)**	
	First 50 Years	**Second 50 Years**
Watana	$0.22	$0.01
Low Watana	$0.20	$0.01
Watana/Devil Canyon	$0.14	$0.01
Staged Watana/Devil Canyon	$0.18	$0.01
Devil Canyon	$0.13	$0.02

A sensitivity analysis was performed to estimate the effect of varying interest rates on the cost of power. Table 5.2 shows the average cost per kWh during the first 50 years for each alternative. A reduction in the interest rate from 5 percent to 3.5 percent results in a decrease of 3 cents to 5 cents per kWh depending on the alterative. However, an increase in the interest rate to 6.5 results in increases of six to nine cents per kWh.

Table 5.2 Average Cost of Electricity Per Kilowatt Hour at Varying Interest Rates			
Alternative	**Cost Per Kilowatt Hour, First 50 Years (2008 dollars)**		
	3.5%	**5%**	**6.5%**
Watana	$0.17	$0.22	$0.31
Low Watana	$0.15	$0.20	$0.28
Watana/Devil Canyon	$0.11	$0.14	$0.20
Staged Watana/Devil Canyon	$0.14	$0.18	$0.25
Devil Canyon	$0.10	$0.13	$0.18

Figure 5.2 through Figure 5.11 provide additional detail on each of the 5 alternatives that were evaluated. There are 2 graphs presented for each alternative. The first graph displays the cost per kilowatt hour for the first 100 years of the project and the second graph displays the construction cost expenditures in each year and the total cost of debt in any year. The vertical scales are the

same across all 5 alternatives (i.e., $0 to $0.40 per kWh for cost of electricity and $0 to $16 billion for construction expenditures and total debt) so that the relative difference between alternatives is more apparent.

The Devil Canyon alternative has the lowest total debt structure of the 5 alternatives, followed by the Low Watana alternative and then the Watana alternative. The Watana/Devil Canyon alternative has a lower total debt structure than the Staged Watana/Devil Canyon alternative because the construction period is shorter and the total capital costs are lower.

Table outputs for the models and a discussion of the model parameters are provided in Appendix D.

5.1 Watana

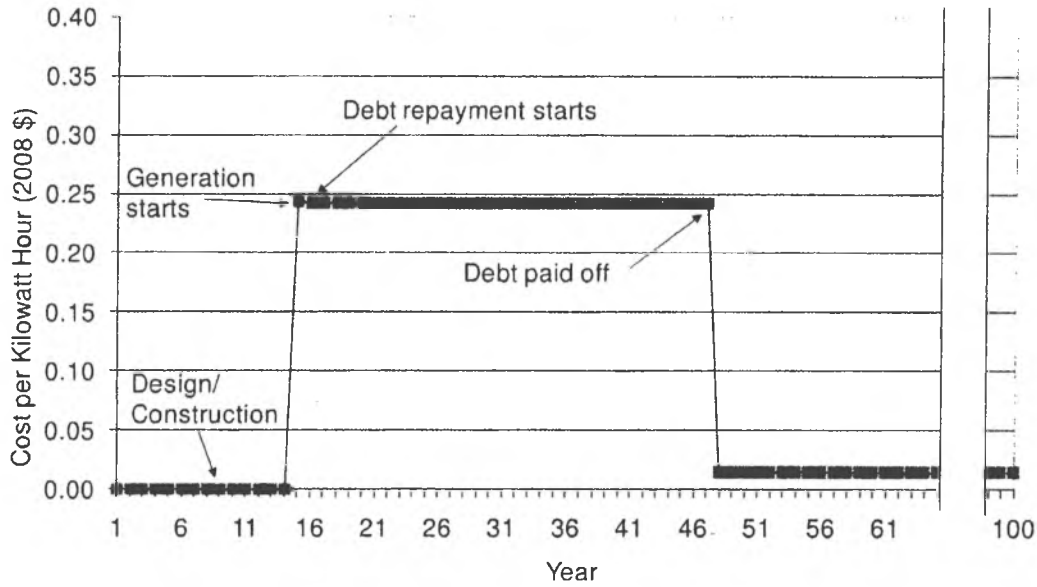


Figure 5.2 Watana Cost of Electricity

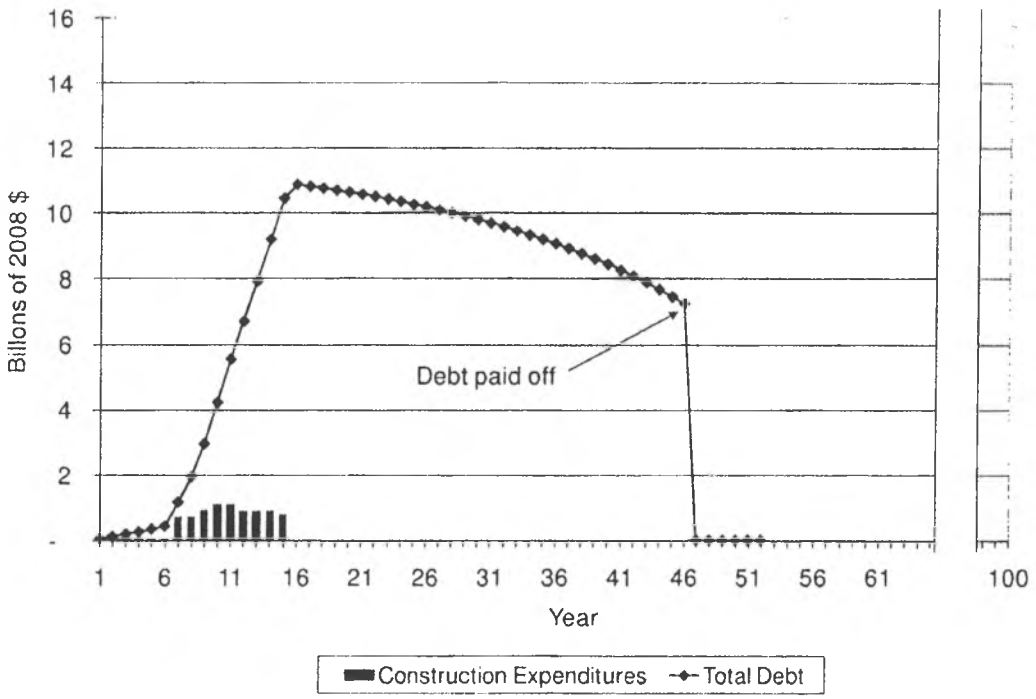


Figure 5.3 Watana Annual Construction Expenditures and Total Debt

5.2 Low Watana

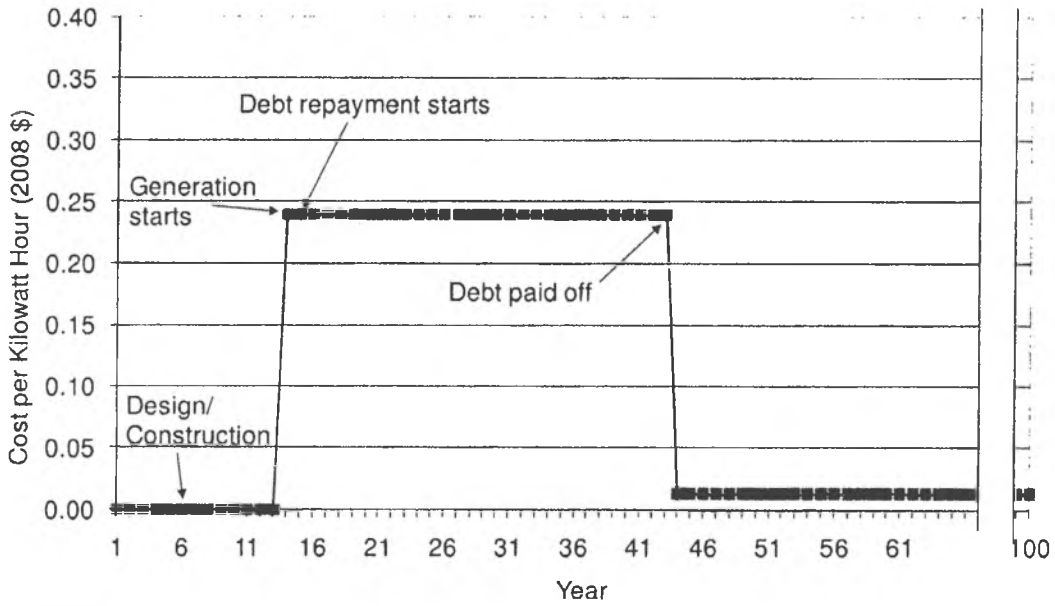


Figure 5.4 Low Watana Cost of Electricity

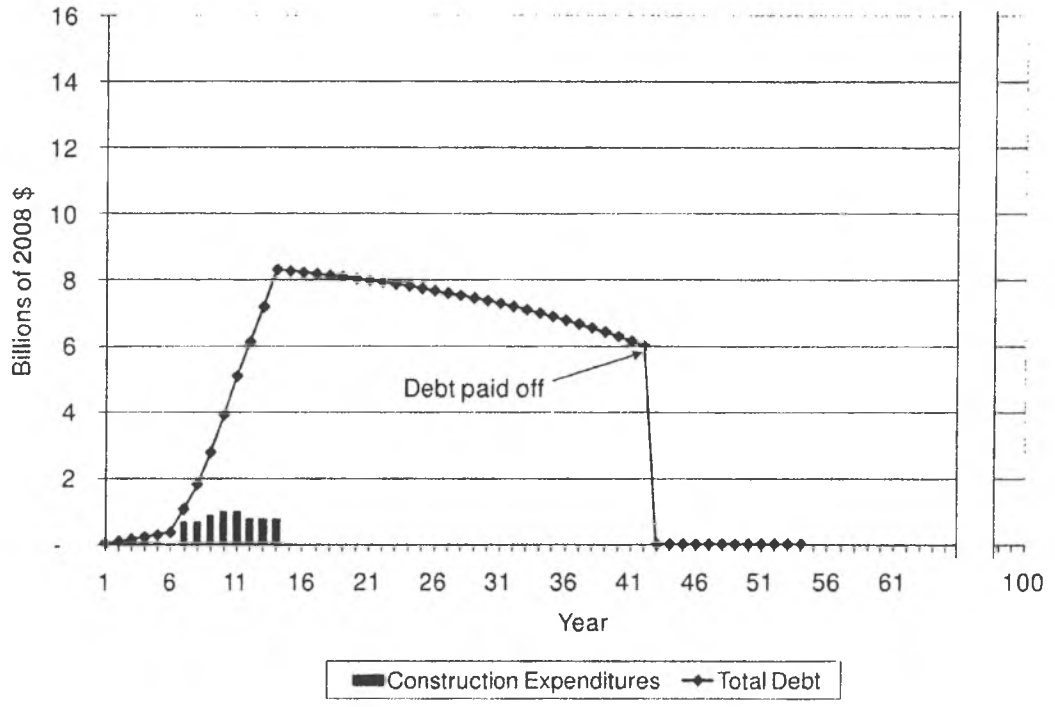


Figure 5.5 Low Watana Annual Construction Expenditures and Total Debt

5.3 Watana/Devil Canyon

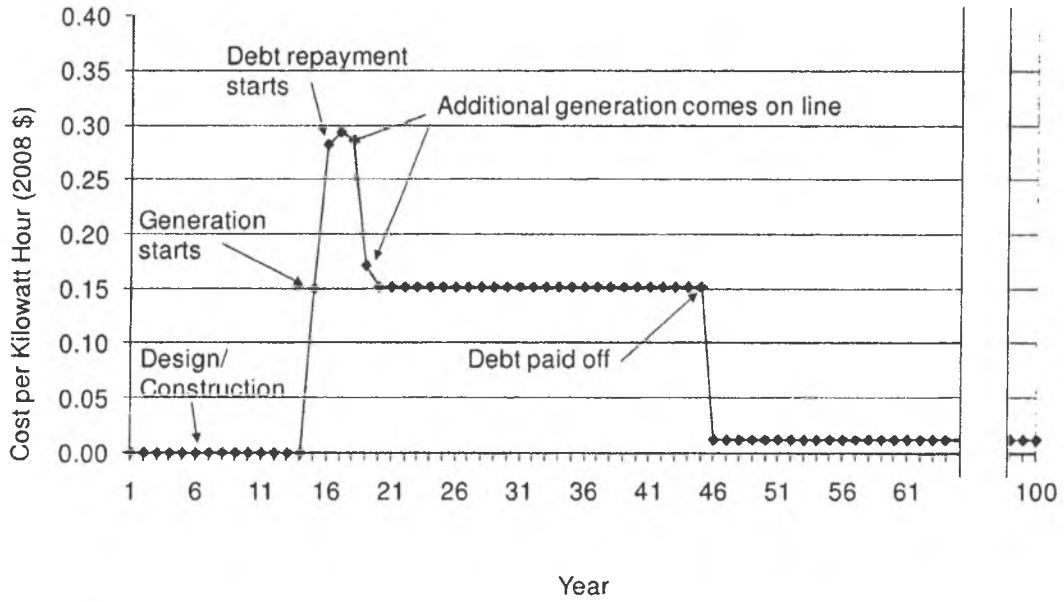


Figure 5.6 Watana/Devil Canyon Cost of Electricity

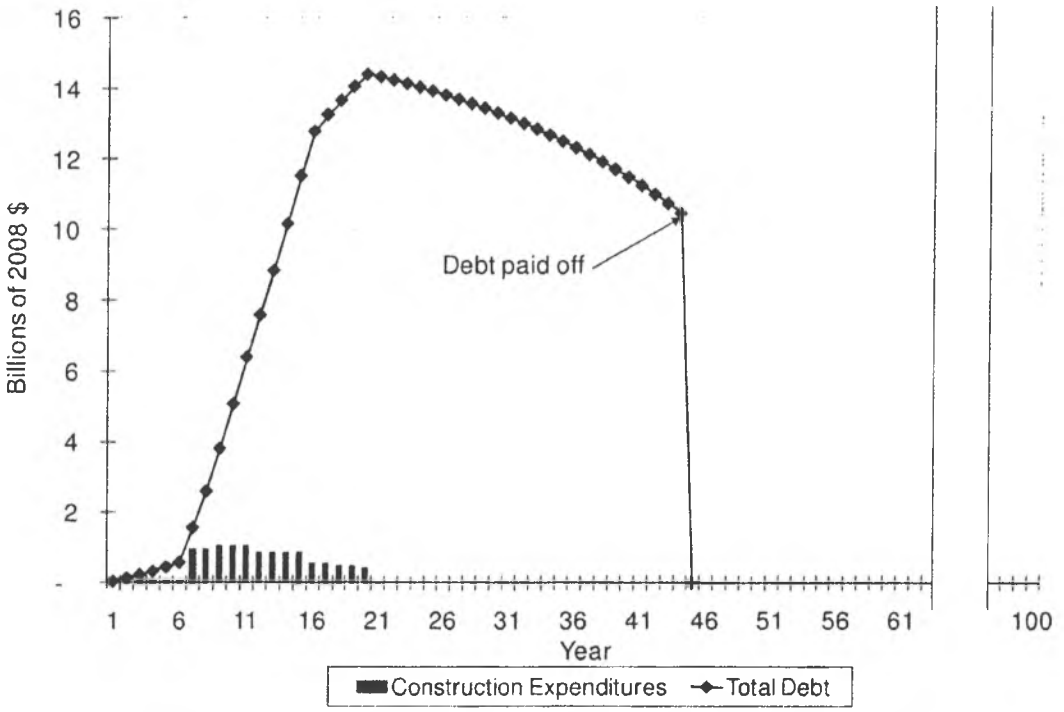


Figure 5.7 Watana/Devil Canyon Annual Construction Expenditures and Total Debt

5.4 Staged Watana/Devil Canyon

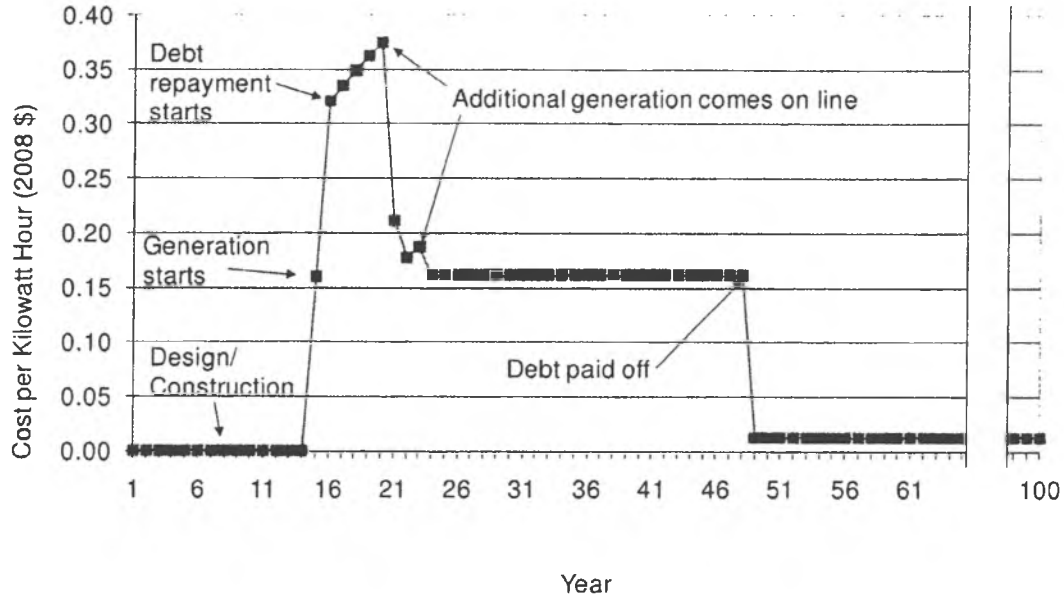


Figure 5.8 Staged Watana/Devil Canyon Cost of Electricity

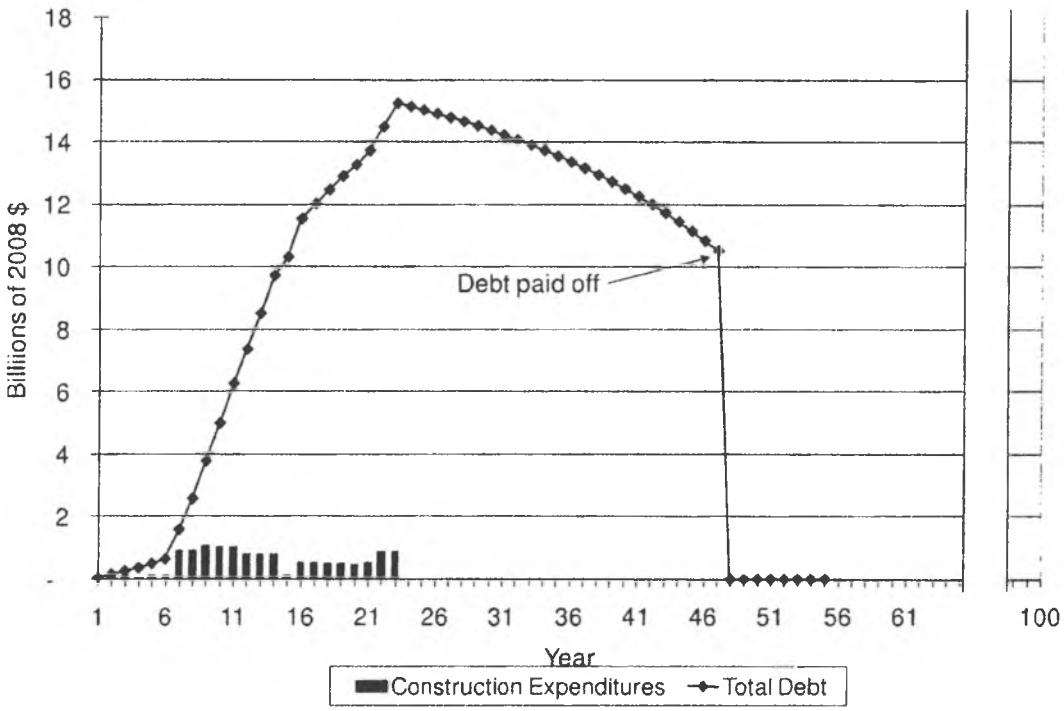


Figure 5.9 Staged Watana/Devil Canyon Annual Construction Expenditures and Total Debt

5.5 Devil Canyon

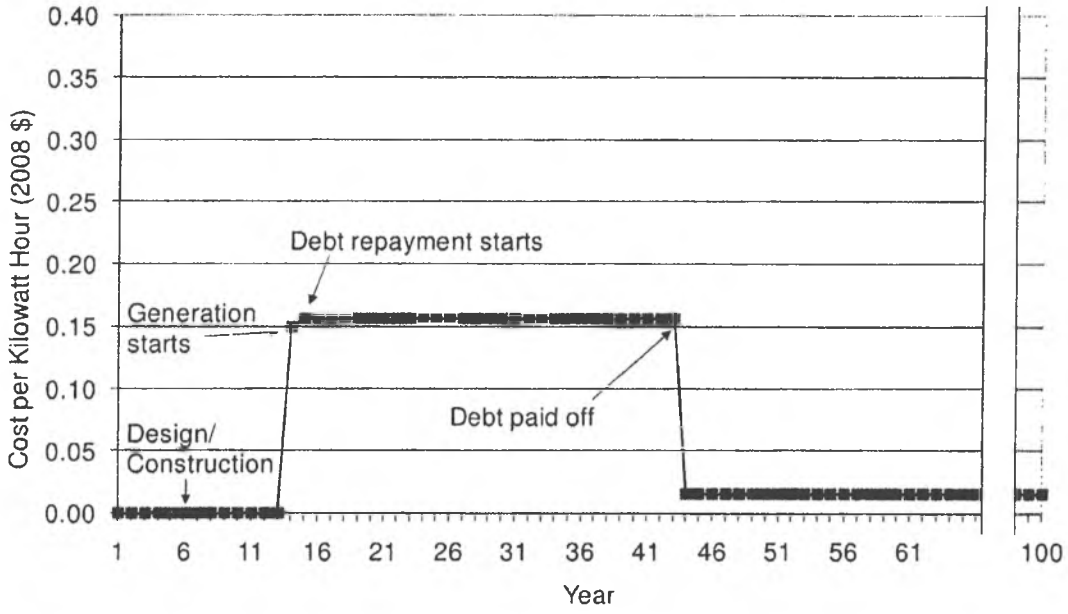


Figure 5.10 Devil Canyon Cost of Electricity

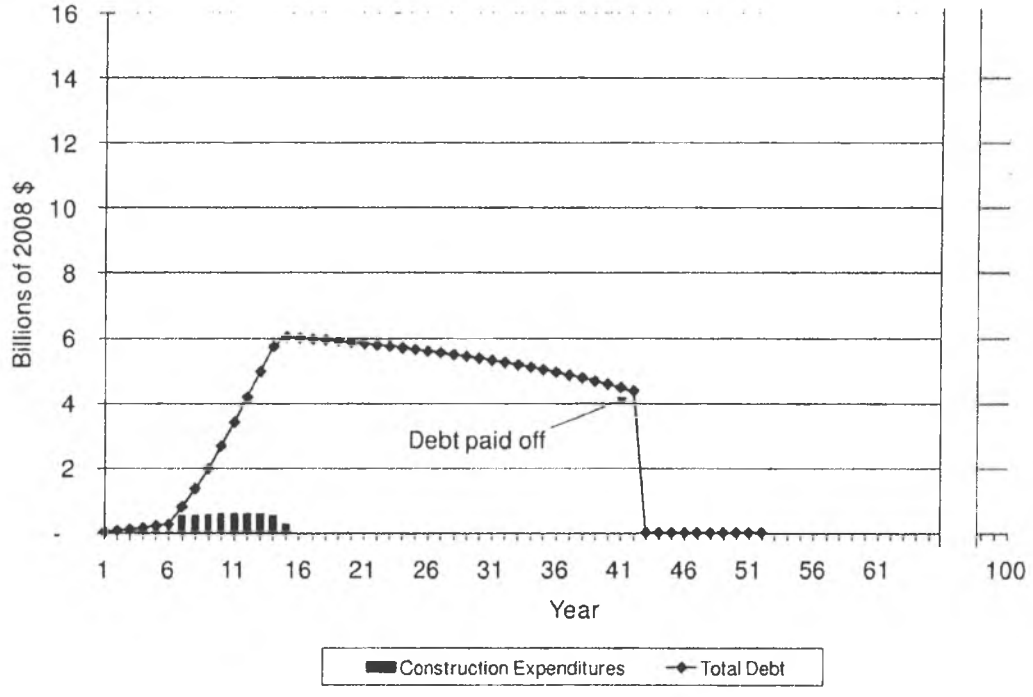


Figure 5.11 Devil Canyon Annual Expenditures and Total Debt

6 Regulatory and Environmental Issues

After the Susitna project was discontinued in 1986 a database of 3,573 documents was created. In September 2008, the 87 most-relevant documents were scanned into HDR's files, of which 18 were summarized. A synthesis of the 7 most-pertinent documents was completed. Because not all of the documents were summarized, some relevant information has likely been overlooked; however, most information was included in the synthesis.

These documents contain information on potential impacts of the proposed project and mitigation proposals for those impacts. Specifically, the documents deal with fisheries resources, botanical resources, wildlife resources, and cultural resources in the potential project area. The documents divide the Susitna River Basin into 4 geographic regions:

- Impoundment zones
- Middle Susitna River
- Lower Susitna River
- Access roads and transmission lines

The potential impacts and mitigation options are discussed for each category in each geographic region as much as possible. It is important to note that not all categories will be impacted in all geographic regions. Mitigation for the proposed impacts is divided into the following categories: avoidance, minimization, rectification, reduction, and compensation. Avoidance is always the preferred mitigation, though it is not usually feasible. Compensation is the only mitigation option for many of the impacts.

6.1 Fisheries Impacts

The fisheries resources have the potential to be impacted the most due to the project. In the impoundment zones, 82 miles of riverine habitat will be transformed into reservoir habitat. The potential exists for the displacement of approximately 20,000 Arctic grayling larger than 8 inches in length from the creation of the reservoirs.

Most of the potential impacts will occur in the middle Susitna River. There will be impacts due to changes in water quality, thermal activity, the water's suspended sediment load, reservoir draw-down fluctuations, impoundment zone inundation, flow regime, and fish habitat. These impacts will result in both positive and negative effects on fish populations. For example, the increase in winter water temperatures will lead to the creation of more overwintering habitat and thus greater fish survival; however, the cooler spring water temperatures will slow fish growth.

Mitigation for these impacts is proposed by compensation through land acquisition, habitat modification, and reservoir stocking.

6.2 Botanical Impacts

The project area contains 295 vascular plant species, 11 lichen genera, and 7 moss taxa. Low Watana inundation will permanently remove 16,000 acres of vegetation. Devil Canyon inundation will permanently remove 6,000 acres of vegetation. Watana inundation will permanently remove an additional 16,000 acres of vegetation. There will be a total of 38,000 acres of vegetation permanently removed. Most of the vegetation inundated will be spruce forest. An additional 836 acres of vegetation will be permanently removed due to access road construction. The transmission corridor will comprise a total of 11,000 acres. Of that area, only a negligible fraction of vegetation will be totally removed due to intermittent placement of control stations, relay buildings, and towers.

There will be limited botanical impacts downstream from the reservoirs. These involve changes to the vegetation due to a more stable environment. Due to flow regulation there will no longer be major flooding events, which destroy the riparian vegetation; instead; rather, there will be succession of the riparian vegetation and colonization of new floodplains. The increase in winter water temperatures will decrease the amount of ice scouring that occurs, which will result in effects similar to those caused by the decrease in flooding.

Botanical resource mitigation will consist largely of compensation for permanently removed vegetation.

6.3 Wildlife Impacts

Within the Susitna River Basin there are 135 bird species, 16 small-mammal species, and 18 large-mammal and furbearing species. There will be 5 classes of potential impacts to terrestrial vertebrates:

- Permanent habitat loss, including flooding of habitat and covering with gravel pads or roads
- Temporary habitat loss and habitat alteration resulting from reclaimed and revegetated areas such as borrow pits, temporary right of ways, transmission corridors, and from alteration of climate and hydrology
- Barriers, impediments, and hazards to movement
- Disturbances associated with project construction and operation
- Consequences of increased human access not directly related to project activities

Mitigation for the proposed impacts involve mostly compensation since there will be permanent habitat loss for most species.

6.4 Cultural Resource Impacts

Within the proposed project area, 297 historic and prehistoric archaeological sites were located. An additional 22 sites were already on file. Sites located within 500 feet of the reservoir's maximum extent may be indirectly impacted due to slumping from shoreline erosion. Indirect impacts may also result from vandalism due to increase in access to the sites. The project has the potential to impact 140 sites. None of these sites will occur in the proposed road corridor or transmission lines. The majority of these sites are relatively small prehistoric sites.

Mitigation for the lost cultural resources will mostly occur through data recovery. Preservation would also be used for some sites. Options to consider include construction of protective barriers to minimize erosion, controlled burial, or fencing of the site to restrict access.

Currently, there are a variety of federal, state, and local land use plans that encompass the Susitna Basin.

6.5 Carbon Emissions

According to the United Nations working group on carbon emissions from freshwater reservoirs the worst case carbon emissions from a reservoir in a boreal climate is 6.7[1] grams per square meter per year. For the Watana/Devil Canyon alternative this equates to 465,000 metric tons of carbon per year or 0.065 metric tons per MWhr. The US Department of Energy reports the average carbon emissions due to electric generation for the State of Alaska to be 0.626[2] metric tons per MWhr. Operation of the Susitna project has the potential to eliminate up to 4 million metric tons of carbon production per year.

[1] United Nations Educational, Scientific and Cultural Organization. Scoping Paper: Assessment of the GHG Status of Freshwater Reservoirs. April 2008

[2] http://www.eia.doe.gov/cneaf/electricity/st_profiles/alaska.html

7 Summary

Table 7.1 provides an estimate of capacity, construction cost, energy, schedule, and cost per kWh for each of the alternatives. Environmental and regulatory issues are substantial and will require comprehensive investigation, though no fatal flaws are apparent based on this initial review. All of these estimates are preliminary, pending more detailed engineering, environmental, and regulatory studies.

Table 7.1 Summary

Alternative	Ultimate Capacity (MW)	Construction Cost ($billion)	Energy (billion kWh/yr)	Schedule (years)	Cost per kWh ($)	
					First 50 Years	Second 50 Years
Watana	1,200	8.4	3.1	15 – 16	0.22	0.01
Low Watana	600	6.9	2.4	14 - 15	0.20	0.01
Watana/Devil Canyon	1,880	11.7	7.2	15 - 20	0.14	0.01
Staged Watana/Devil Canyon	1,880	12.8	7.2	14 - 23	0.18	0.01
Devil Canyon	680	5.0	2.9	14-15	0.13	0.02

Hydroelectric power has many economic and environmental benefits including long-term rate stabilization. Because the cost of the water to power a hydroelectric turbine is essentially free the cost per kilowatt hour is related to the construction and maintenance costs of the dam and powerhouse facilities. As we have seen recently, the price of fossil fuels can fluctuate dramatically over time whereas the cost of hydroelectric power decreases once the initial investment has been repaid and remains low and stable for the life of the project. Consequently the economic risk associated with hydroelectric power is substantially lower than thermal power. Additionally, the life cycle carbon dioxide production of hydroelectric facilities is orders of magnitude less than thermal power plants.

8 Recommendation

The Watana/Devil Canyon alternative is the most cost effective per unit of energy. The Devil Canyon alternative does not provide a stable winter energy supply although its cost per kWh is lower than the other alternatives.

A primary assumption of this report is that all power from these alternatives can be used at the time it is produced. Determination of the need for this power will be dependent upon further studies in conjunction with the Railbelt IRP.

Appendix A

Energy Analysis Input and Results

For the purposes of this submittal, the appendices have been attached as PDFs.

Appendix B

Detailed Cost Estimates

For the purposes of this submittal, the appendices have been attached as PDFs.

Appendix C

Detailed Schedules

For the purposes of this submittal, the appendices have been attached as PDFs.

Appendix D

Economic Analysis Input and Results

For the purposes of this submittal, the appendices have been attached as PDFs.

3/10/11 Presentation by Innova Labs: Remote Autonomous Hydrogen Production Stations

<TARGET><BILL></BILL><SUBJECT>3-10-11 Presentation by Innova Labs Remote Autonomous Hydrogen Production Stations</SUBJECT><COMM>HENE27</COMM></TARGET>

Introduction to Innova

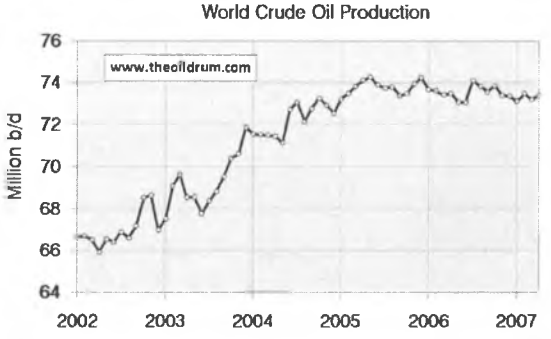
History

Until a few hundred years ago, humans lived foraged a lifestyle as hunter-gatherer's. Suddenly we started to find and develop agricultural methods where we could grow things that we didn't need to eat that day, we could store them for many months or even years. Subsequently we started to live more sedentary lifestyles and consequently began development of new technologies.

Then in the 1700's, we basically hit the energy jackpot when we figured out how to use coal, and then subsequently, in the 1800's, oil, and in the last century, natural gas. Now the question is, what is going to replace fossil fuels?

What very few Americans know is that everyone right now has 200 to 300 energy slaves standing behind them doing work that we take for granted: the average food travels 1,500 miles to get to our plate, and that all uses energy. All these things are subsidized by a one-time endowment of fossil energy that is so powerful that for all human intents and purposes, it is indistinguishable from magic.

People are beginning to recognize that we live on a finite planet, and we have virtually, infinite wants and perceived needs. But those two trends are butting up against each other, and the question then becomes what are we going to do about it?



We've been so endowed with natural resources for 60, 70, 80 years; we have not really thought that this was a problem. There have been some recessions and even a great depression, but we've always reset from that. We build our institutions and our expectations assuming, that this sort of subsidy will continue in the future, and now we've built a lifestyle that is no longer sustainable. We have built an entire industrial civilization on the assumption that there will be more every year.

Today

Technology today is in a race with depletion and depletion is winning. The World uses 86 million barrels of oil a day. By 2015 that is expected to grow to over 98.5 million barrels of oil a day. We have breached the psychological barrier of one hundred dollars a barrel in early 2008. Oil prices have quintupled in the past six years. The United States alone uses 21 million barrels of oil each day, roughly 25% of all of the oil produced in the world. The projections are over 27 million barrels a day by the year 2020. The United States consumes

over 43% of the world's motor gasoline. No new gasoline refinery has been built in the U.S. since 1976. Even if all of the corn and soybean crops produced in the United State were converted for fuel, it would only be enough to meet 20 percent of consumption demands. The country, the world, is demanding another solution.

Why Not Hydrogen?

Innova Labs asks the question – "What about Hydrogen?" The energy contained in one gallon of water exceeds 2.5 million barrels of oil when equated in terms of atomic energy. Within 25 to 30 years, energy experts foresee that Hydrogen will become the de-facto and inevitable main source of energy on Earth. Currently internal combustion engines account for over 45% of the petroleum used in the USA. The internal combustion engine is approx. 26% efficient – 1 quart/gallon of gasoline effectively goes to the engine; the remaining 74% is rejected as heat & emissions through the radiator & exhaust.

One of the primary concerns often associated with Hydrogen is the safety factor. Hydrogen is very safe to use. Hydrogen is the most abundant and lightest of gases in the universe and prefers to combine with other elements. Due to this fact, hydrogen disperses and combines with other elements very quickly. The technologies and systems that are used by INNOVA produce low-pressurized hydrogen on demand and in specific amounts as required and used by the engine, and therefore is safe within its designed specifications.

Properties of Hydrogen

There are several important characteristics of hydrogen that greatly influence the technological development of hydrogen in internal combustion engines. Innova Labs has learned through trial and error and has made quantum leaps in the sustainability of hydrogen technology by utilizing the unique properties of hydrogen in a proprietary manor. In an effort to briefly explain the primary drivers we find so promising and exciting about hydrogen we have briefly listed the primary characteristics below.
the range, reliability and functionality of our canisters.

What is Next?

Innova Labs is in a race to answer some of the most pressing issues ever seen by our planet. There must be an answer to the looming energy crisis set before us. We believe the answer is Hydrogen.

Our Mission

It is INNOVA Lab's Mission to provide the best in sustainable alternative energy and innovative clean products. Providing services and tools to individuals, businesses and governments, so that they can contribute to the global footprint in a positive way. Thereby, helping us change the world, as we currently know it for the future of our children and theirs.

Products & Services

Our products uses a proprietary super conductive fluid that works in combination with a special electrolyzer reactor system to produce scalable amounts of hydrogen (on demand) in a virtually maintenance free environment. This system is designed to extend the range of, or replace any combustion engine fuels and has consumer, commercial and military

applications. This system also has home use and fuel generation only applications. This system reduces emissions and the overall environmental impact as well as extending the

life of the engine. This system can be powered in many ways, including wind, geo and solar. The HydroSTAX products are modular and easily scaled and configured for many applications.

This includes, but is not limited to: Automotive, Trucking, Agricultural, Military, Homeland Security, Aviation, Boating & Shipping, Household Use, Hydrogen Fuel Generation and actual Power Generation.

About Us

We have benefited from guidance and leadership from multiple strategic partnerships within both the consumer and military environments. Through these comprehensive relationships we have been able to complete a vast array of industry specific field tests that were completed exclusively for INNOVA by top experts including Roush, Mercedes Benz and United States Navy.

The following are some of our initial tests done under cooperation with strategic partners and through independent Pilot Program. The data compiled has been and continues to be used for modifications and constant improvement and refinement of the INNOVA product offerings.

Evaluation

Scarcely a day goes by that we don't hear some mention of fuel cells or the new "hydrogen economy". The environmental advantages of a hydrogen economy are so promising that

the push toward hydrogen is strong. In the coming decades, the United States (and the World) will need new energy supplies and a better energy infrastructure to meet growing demands for alternative power and transportation fuel. Hydrogen electrolyzers and fuel cells offer one of the most promising paths toward meeting those goals:

- Hydrogen is a versatile energy carrier that can be used to power many end-users' energy needs.

- The use of Hydrogen will eventually help reduce U.S. dependence on foreign oil.
- HydroSTAX can provide pollution-free energy for both transportation and electric utilities.
- HydroSTAX operates quietly, and is reliable, easy to maintain, and safe.
- Hydrogen poses fewer environmental dangers than those associated with petroleum.
- Innova Labs products are scalable and modular; they can and have been utilized for many applications. Including vehicle, engine and power generation.

With breakthroughs in storage and hydrogen technology developments, such as those being worked on by INNOVA, we are already heading toward a hydrogen economy. This includes research to develop materials, processes, and reactor-based systems for many industries, as well as hydrogen production, delivery and storage options.

Furthermore, non-conventional energy sources, such as solar and wind energy will remain available for an infinite period. Of tremendous worry for all of us is the decline of conventional energies. The rate of global fossil fuel consumption is higher than the rate of nature's fossil fuel production; resulting in the scarcity of fossil fuel and its potential uses, specifically, but not exclusively related to transportation. Of equal importance, is the pollution associated with the ever-increasing use of fossil fuels resulting in a possible decline in the quality of life on our planet. The result is a constant search for alternative fuels to solve energy shortages and to provide energy without pollution.

The alternative fuel most frequently discussed is hydrogen, because it is a clean burning form of energy. In the last decade alone hydrogen has attracted worldwide interest as a secondary energy carrier. This has generated comprehensive investigations on the technology involved and how to solve the problems of production, storage and transportation of the gas.

Hydrogen is:

- The most abundant element in the universe.

- Light and clean.
- The richest in energy per unit mass, and unlike electricity, it can be easily stored.

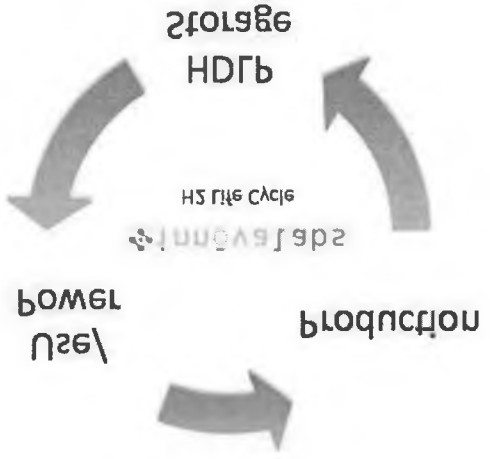
Hydrogen gas is now considered the most promising fuel of the future. It will soon be used in many applications including the generation of electricity, heat your house and cook your food, fuel for your cars and trucks, complete hydrogen powered industries, jet planes, and eventually to power complete towns and cities.

In the engine, hydrogen:

- Lowers operating costs by increasing fuel efficiency

- Lowers particulate and gaseous emissions
- Increases the range of any internal combustion engine (ICE)
- Induces a cleaner, more efficient burn
- Removes carbon residue and sludge buildup
- Spark plugs and valves stay cleaner - longer
- Reduces frequencies for oil changes (engine oil stays cleaner, longer)
- Results in fewer maintenance problems, especially with fuel injector systems
- Causes less bearing wear
- Increases horsepower and torque

Produce - Store - Use



Product Overview - Storage

INNOVA Labs Storage Canisters

We will now focus our energies on our high volume (and high purity) hydrogen storage. This is where our LPH2SC (Low Pressure Hydrogen Storage Containers) will come to the market in various sizes and for many applications.

Our Hydrogen Storage Devices are:



- **Safe -** even a gunshot will not result in gas explosion
- **Stable, low pressure -** automatic pressure regulation
- **Compact and scalable -** 10X smaller than traditional storages (see images)
- **99.99% purity hydrogen -** automatic purification of 4N gas to 6N

- **Incredible lifetime –** recharge capabilities far exceed batteries life

With the latest achievements in hydrogen storage technology using various alloys, substrates and nano-sciences, as well as the unique techniques of alloy loading, we will offer the most advanced hydrogen storage systems. Our canisters can safely store hydrogen in the solid state and release it steadily at ambient temperature without an additional energy source - an important issue for fuel cell application and combustion engine support. The enhanced discharge gas flow rates of our canisters and tanks make them a highly competitive gas supply source for a large variety of applications.



At present, this type of storage is considered as the safest one. Even gunshot tests with fully hydrogen charged tanks do not result in any combustible reaction, which clearly demonstrates the safety level of the product. Unlike the high-pressure hydrogen cylinders, here hydrogen is bonded with the alloy chemically. So, it will take hours, before the system will release it fully in event of gas leakage caused by system's damage.

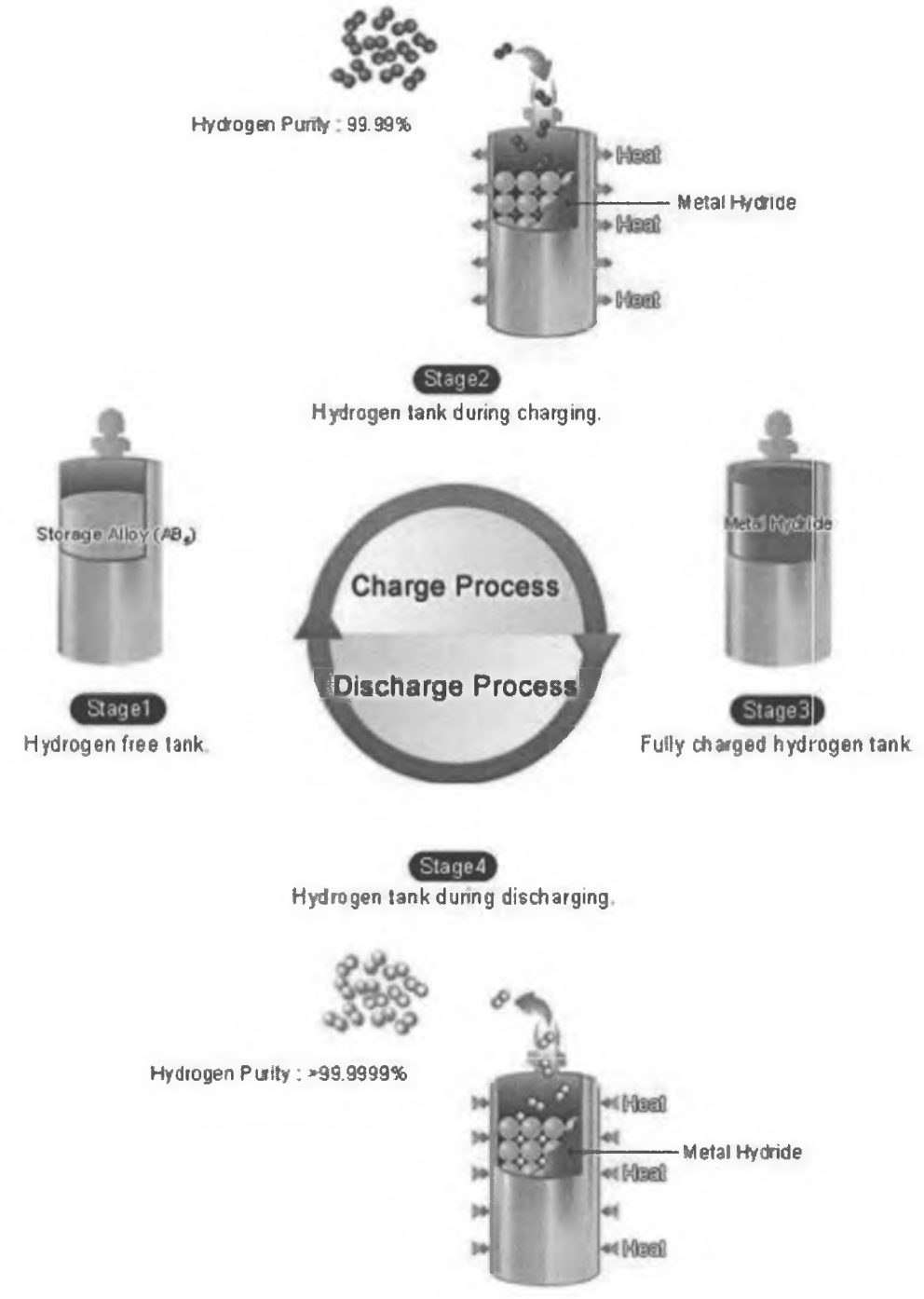


The system life cycle is incredibly long – our storage is able to pass thousands of charge/discharge cycles without any essential changes in working technical characteristics.

Due to the latest low-pressure storages from INNOVA, it has become possible to absorb hydrogen fuel directly from our autonomous hydrogen production stations (of any size or scale), which are powered by any renewable energy source – solar, wind, geo, hydro, etc. In the future, mankind will be able to create clean fuel himself by running one closed "water-hydrogen-water" cycle, and the driving force will come from infinite renewable energy sources. It will be the beginning of an off-grid energy century, where cities, communities, villages, and even people themselves will no longer need to buy electricity or fuel from the traditional sources. They then become totally free from grid electricity and centralized power plants. Moreover, all these separated renewable energy sources, combined with INNOVA charging and storage systems, can be connected into one energy network under one central control system.



Our Charge/Discharge Cycle



Product Overview – Scalable Charging Stations

The INNOVA charging stations will be able to produce hydrogen in a wide range of volume's and on multiple scale's in an effort to maixmize opportinities from the smallest operations base to considerable remote villages. By using solar, geo, wind and/or any alternative energy source, the hydrogen produced by these stations can be used for a vartiety of applications - including, but not limited to, expeditionary, remote and stationary power.

NOTE: All products and systems are scalable up or down.

Current Hydrogen Production Solutions

HydroSTAX – Can be used individually for under the hood and onboard applications.
OR

Autonomous Stations

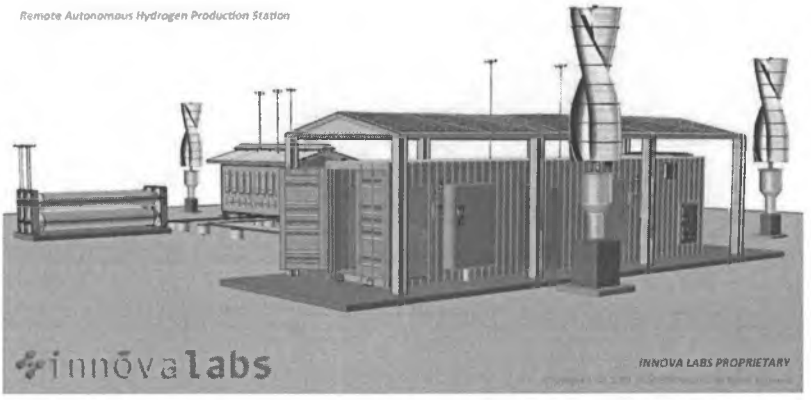
Uses:

- Direct Injection / Supplementation – For Large GenSets, FOB, and Home Scales
- Charging Bottles, Tanks, Canisters and Cartridges, Aerostat and Balloon Filling. Can work alone or with any fossil, bio or alternative fuel source.

Hydrogen Storage Solutions

HDLPH2 Canisters & Cartridges

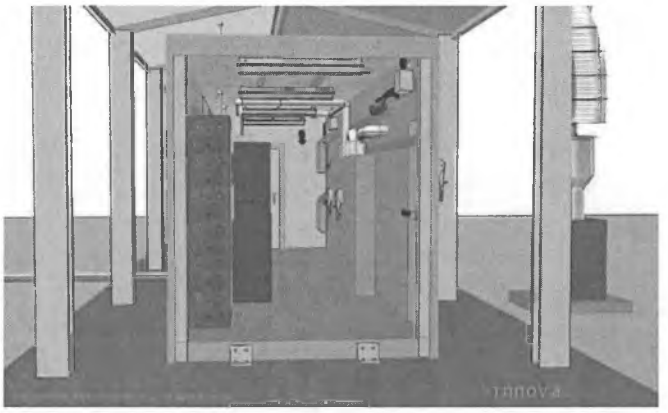
Hydrogen Power Solutions



- Very light weight and small footprint
- AC, DC or Both
- We are working with many types of engines – orthodox or unorthodox – piston driven systems as well as rotary, radial, liquid piston, and axial. We constantly explore and research for the latest in engine technology.
- Rack, Rail or Pak Mounts available.
- Because of the nature and way H2 combusts, very little atmosphere is needed. Therefore, our power systems can be contained underground for security or where visibility or landscape issues are prevalent.
- This lineup is totally hydrogen powered – no fossil or alternative fuel needed.

- Fuel Delivery can be a separate Module or built into the GEN itself.
- All items can be custom configured to meet your demands and requirements.

PowerPak – Backpack Power System – Using Down East Molle Polymer Frame – 800-1200 W - approx. 45 lbs. without canisters. One PowerPak can hold power module as well as a small amount of H2 (for single man operations) and a second PowerPak can hold Canisters and/or Cartridges and perform as the Fuel Delivery System itself.



MicroGEN – 1500W – 2KW approx. 55 pounds*

Little GENnie – 3KW approx. 65 pounds*

GENnie – 5 KW approx. 90 pounds*

Big GENnie – 10KW approx. 110 pounds*

*Using current piston driven engines – weight and footprint can be reduced significantly using other engine technologies.

innōvalabs

Remote Autonomous Hydrogen Production Stations

OVERVIEW

INNOVA's modular hydrogen production exchange facility is a turnkey solution, designed to provide a supply of continuous zero-emission power for supplementation and replacement through nature's most common element - ***hydrogen***.

The INNOVA hydrogen charging stations ("HPX") will be able to produce scalable hydrogen supplies for a wide variety of applications. These stations will use alternative energy sources such as wind, solar and/or thermal to produce the hydrogen from virtually any water supply. The stations can also be backed up by or tied into a grid if necessary. The HPX can be built to any size depending on the amount of hydrogen needed for each application.

The HPX can be located anywhere there is a sustainable water source: public water system via hose, lake, river, well water, ocean, etc. The HPX systems can be upgraded or daisy-chained to increase production and are modular enough to grow with you and your needs.

The hydrogen gas produced by the stations can be used to supplement existing power sources that use internal combustion engines as well as to charge INNOVA's high capacity low pressure storage containers. These containers (bottles) can be supplied in various sizes to service many applications – including: remote power generators, heating, cooking, yard tools and small engine powered devices like ATV's, motorcycle's, snowmobiles, etc.

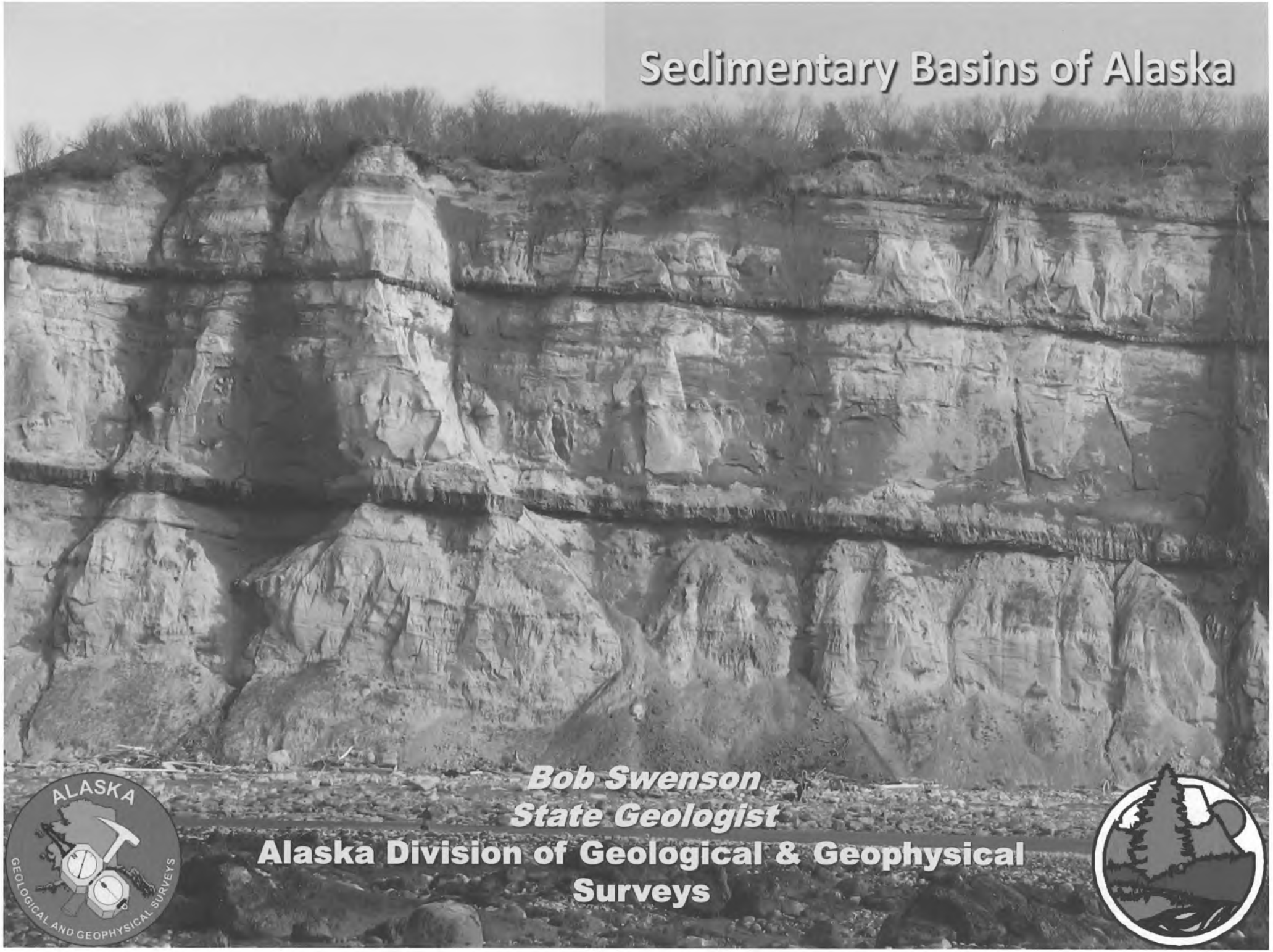
For internal combustion engines ("ICE") the enrichment of hydrogen brings various benefits: improved fuel combustion, lower particulate emissions, greater thermal efficiency, and lower fuel consumption. INNOVA's technology allows a light, compact system to be installed that produces clean, dry hydrogen without the presence of harmful materials, and the gas can be injected directly into the engine with excellent results.

INNOVA's holistic vision brings energy independence to the individual and the community.

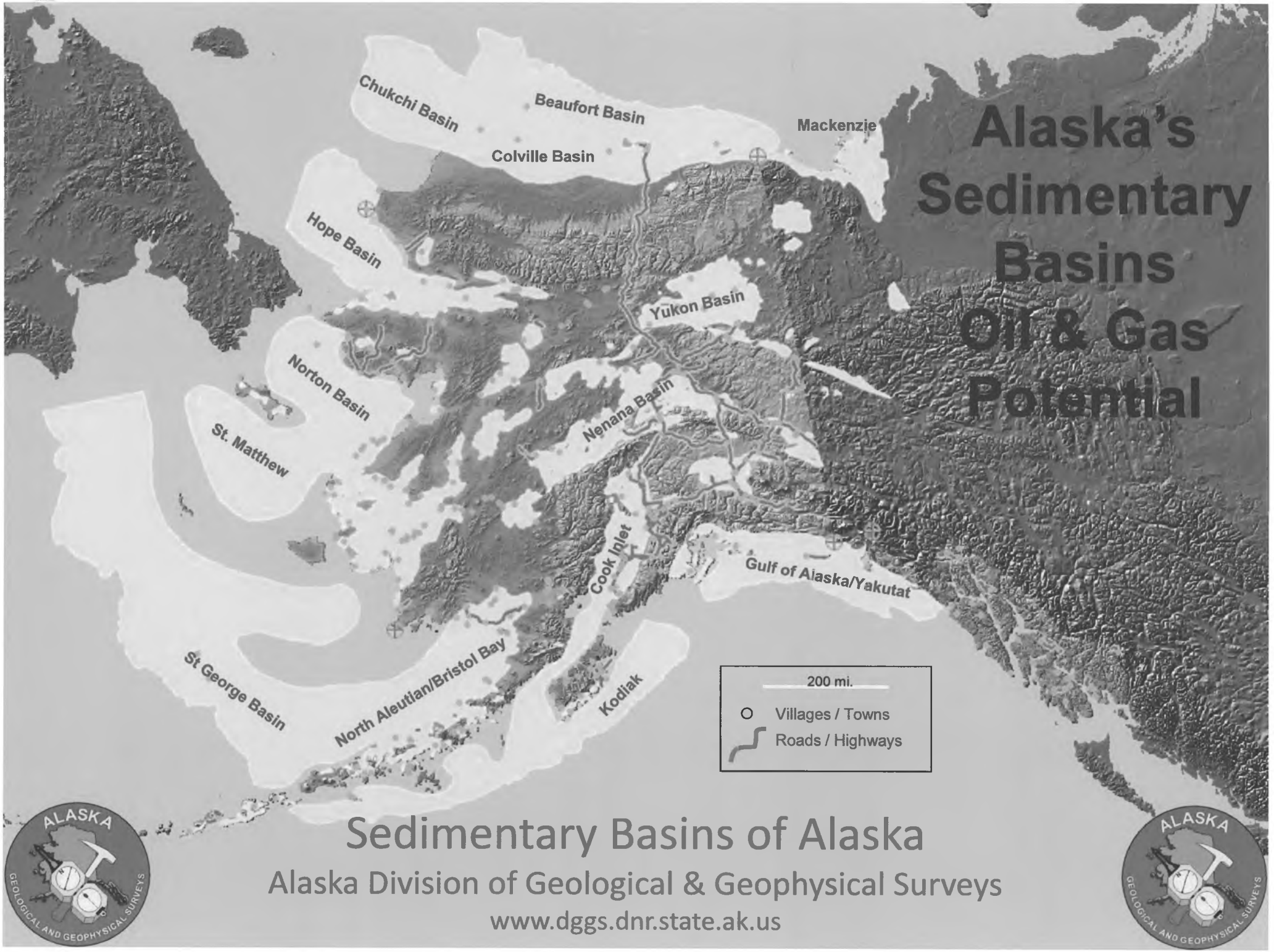
3/24/11 Presentation by Bob Swenson, State Geologist: Sedimentary Basins of Alaska

<TARGET><BILL></BILL><SUBJECT>3-24-11 Presentation by Bob Swenson, State Geologist Sedimentary Basins of Alaska</SUBJECT><COMM>HENE27</COMM></TARGET>

Sedimentary Basins of Alaska



Bob Swenson
State Geologist
Alaska Division of Geological & Geophysical Surveys

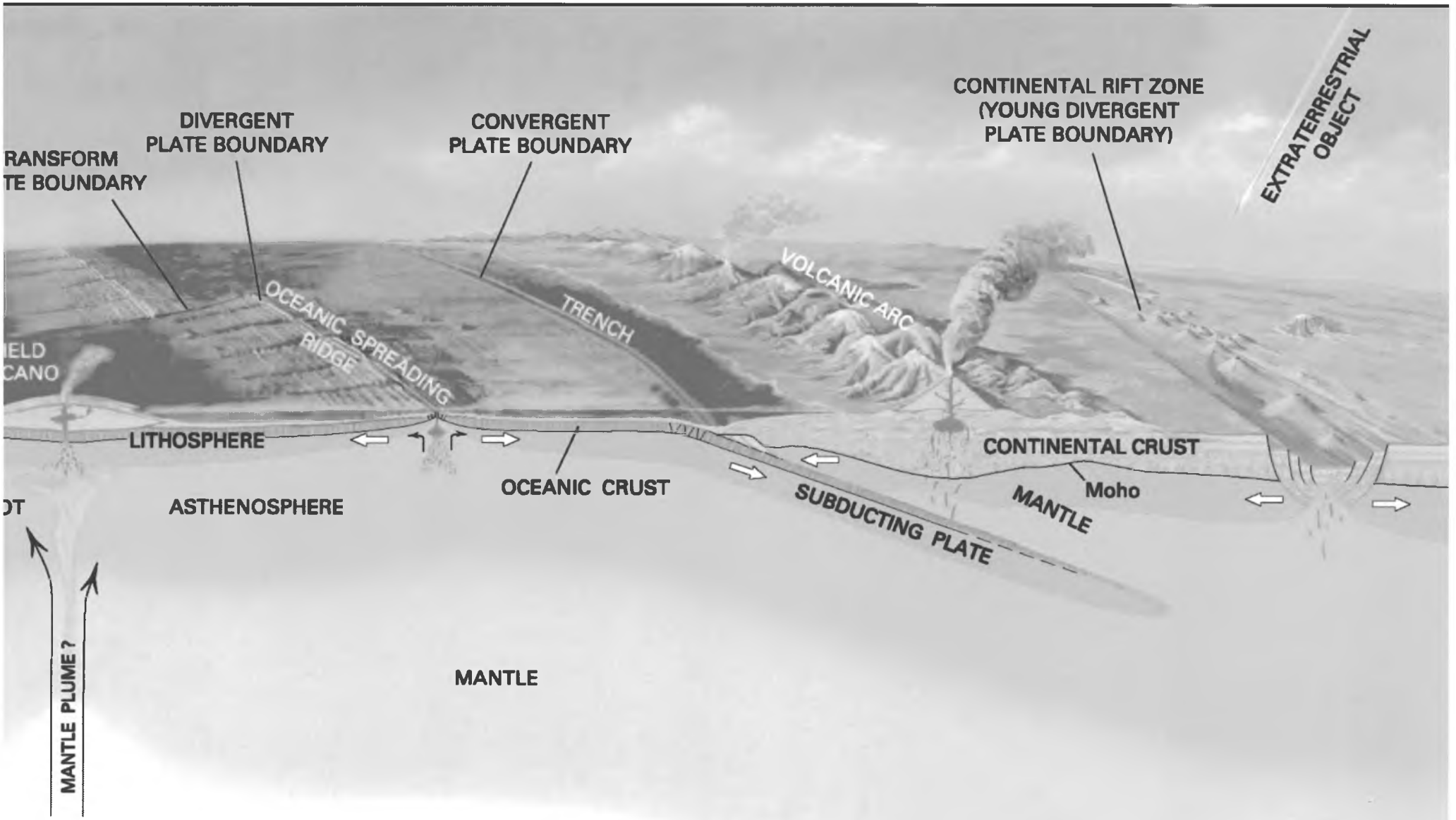


Sedimentary Basins of Alaska

Alaska Division of Geological & Geophysical Surveys

www.dggs.dnr.state.ak.us

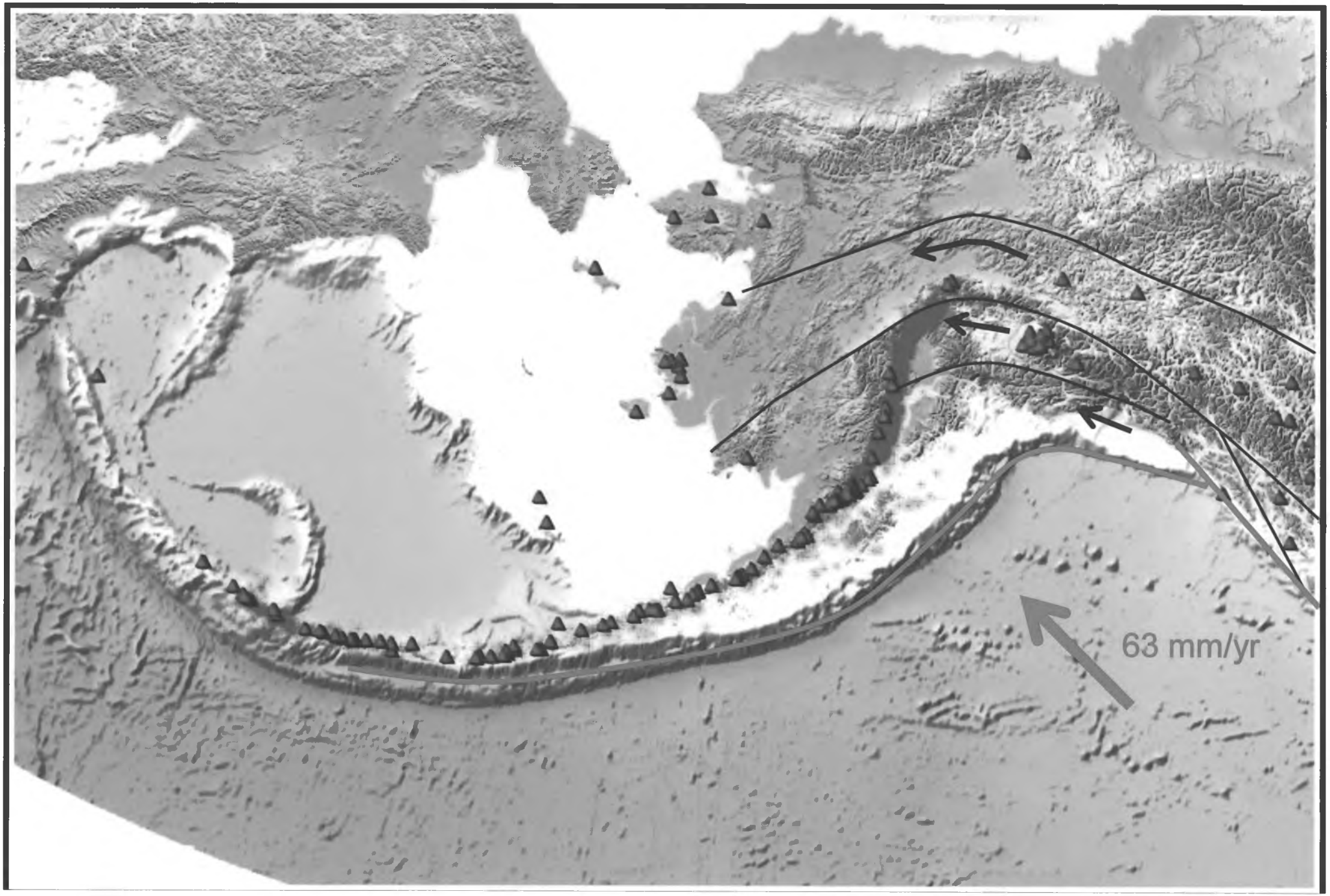
Subduction and Tectonics Drive the System



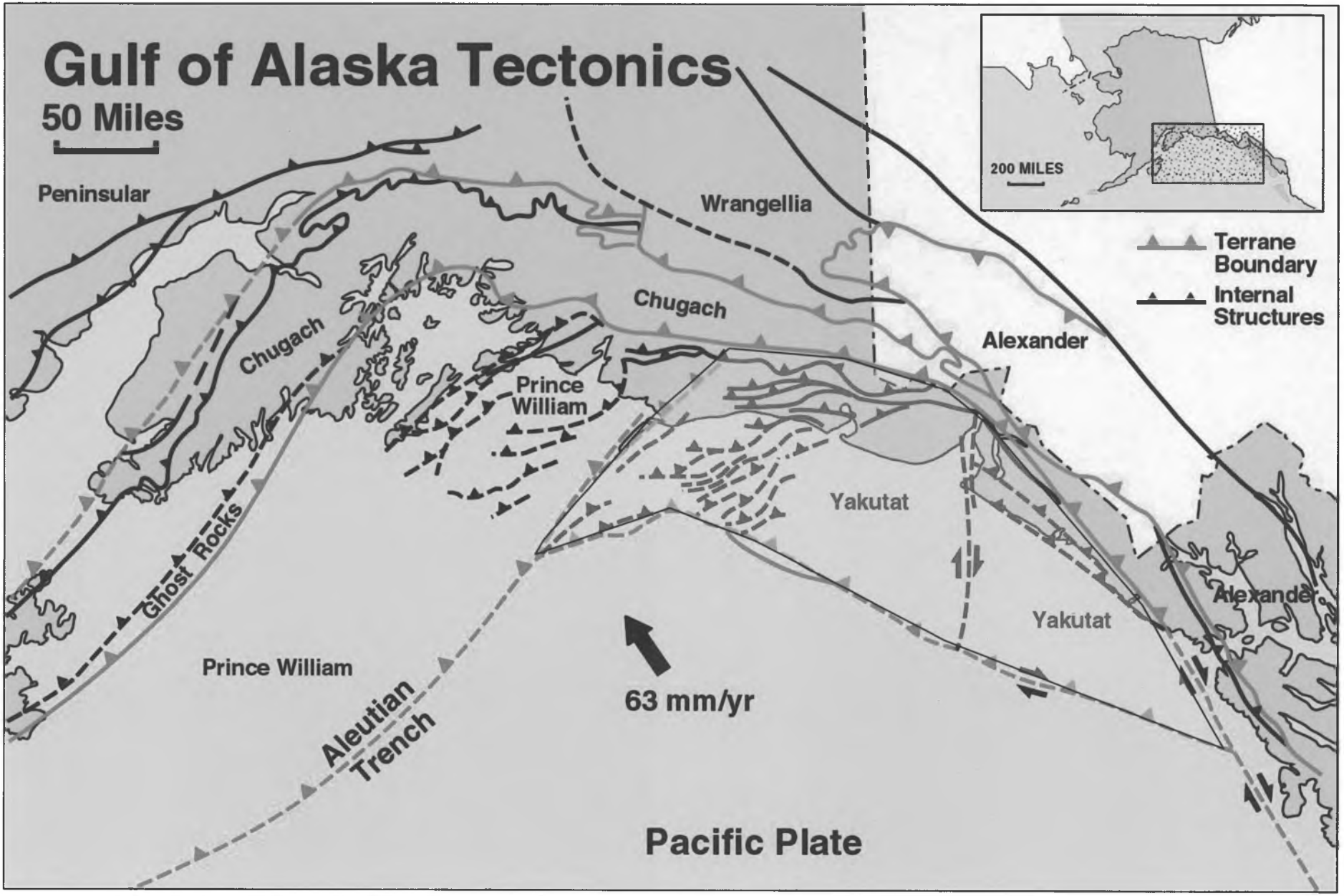
SCHEMATIC CROSS SECTION OF PLATE TECTONICS

José F. Vigil and Robert I. Tilling

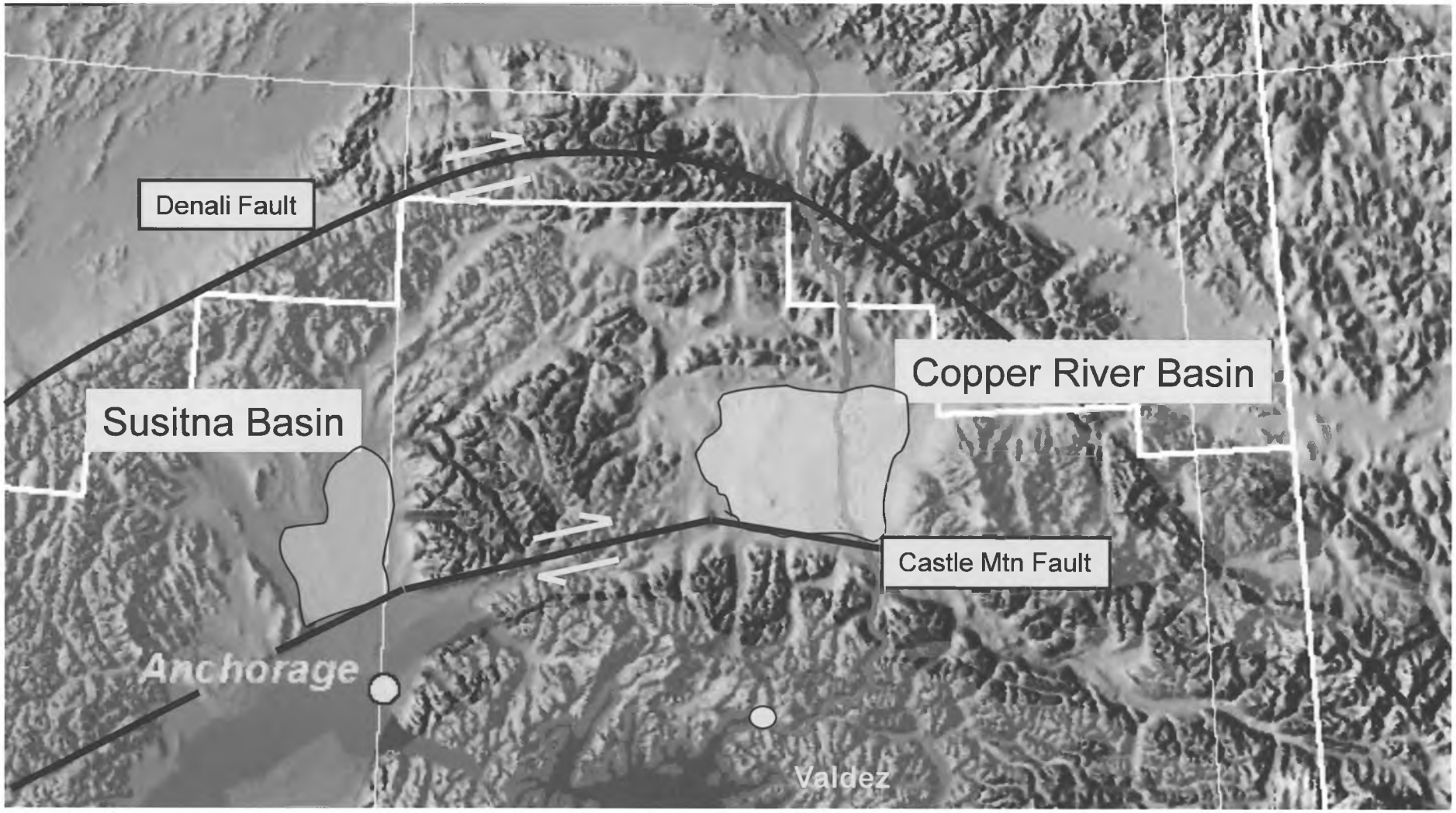
Alaska is Complex, Both Topographically & Geologically



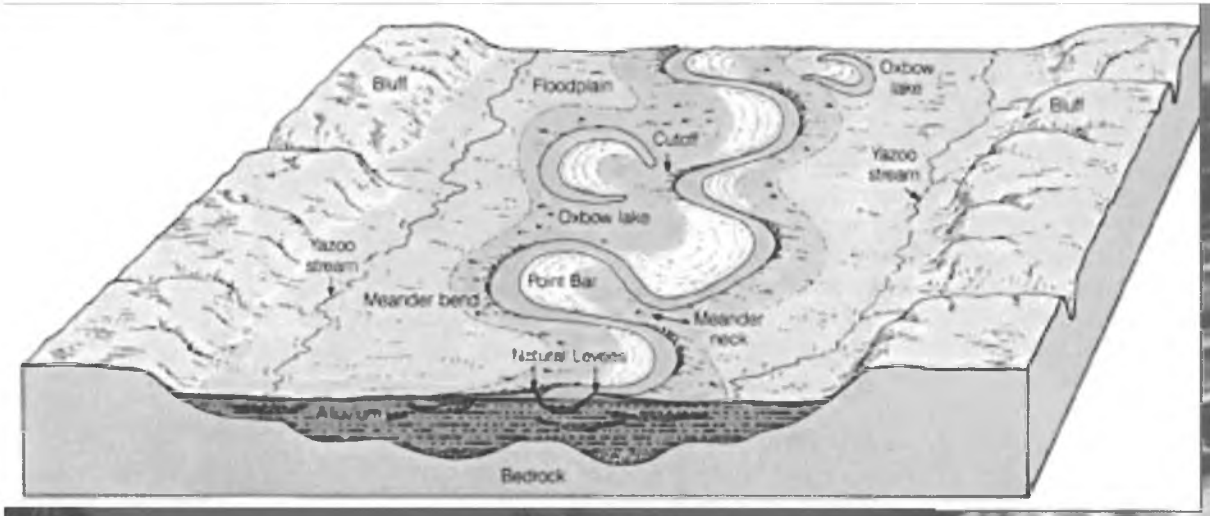
South Alaska Terranes



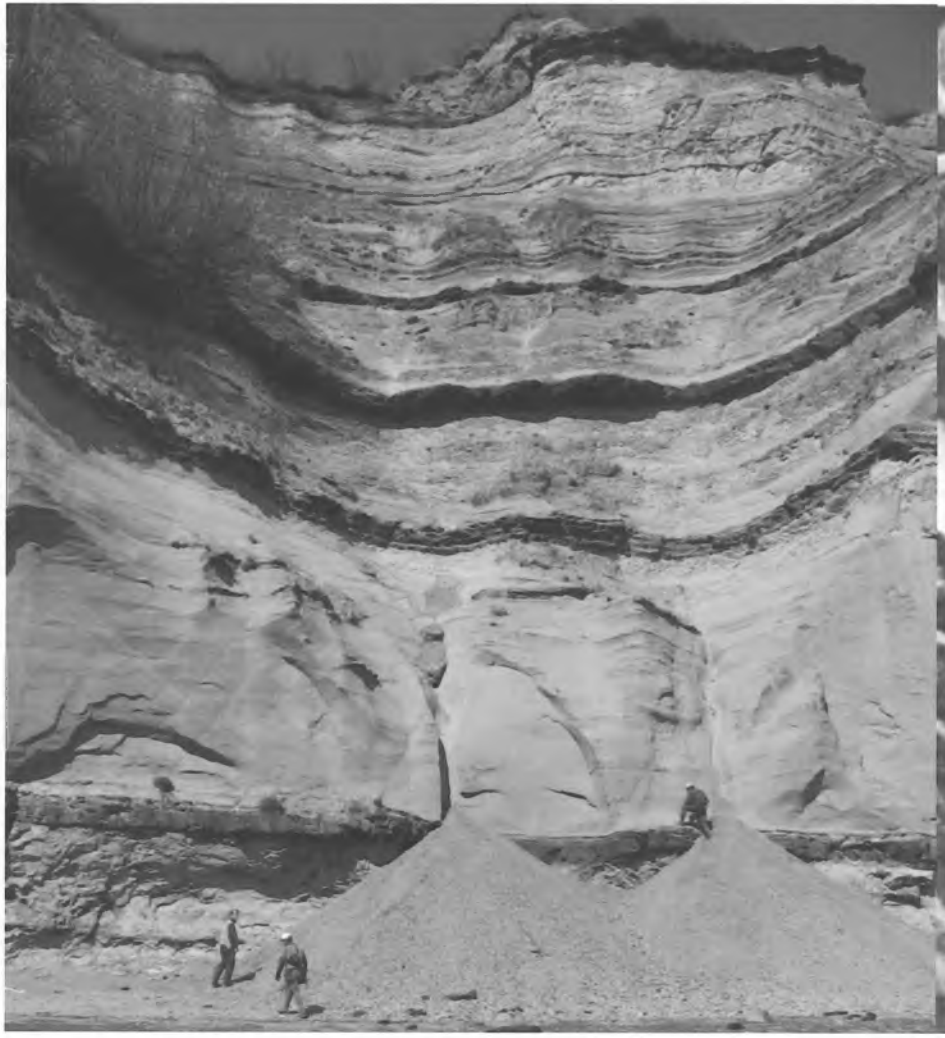
Mountain Building and Depressions



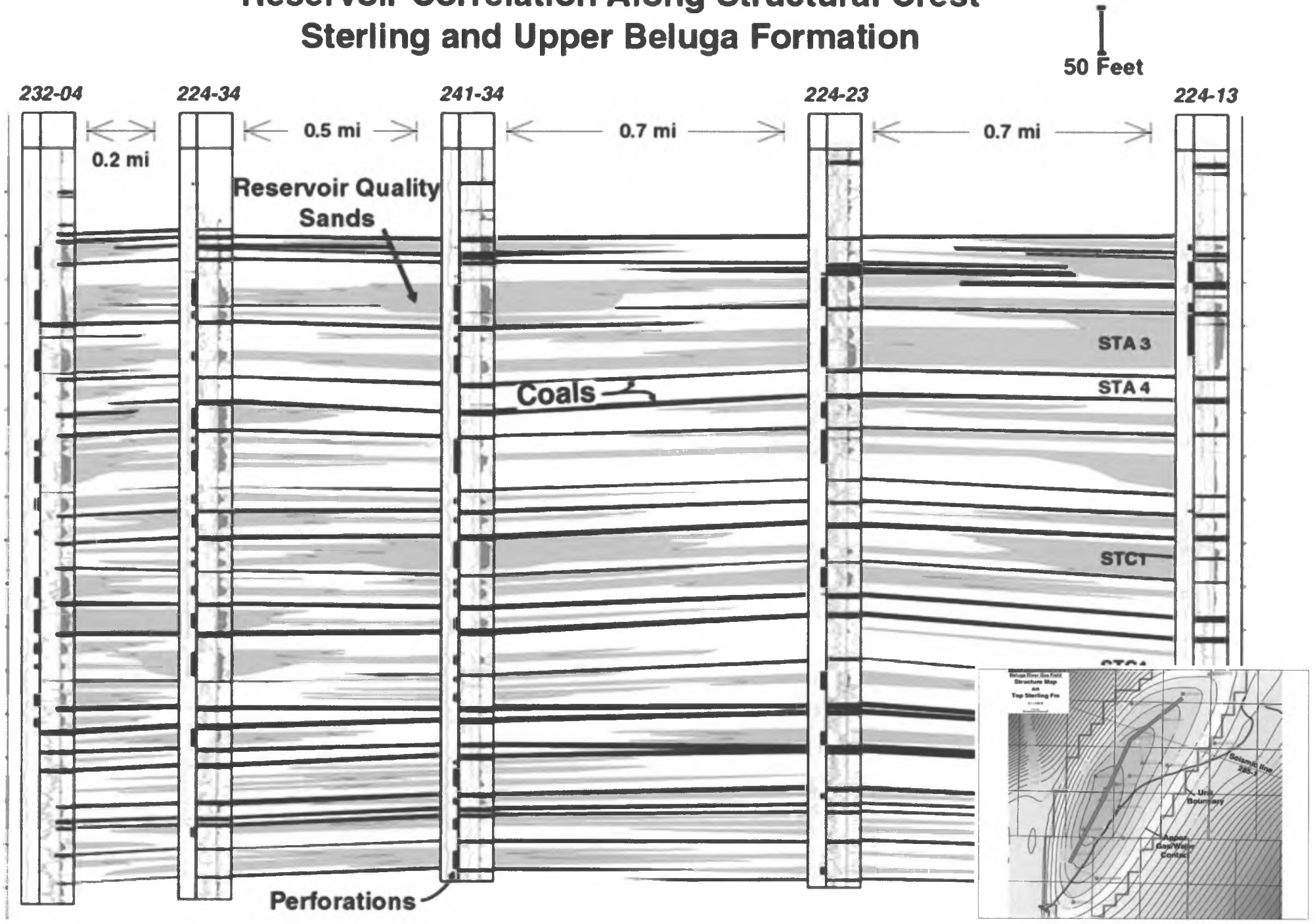
Tertiary Basin Depositional Systems

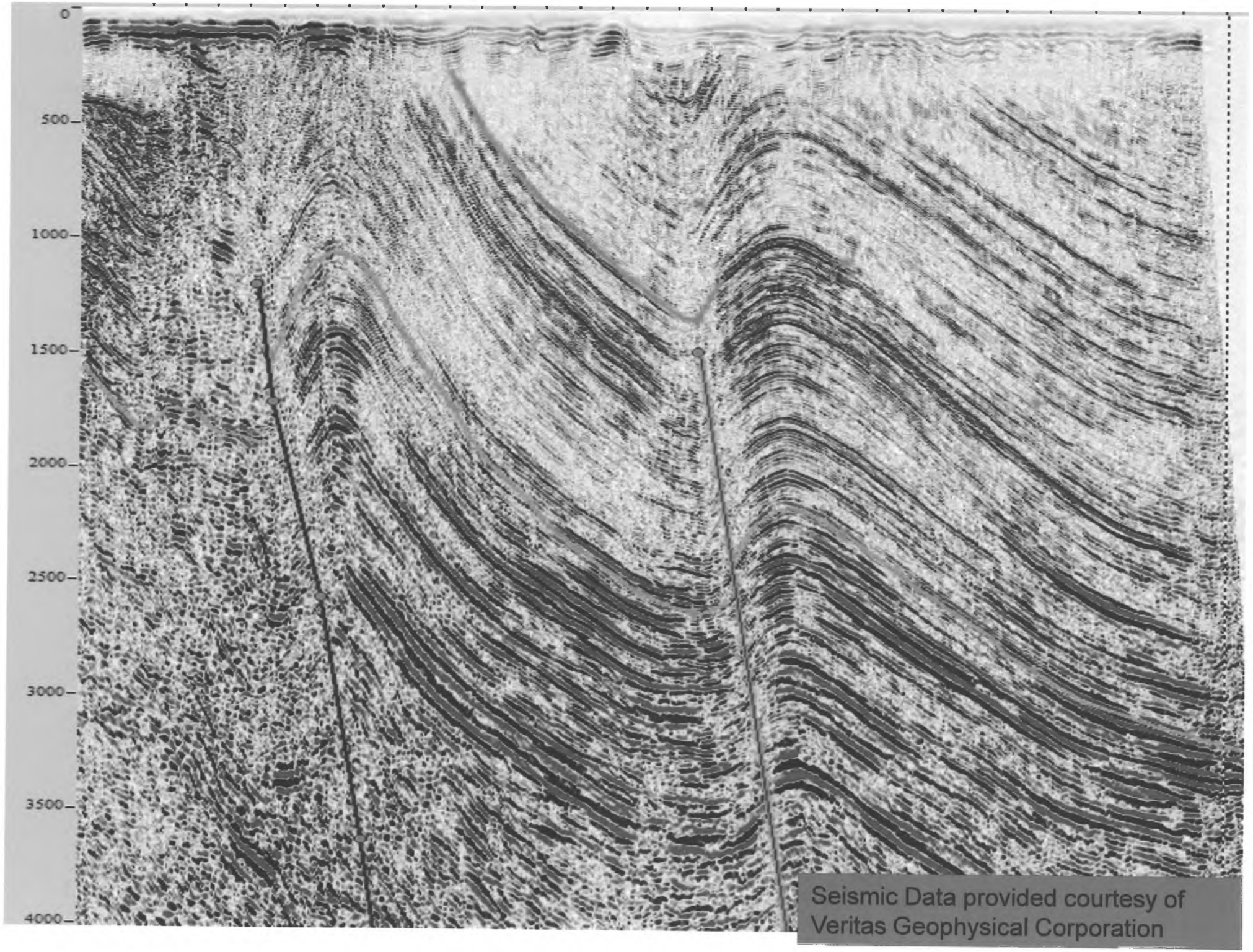


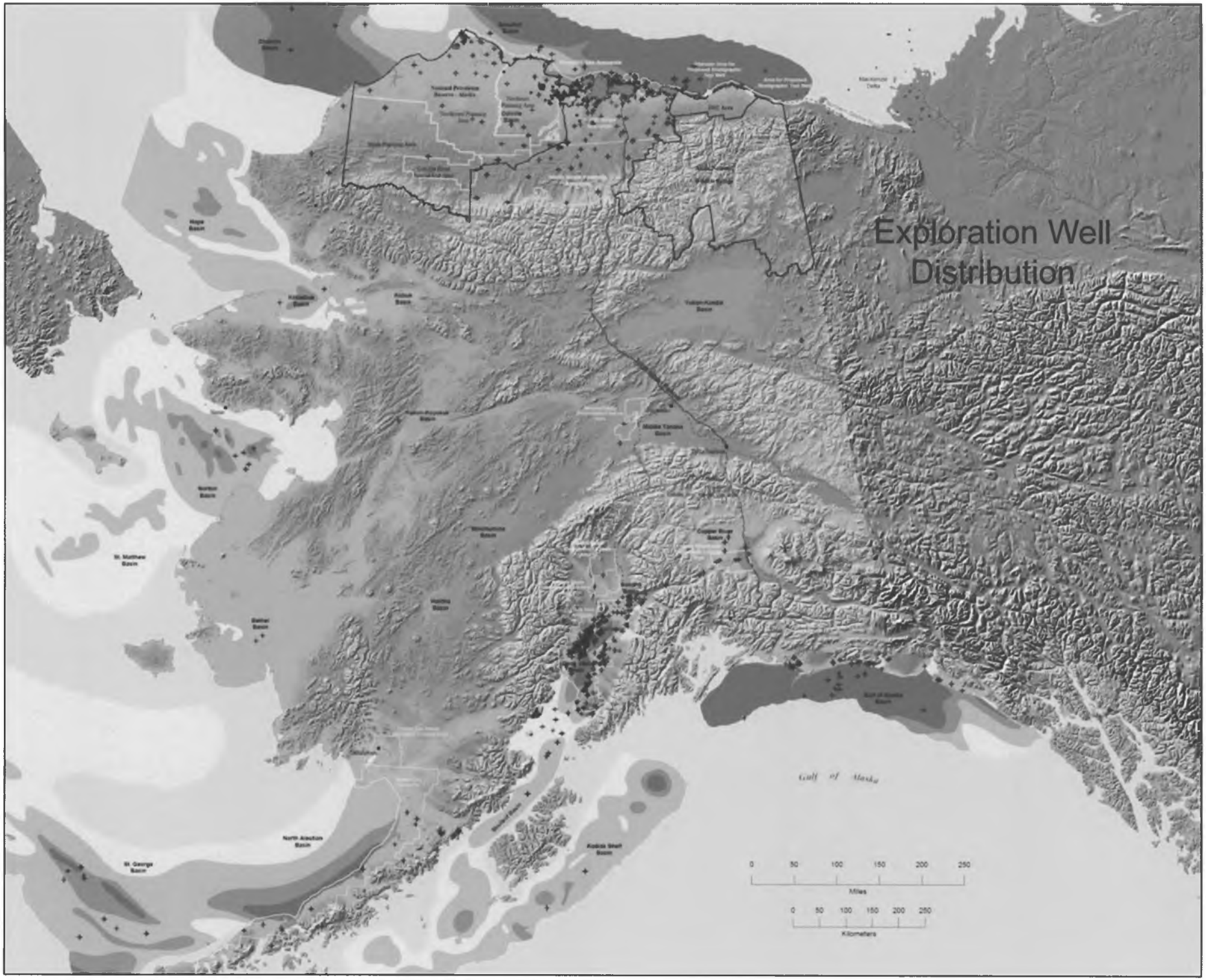


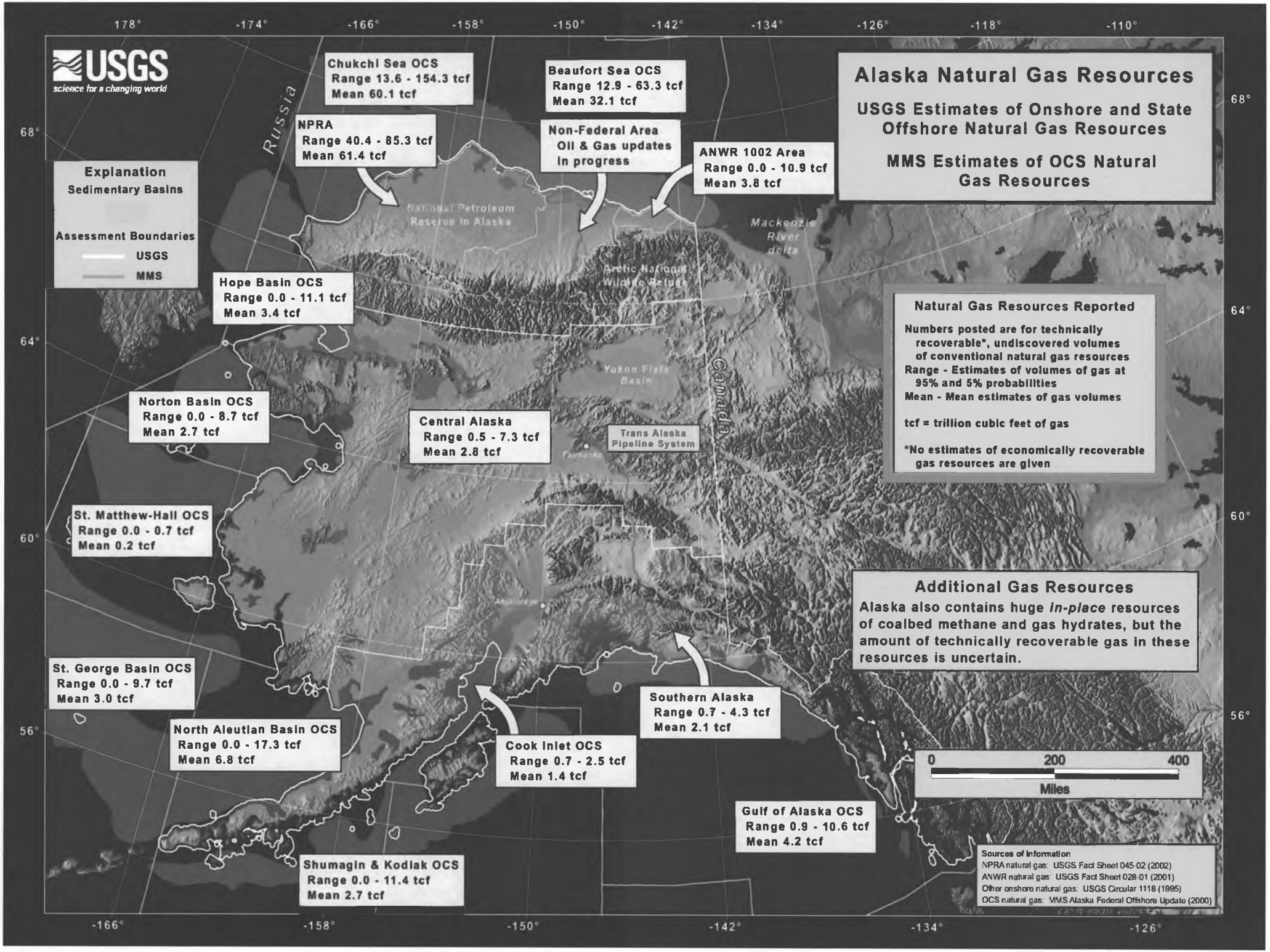


Beluga River Gas Field
Reservoir Correlation Along Structural Crest
Sterling and Upper Beluga Formation

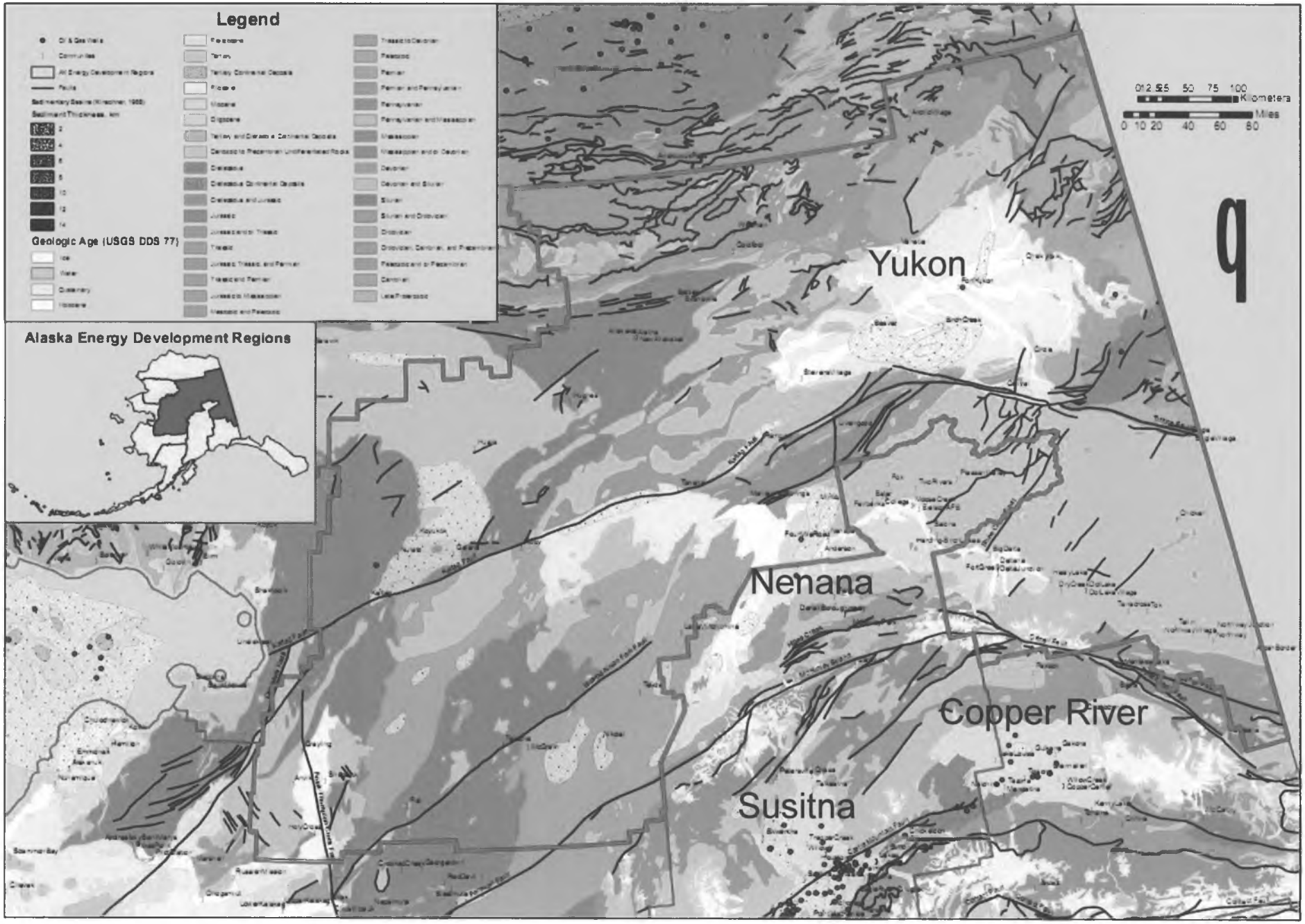



0
500
1000
1500
2000
2500
3000
3500
4000
Seismic Data provided courtesy of
Veritas Geophysical Corporation


Exploration Well Distribution
Gulf of Alaska
0 50 100 150 200 250
Miles
0 50 100 150 200 250
Kilometers

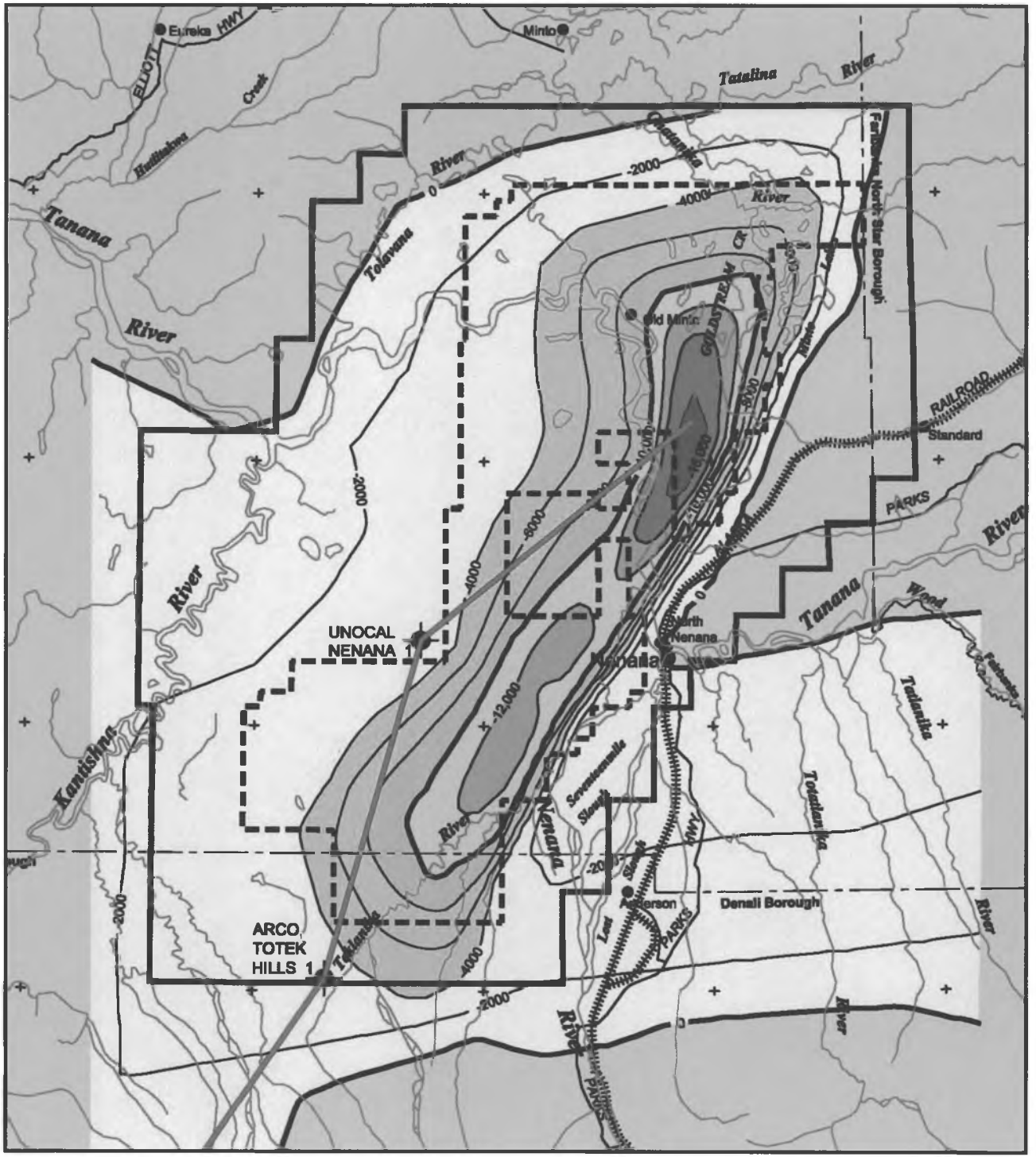

USGS
science for a changing world
Alaska Natural Gas Resources
USGS Estimates of Onshore and State Offshore Natural Gas Resources
MMS Estimates of OCS Natural Gas Resources
Explanation
Sedimentary Basins
Assessment Boundaries
USGS
MMS
Chukchi Sea OCS
Range 13.6 - 154.3 tcf
Mean 60.1 tcf
Beaufort Sea OCS
Range 12.9 - 63.3 tcf
Mean 32.1 tcf
NPRA
Range 40.4 - 85.3 tcf
Mean 61.4 tcf
Non-Federal Area
Oil & Gas updates
in progress
ANWR 1002 Area
Range 0.0 - 10.9 tcf
Mean 3.8 tcf
Russia
National Petroleum Reserve in Alaska
Mackenzie River delta
Arctic National Wildlife Refuge
Hope Basin OCS
Range 0.0 - 11.1 tcf
Mean 3.4 tcf
Yukon Flats Basin
Canada
Norton Basin OCS
Range 0.0 - 8.7 tcf
Mean 2.7 tcf
Central Alaska
Range 0.5 - 7.3 tcf
Mean 2.8 tcf
Trans Alaska Pipeline System
Fairbanks
Natural Gas Resources Reported
Numbers posted are for technically recoverable*, undiscovered volumes of conventional natural gas resources
Range - Estimates of volumes of gas at 95% and 5% probabilities
Mean - Mean estimates of gas volumes
tcf = trillion cubic feet of gas
*No estimates of economically recoverable gas resources are given
St. Matthew-Hall OCS
Range 0.0 - 0.7 tcf
Mean 0.2 tcf
Anchorage
Additional Gas Resources
Alaska also contains huge in-place resources of coalbed methane and gas hydrates, but the amount of technically recoverable gas in these resources is uncertain.
St. George Basin OCS
Range 0.0 - 9.7 tcf
Mean 3.0 tcf
Southern Alaska
Range 0.7 - 4.3 tcf
Mean 2.1 tcf
North Aleutian Basin OCS
Range 0.0 - 17.3 tcf
Mean 6.8 tcf
Cook Inlet OCS
Range 0.7 - 2.5 tcf
Mean 1.4 tcf
0
200
400
Miles
Gulf of Alaska OCS
Range 0.9 - 10.6 tcf
Mean 4.2 tcf
Shumagin & Kodiak OCS
Range 0.0 - 11.4 tcf
Mean 2.7 tcf
Sources of Information
NPRA natural gas: USGS Fact Sheet 045-02 (2002)
ANWR natural gas: USGS Fact Sheet 028-01 (2001)
Other onshore natural gas: USGS Circular 1118 (1995)
OCS natural gas: MMS Alaska Federal Offshore Update (2000)
178°
-174°
-166°
-158°
-150°
-142°
-134°
-126°
-118°
-110°
68°
64°
60°
56°

Geology of the Yukon-Koyukuk/Upper Tanana Energy Region, Alaska



Nenana Basin

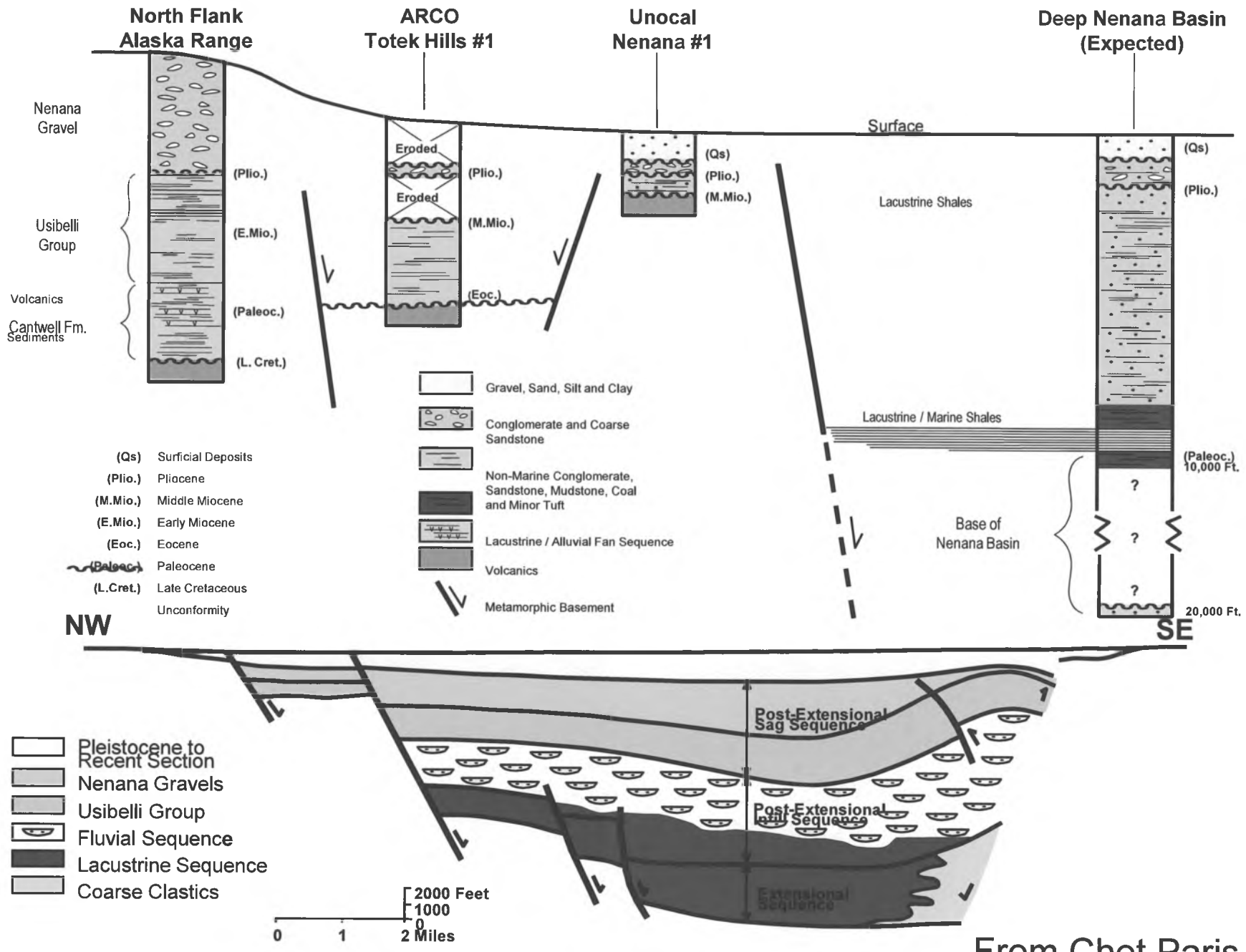
Thickness of Sedimentary Basin (Tertiary)



Contour Interval = 2,000 Ft.

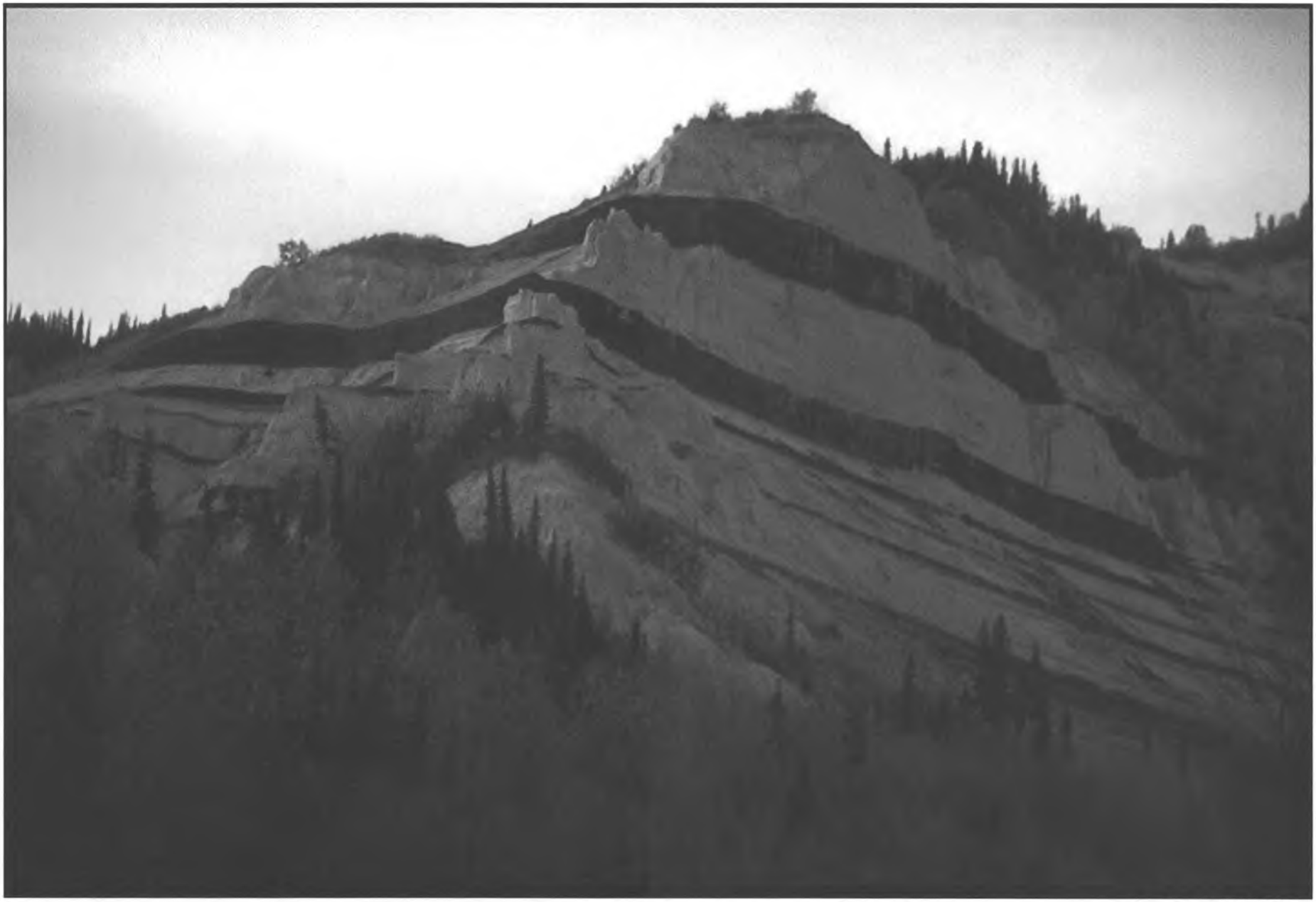
ods 2/02

Nenana Basin



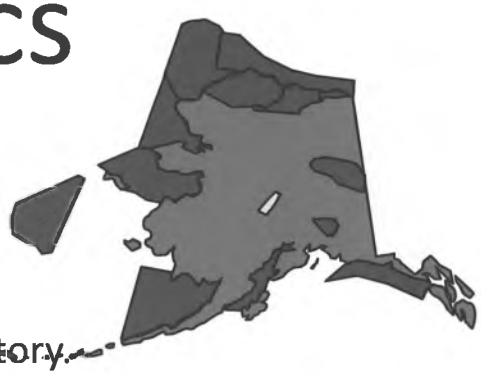
From Chet Paris, PRA

Usibelli Group in Outcrop Belt South of Nenana Exploration License Area



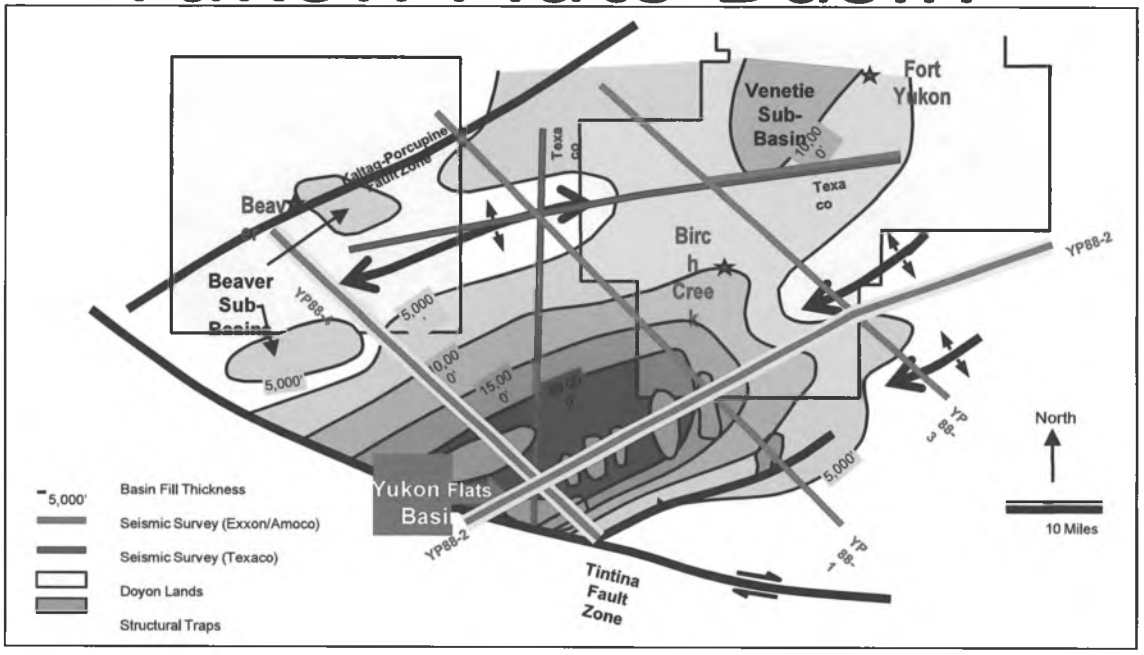
Roy D. Merritt, DGGS 08/95

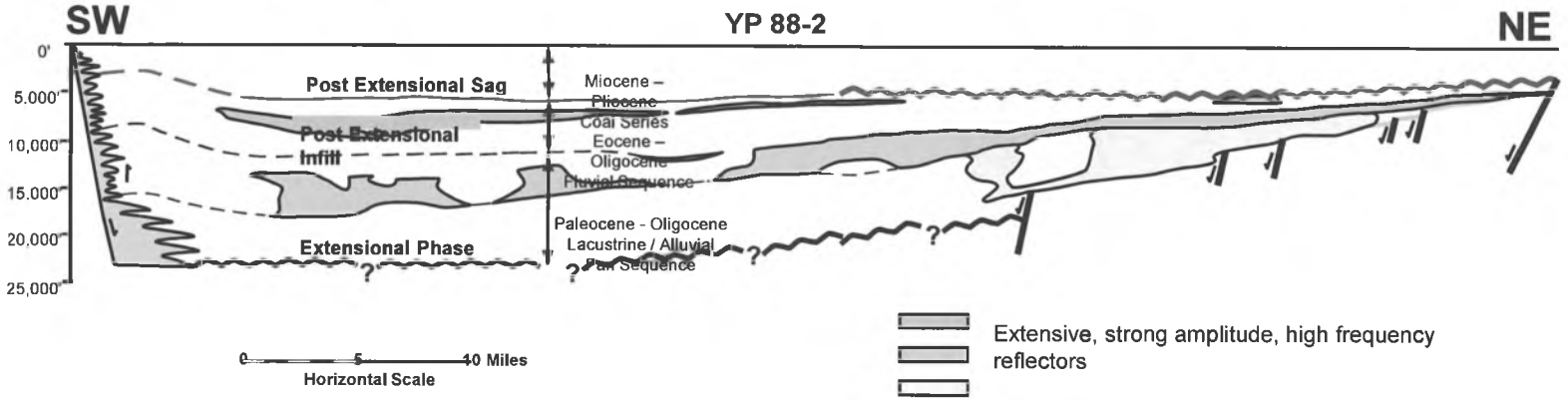
Nenana Basin Statistics



- Tertiary Non Marine Basin Fill
  - Up to 18,000 Ft Thick (Seismic).
  - Time-equivalent to Cook Inlet's productive Kenai Group.
  - Potential for oil is low due to thin low-organic source rocks & thermal history.
  - 350 miles 2-D seismic data in southern and central basin areas (1981-82)
- The range of possible reserve outcomes is wide and poorly constrained
  - Terrestrial Kerogens and Coal Sourced Gas
- 2 Wells Drilled on Basement Highs
  - Unocal Nenana #1 (1962) – 3,062' deep, coal seam gas shows.
  - ARCO Totek Hills #1 (1984) – 3,590' deep, coal seam gas shows.
  - Entire Section not Penetrated
  - Good Reservoir in Shallow Section
  - Potential for CBM and conventional gas is good
- Significant Deformation on Southern Margin
  - Likely Associated with Strike Slip on Basin Bounding Faults
- Recent Seismic Work and Exploration Well
  - No commercial discovery announced

Yukon Flats Basin





Extensive, strong amplitude, high frequency reflectors

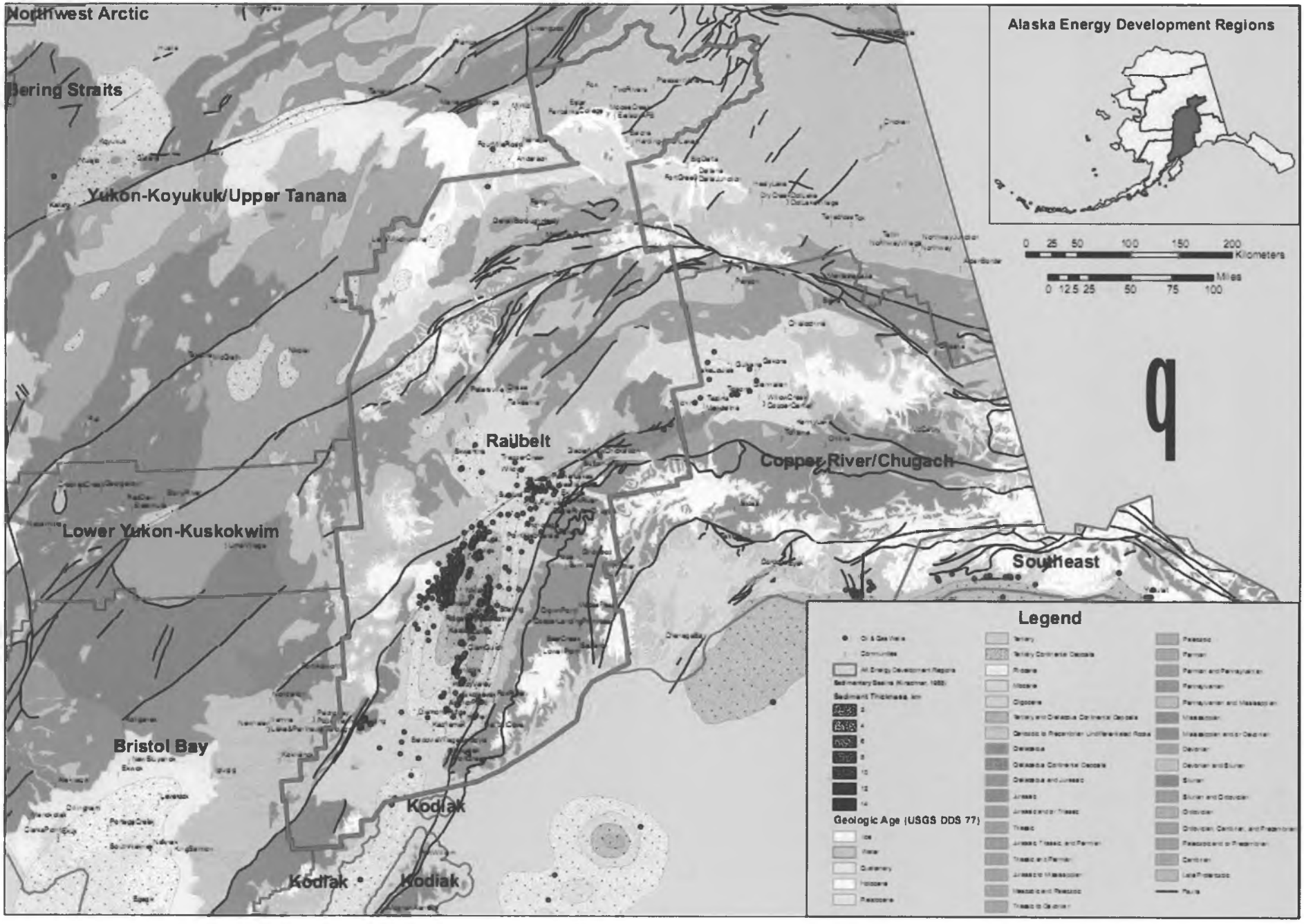
Extensive, strong amplitude, low frequency reflectors

Local, strong amplitude, low frequency reflectors

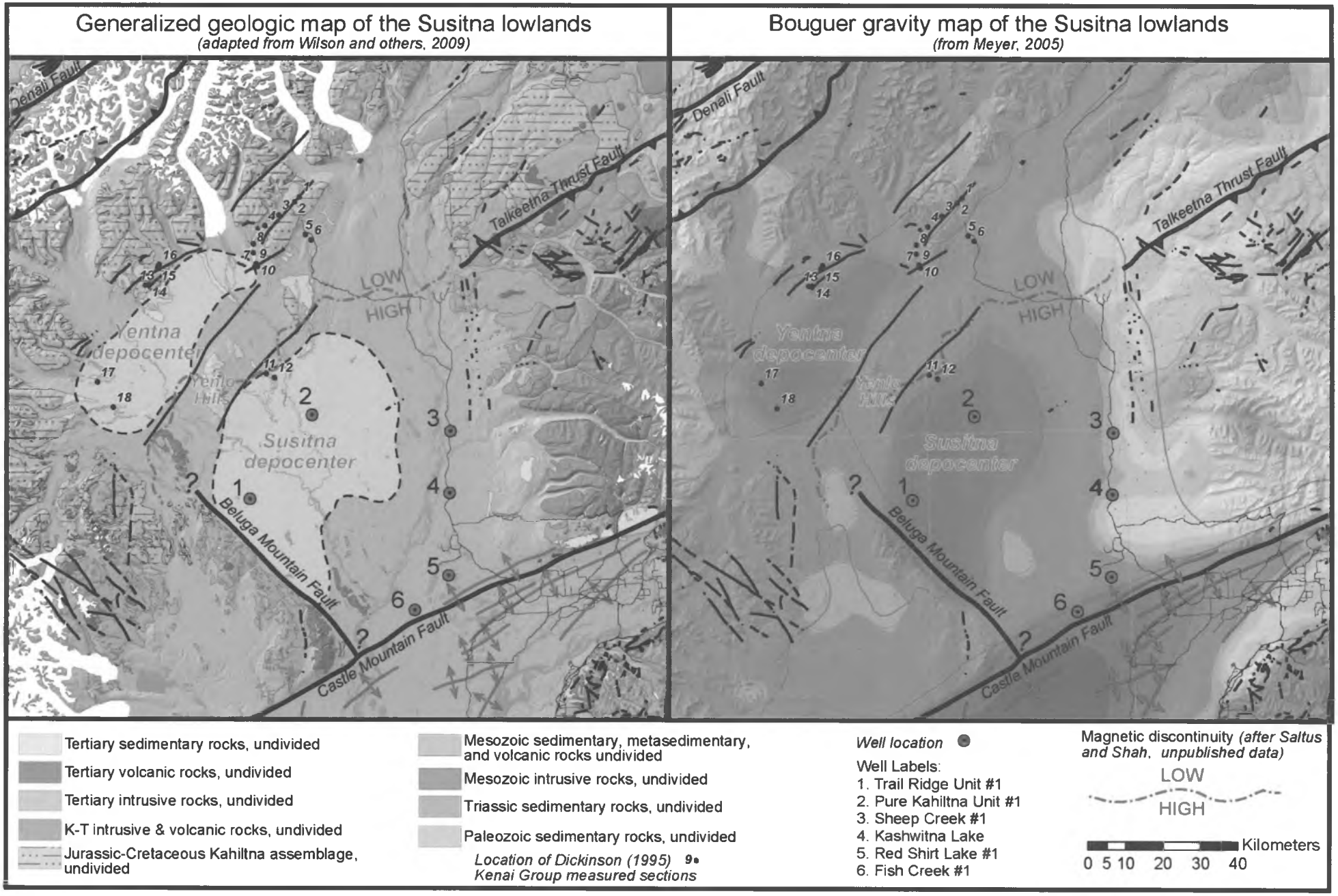
Coarse clastic wedge

From Chet Paris, PRA

Geology of the Railbelt Energy Region, Alaska



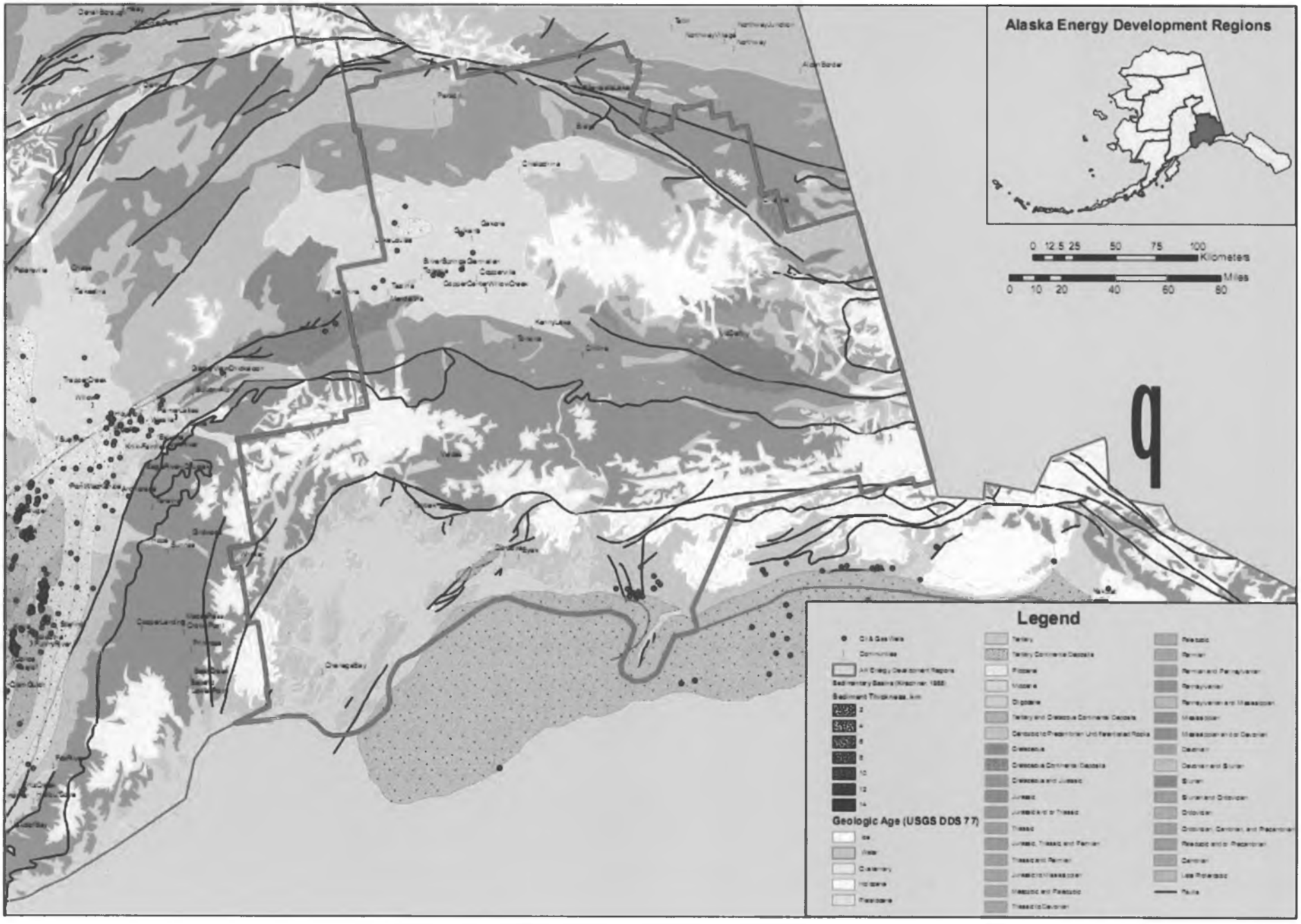
Susitna Basin



Susitna Basin Statistics

- Similar Stratigraphy Cook Inlet
  - Separated by Crustal Scale Castle Mountain Fault
  - Up to 15,000 Ft of Tertiary Section (Based on Gravity in Sub-basins)
    - Overlies Mesozoic Metamorphic Complex and Tertiary Volcanics
  - Lacks Paleocene and Early Oligocene Strata
- 2 Wells and Limited '60's Vintage Seismic
  - Some Gravity and Magnetic Data Available
- Tertiary Gas Prone Basin
  - No Viable Oil Source Identified
- Currently Under Exploration License by Cook Inlet Energy
- Focus of detailed mapping and analysis in 2011 by DGGS

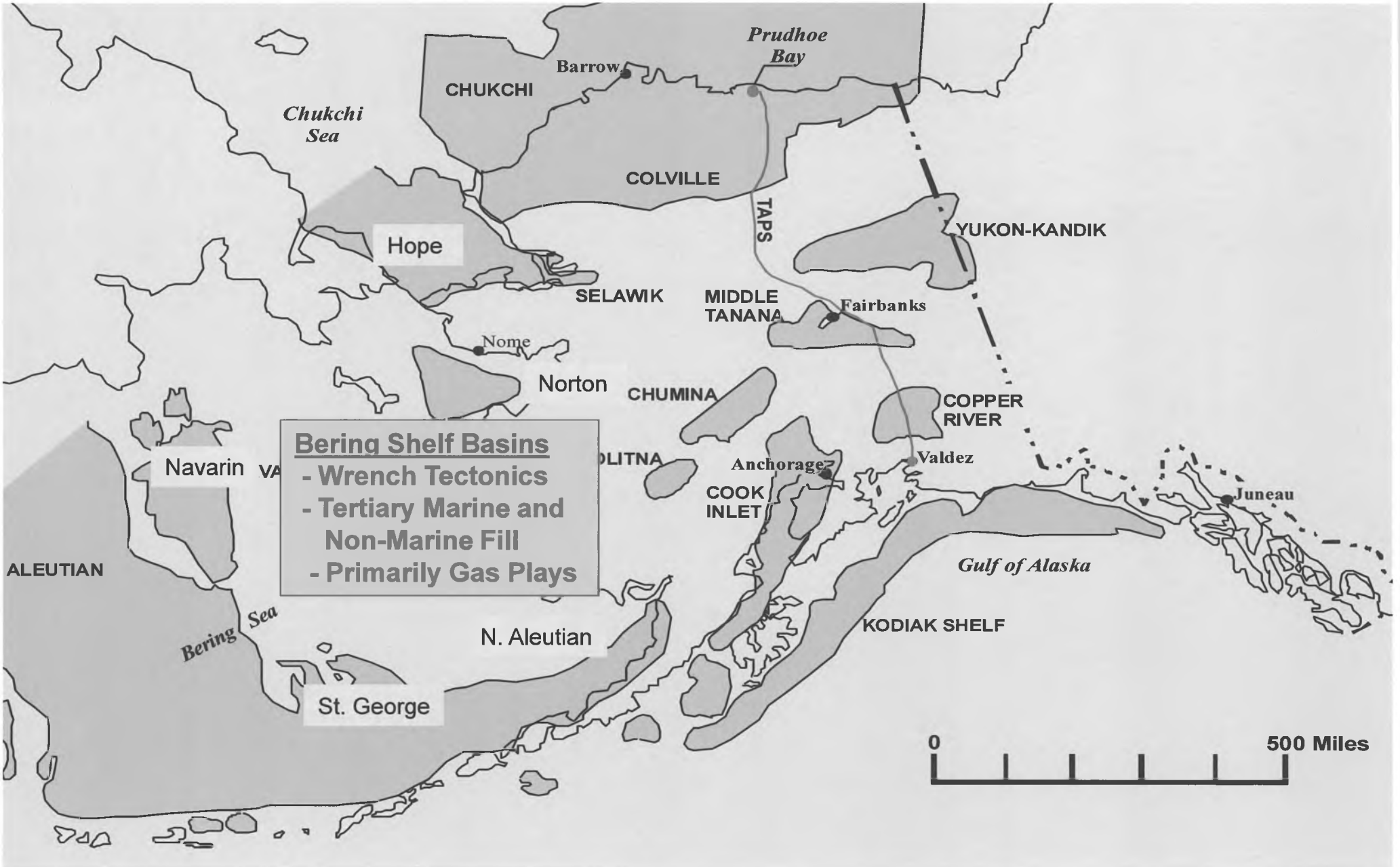
Geology of the Copper River/Chugach Energy Region, Alaska

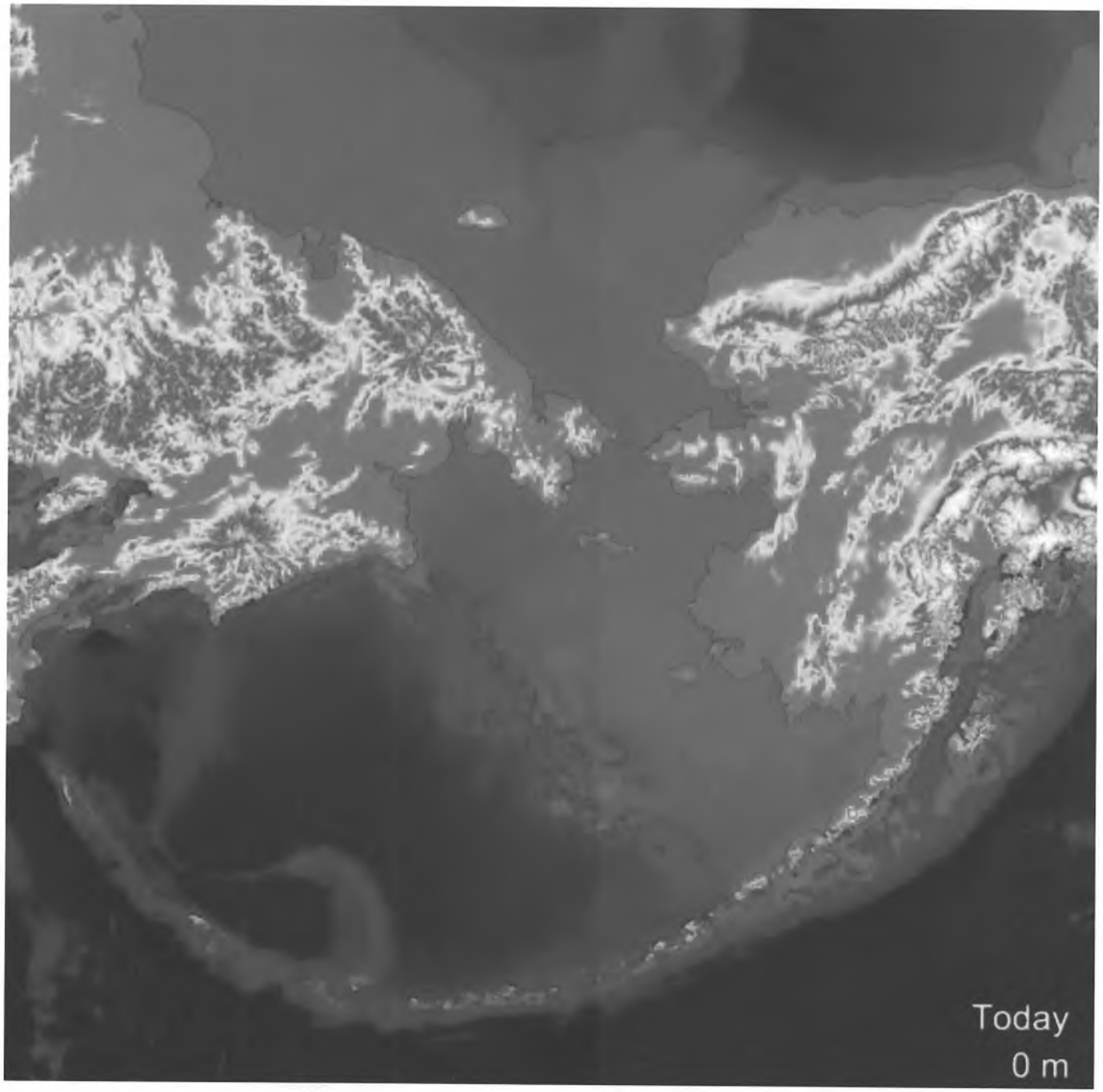


Copper River Basin Statistics

- Tertiary Stratrigraphy Similar to Cook Inlet
  - Less Than 3,000 Ft of Tertiary Section
  - Immature Mesozoic Source Terrane on Western Boundary
    - Remainder of Basin Surrounded by Metamophic and Volcanic Rocks
    - Some potential in Mesozoic marine section
- 11 Wells and Limited '70's Vintage Seismic
  - Limited Gravity and Magnetic Data Available
- Tertiary Gas Prone Basin
  - Oil Source in Mesozoic Section Immature where Encountered
- Recent Exploration Well
  - No Commercial Discovery

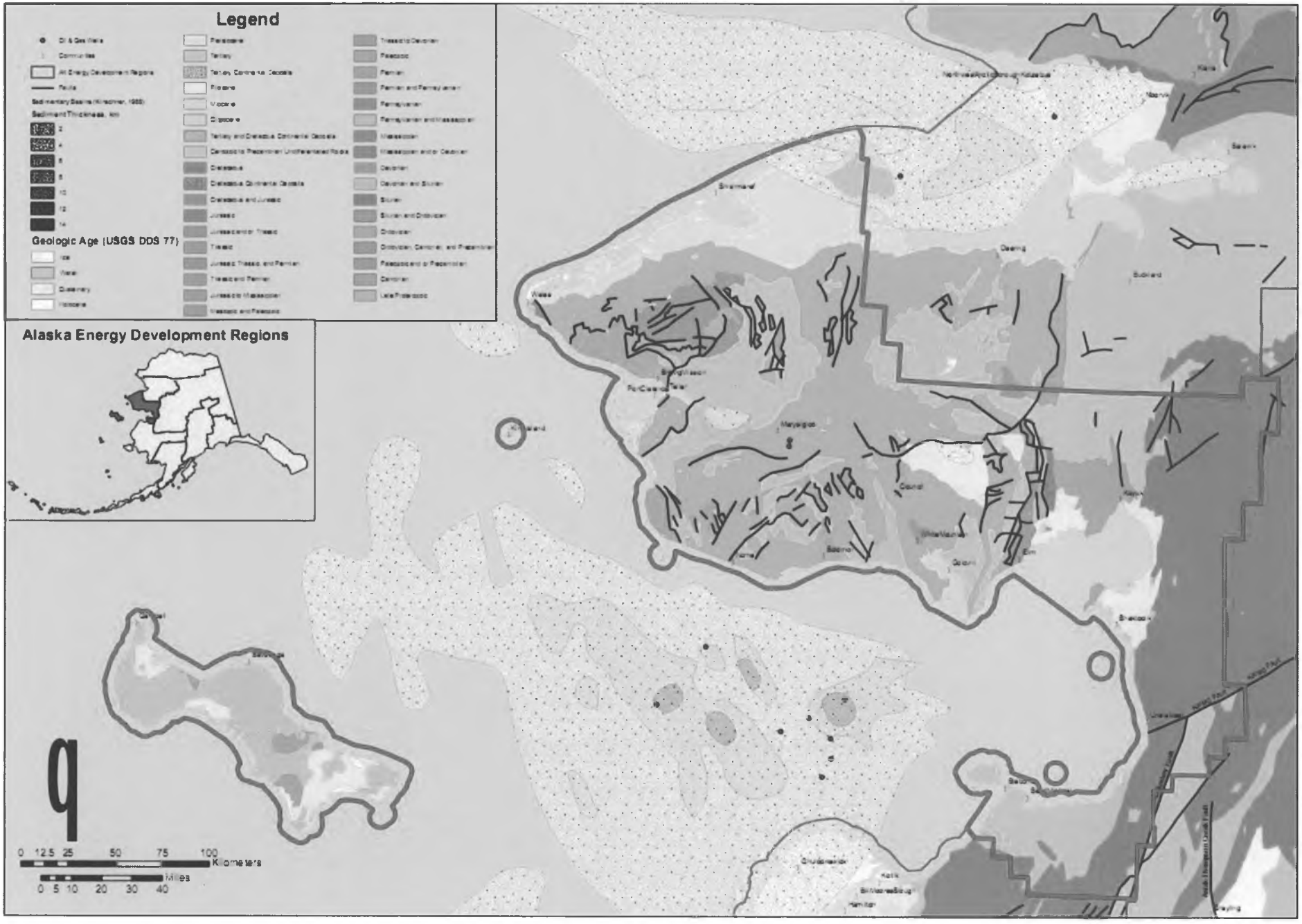
Bering Shelf Basins



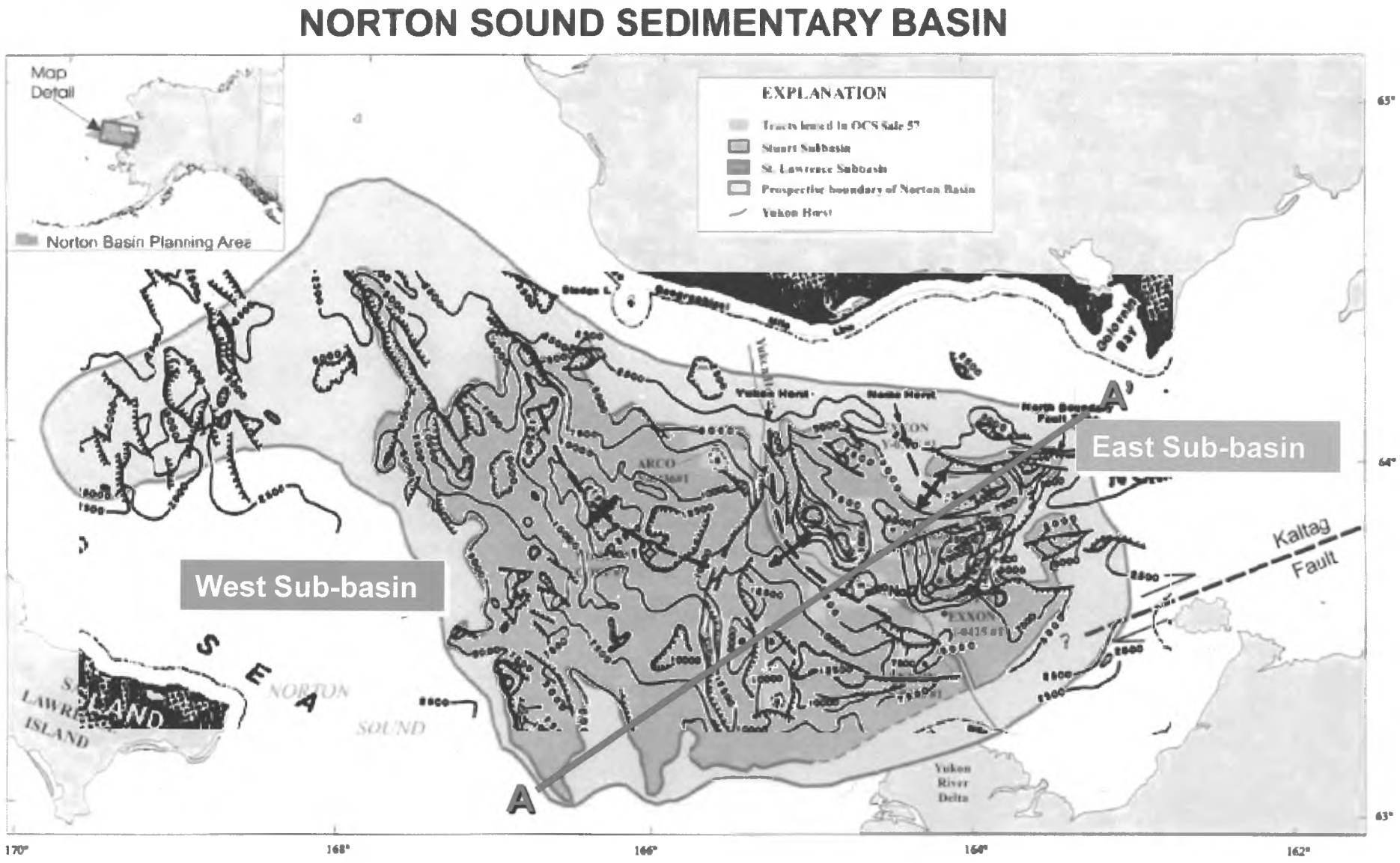


Manley, W.F., 2002, Postglacial Flooding of the Bering Land Bridge: A Geospatial Animation: INSTAAR, University of Colorado, v1, http://instaar.colorado.edu/QGISL/bering_land_bridge.

Geology of the Bering Straits Energy Region, Alaska


Legend
Oil & Gas Wells
Communities
Alt Energy Development Regions
Roads
Sedimentary Basins (Kirschner, 1988)
Sediment Thickness, km
2
4
6
8
10
12
14
Geologic Age (USGS DDS 77)
Ice
Water
Quaternary
Tertiary
Pleistocene
Tertiary, Commonly Glaciated
Pliocene
Miocene
Oligocene
Tertiary and Cretaceous Commonly Glaciated
Cretaceous to Precambrian Undifferentiated Rocks
Cretaceous
Cretaceous Commonly Glaciated
Cretaceous and Jurassic
Jurassic
Jurassic and/or Triassic
Triassic
Jurassic, Triassic, and Permian
Triassic and Permian
Jurassic to Mississippian
Mississippian and Pennsylvanian
Triassic to Devonian
Paleozoic
Permian
Permian and Pennsylvanian
Pennsylvanian
Pennsylvanian and Mississippian
Mississippian
Mississippian and/or Devonian
Devonian
Devonian and Silurian
Silurian
Silurian and Ordovician
Ordovician
Ordovician, Cambrian, and Precambrian
Paleozoic and/or Precambrian
Cambrian
Late Paleozoic
Alaska Energy Development Regions
Shishmaref
Wales
Diomede
Nome
Teller
Golovin
White Mountain
Elim
Koyuk
Unalakleet
Shaktoolik
Stebbins
St. Michael
Savoonga
Gambell
Kotzebue
Noatak
Kiana
Noorvik
Selawik
Buckland
Deering
Kivalina
Point Hope
Wainwright
Barrow
Atqasuk
Nuiqsut
Barrow
Umiat
Anaktuvuk Pass
Arctic Village
Wiseman
Coldfoot
Bettles
Evansville
Allakaket
Hughes
Alatna
Huslia
Hughes
Koyukuk
Nulato
Kaltag
Unalakleet
Shaktoolik
Stebbins
St. Michael
Savoonga
Gambell
Golovin
White Mountain
Elim
Koyuk
Nome
Teller
Brevig Mission
Port Clarence
Diomede
Wales
Shishmaref

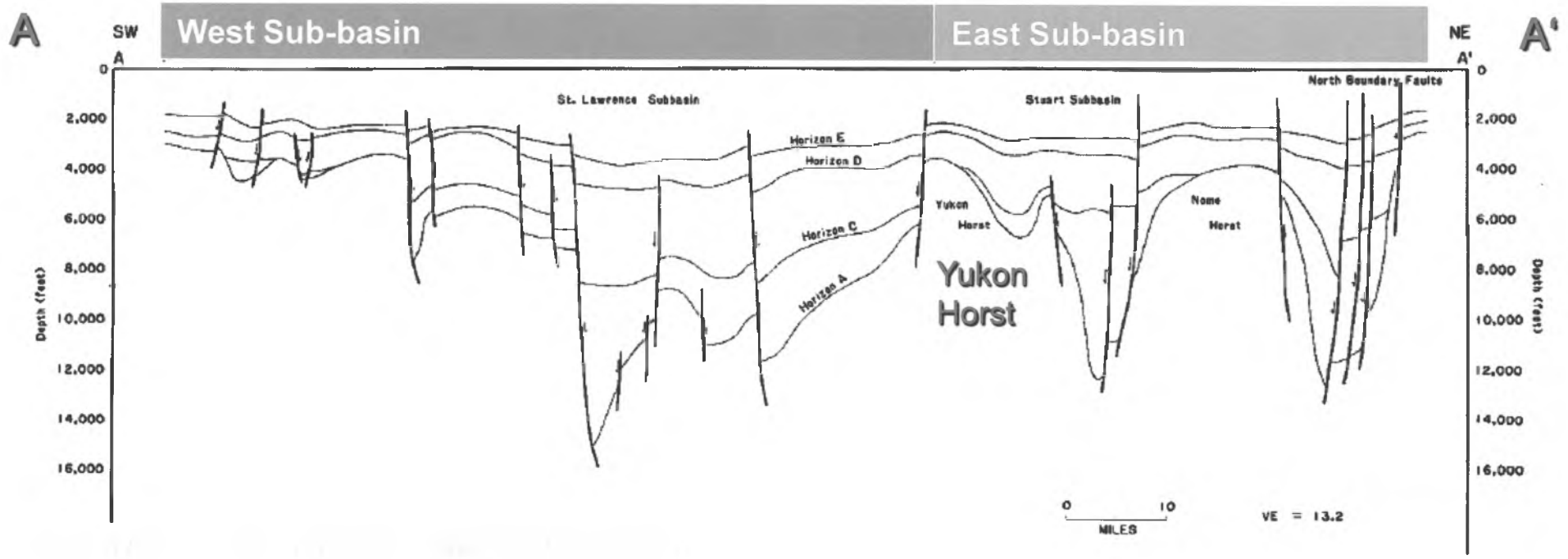
Depth Structure: Base Tertiary unconformity



Modified from "Exploring the Frontier – Alaska's Norton Sound" (MMS) and Turner and others, 1986 (MMS 86-0033)

Norton Basin Structure

Cross Section from Seismic Transect

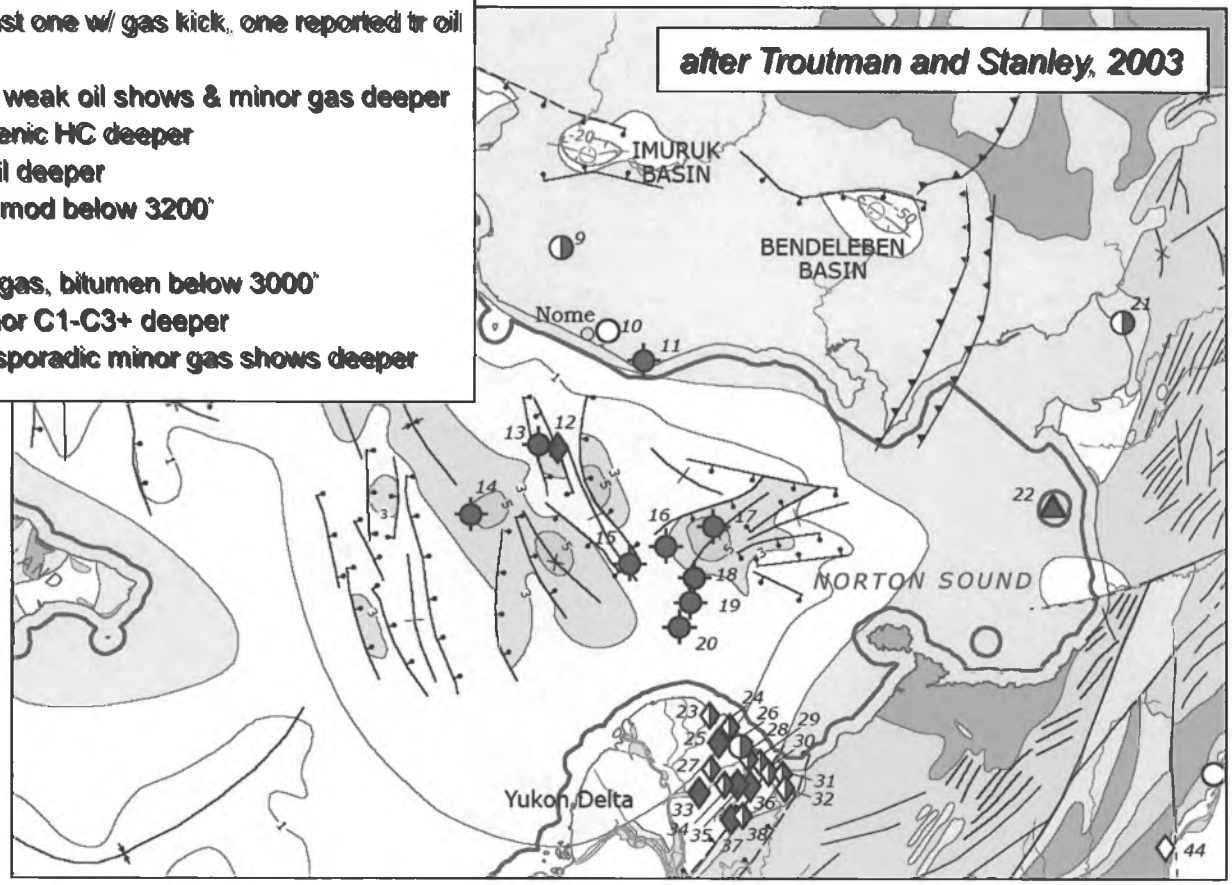


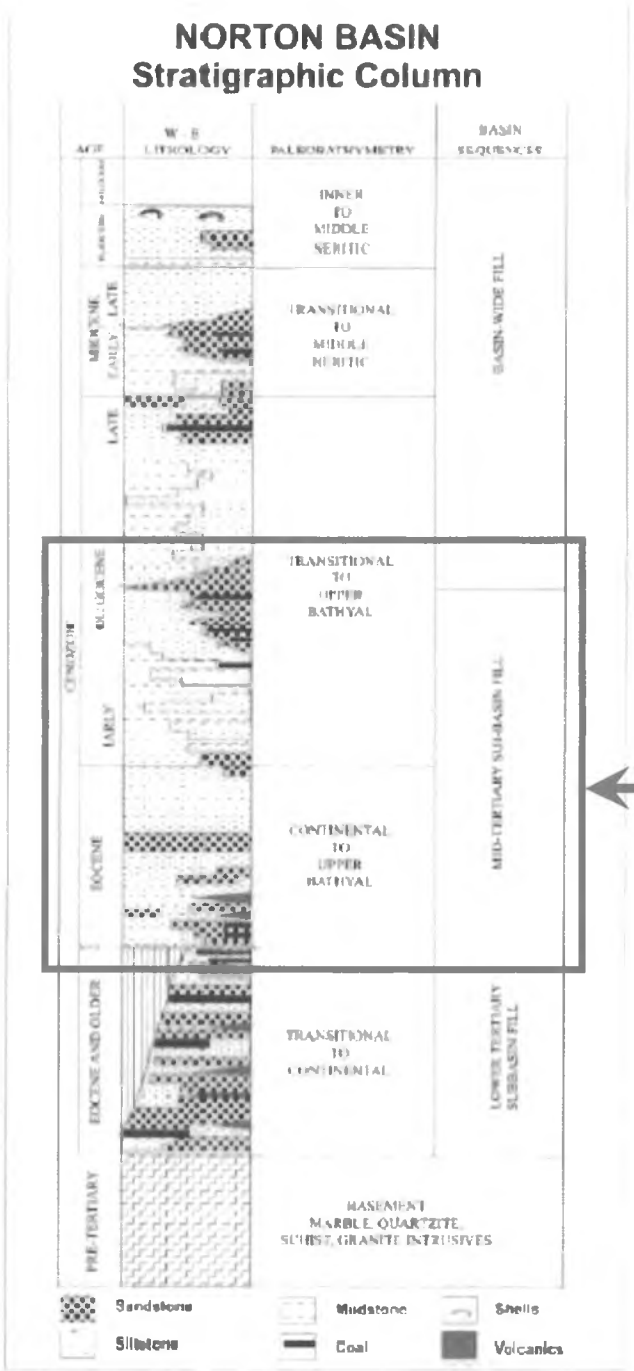
Norton Basin Exploration History

- 2 COST wells in 1980, 1982 (ARCO)
- OCS Sale 57 in March 1983: 59 tracts sold for $325 million
- 6 exploration wells 1984-85 (Exxon-ARCO)
- Gas shows in all wells (moderate to strong shows in 2), weak oil shows in 3 wells

Key to Wells and Hydrocarbon Occurrences Shown on Map

9, 10	Reported oil seeps, unconfirmed and/or regarded as doubtful
11	Four wells (2 in 1906, 2 in 1918): All < 210' deep, at least one w/ gas kick, one reported tr oil
12	Gas seep: 98% CO2, < 0.1% C1-C8 hyrdrocarbons
13	ARCO OCS Y-0436, 1984: Strong gas shows shallow, weak oil shows & minor gas deeper
14	ARCO COST 1, 1980: Biogenic C1 shallow, tr thermogenic HC deeper
15	Exxon OCS Y-0414: 1984, Mod-strong C1 shallow, tr oil deeper
16	Exxon OCS Y-0407: 1985, Mod-strong C1 shallow, wk-mod below 3200'
17	Exxon OCS Y-0398: 1985, Minor C1 shows
18	ARCO COST 2, 1982: Biogenic gas shallow, minor oil, gas, bitumen below 3000'
19	Exxon OCS Y-0425, 1985: Mod-strong C1 shallow, minor C1-C3+ deeper
20	Exxon OCS Y-0430, 1984: Abdt minor shows shallow, sporadic minor gas shows deeper





Source: "Exploring the Frontier – Alaska's Norton Sound" (MMS)

Norton Basin Geology Summary

- Tertiary extensional basin associated with strike-slip on Kaltag fault
- Tertiary clastic basin fill up to 23,000 ft thick overlies Paleozoic and Mesozoic metamorphosed sedimentary and igneous rocks
- Two sub-basins separated by narrow horst system that controlled depositional environments; east sub-basin mostly nearshore marine to shelfal deposits, west sub-basin mostly shelfal to deep water units

Mid-Tertiary West Sub-basin Fill Play

Age: Eocene to middle Oligocene clastic sediments of St. Lawrence sub-basin

Reservoirs: Shelf sands and turbidites, possible alluvial fan and deltaics on flank of Yukon horst and basin margin; avg depth ~ 5500 ft, avg porosity 14%, avg permeability 0.9 md, avg net pay 178 ft

Traps: Faulted anticlines and stratigraphic onlap against basement

Source: Thermally mature, mostly Eocene strata, Type III (gas-prone) terrestrial kerogen, lean in total organic carbon (TOC)

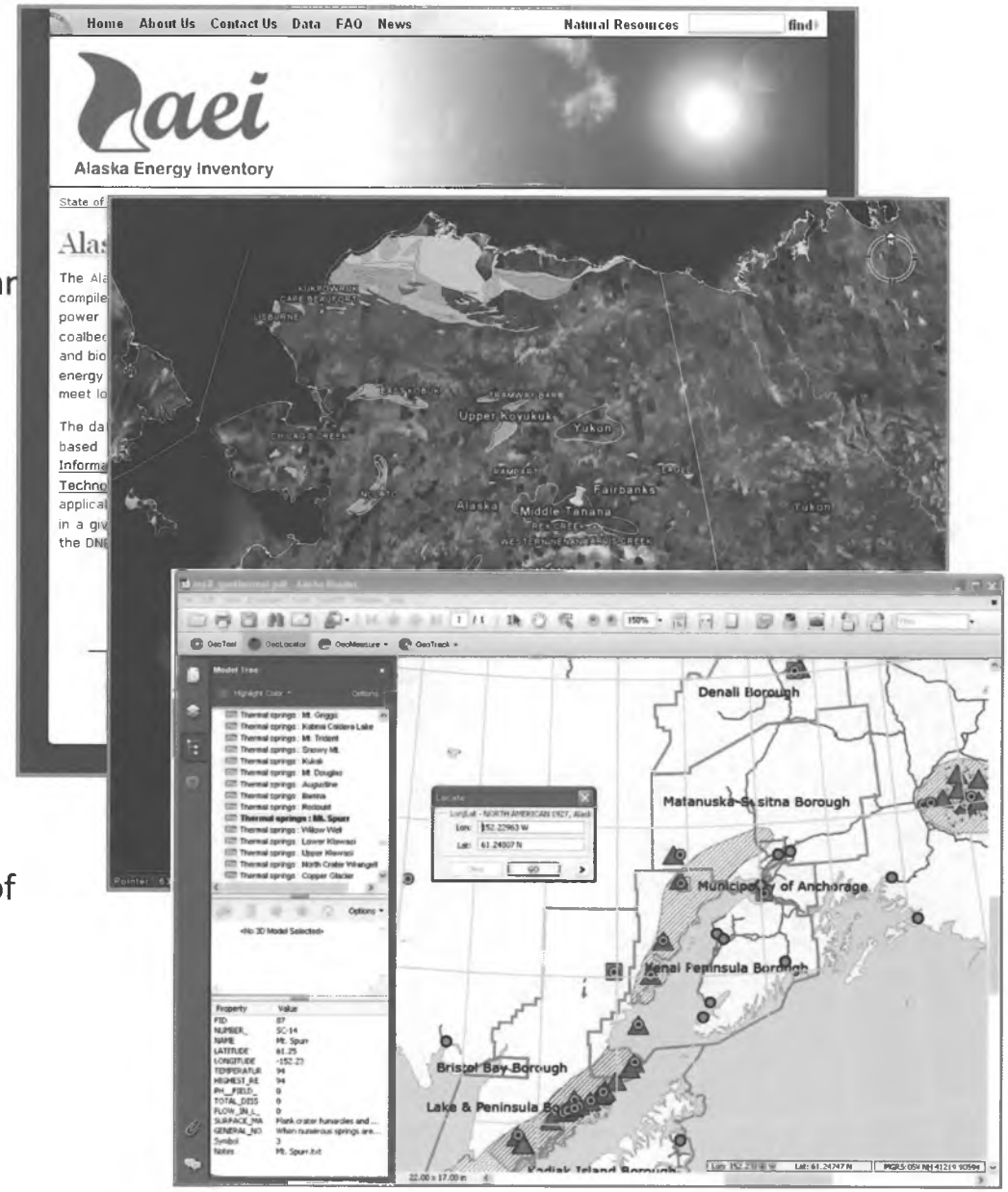
Potential: MTWSF play contains > 50% of basin's assessed endowment (1.6 TCF Mean); 1 COST well + 1 prospect tested

Navarin Basin Statistics

- Largest and Most Remote Bering Shelf Basin
  - 32,000 sq. mi
  - Wrench Fault Related Structures
  - Up to 36,000 Ft. of Tertiary Strata
- 1 Cost Well and 8 Exploratory Wells from 1983 to 1987
  - Gas and Limited Oil Prone Source Rocks in Eocene and Paleocene
  - 7 Marine Reservoir Quality Intervals in Tertiary Section
  - Trace to Minor Gas and Oil Shows in 5 of the Wells
- Considered Gas Prone Basin
- Not on Federal Lease Sale Schedule
  - Future Sales (post 2007) Will Depend on Industry Interest
- Mean Risked Resource (MMS)
  - 500 mmbo; 6 tcf Gas / Conventionally Recoverable

Alaska Energy Data Inventory

- Consolidating Alaska's energy resources data
  - Resource data suitable for electrical power generation and space heating needs
  - Natural gas, coal, coalbed and shalebed methan gas hydrates, geothermal, wind, hydro, and biomass
  - Available energy meeting local needs?
- Making the data accessible
  - Alaska Mapper, Google Earth, and Terrago Technologies' GeoPDF format
  - http://energyinventory.alaska.gov
  - Query and download data; view data with existing infrastructure
- Involvement
  - DGGS, Alaska Energy Authority, DNR Division of Forestry, DNR LRIS, UAF/GINA
  - CCHRC, USGS, USDOE, DNR DOG, BLM, DMLW, Div. Agriculture, DEC



3/24/11 Overview: RurAL CAP's Energy Wise Program to Reduce Energy Costs

<TARGET><BILL></BILL><SUBJECT>3-24-11 Overview RurAL CAP's Energy Wise Program to Reduce Energy Costs</SUBJECT><COMM>HENE27</COMM></TARGET>

Rural Alaska Community Action Program, Inc.'s

Energy Wise Program



Rural Alaska Community Action Program, Inc.
Ellen Kazary, Community Development Manager
907-865-7358; ekazary@ruralcap.com

Rural Alaska Community Action Program, Inc.'s

Energy Wise Program

Energy Wise is a comprehensive residential energy efficiency and conservation education program.

- RurAL CAP works in partnership with local communities to reduce the burden of high energy costs.







Rural Alaska Community Action Program, Inc.'s

Energy Wise Program

- **Reduces** energy consumption, **saves** money
  - Household assessment of energy use
  - Identification of best savings options
  - Low-cost home upgrades
- **Saves PCE**
- **Creates jobs** for rural Alaskans
  - Hire and train locally
  - Professional development and certification

Proven Results

- **99% of households participate**
- **80%+ report maintaining changes, lower bills, warmer homes**
- Residents save:
  - $20/month in electricity = $240/year
- State saves - PCE reduction:
  - $39/month = $468/year
- Project cost is $2,000/home:
  - Annual savings = $708/year
- Return on Investment = less than 3 years in electrical savings alone

Reducing the Energy Burden

CAPSIS request for $20M for conducting Energy Wise across Alaska

- Energy Wise is a tested and proven initiative with immediate and long-term results
- Energy Wise can provide immediate relief to communities outside the Railbelt with few other options
- RurAL CAP is committed to reducing the energy burden for Alaskans while creating healthy economies and sustainable communities
- Regional and local requests for expansion

Operational Plan for $20M

- 5 year plan, $4M per year
- $2,000 per home, 2,000 homes per year
- 150 rural Alaskans employed per year
- Competitive selection process will evaluate
  - Energy burden and resources
  - Economic stress
  - Efficiency considerations: population size and geographic dispersion
  - Community and regional organization buy-in, commitment of available resources, and support

Collaborative Effort with State Energy Partners

Designed and implemented in partnership with:

- Alaska Housing Finance Corporation
- Alaska Energy Authority
- Weatherization Service Providers
- Housing Authorities
- Department of Energy
- Denali Commission
- Department of Labor
- Regional and community organizations
- Utilities

COMPLEMENTS WEATHERIZATION

- Prioritizes communities not recently served or scheduled to be served by Weatherization
- Focuses on immediate improvements for energy savings and education
- Residents are involved in assessing energy use and making changes in their homes
- Engages the entire community, all homes eligible



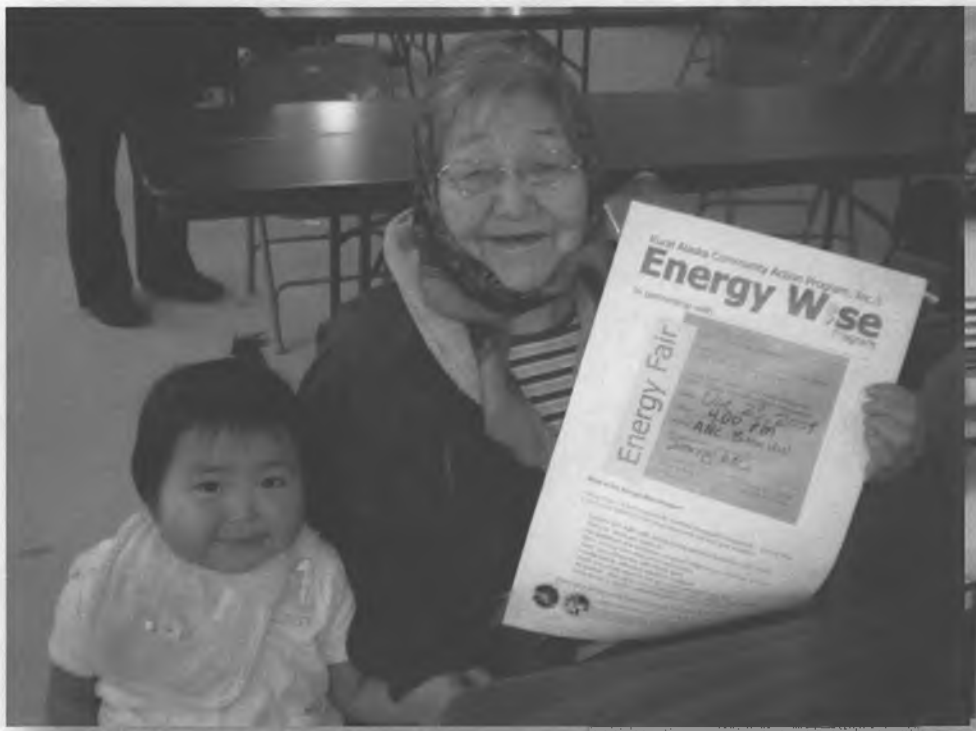
Effective Program Design

- Community Partnership
- Message Delivered by Local Crews
  - 4- 10 hired per community, 6-12 weeks
  - Professional training and certification



Effective Program Design

- Energy Fair
  - Engages entire community
  - Residents sign-up for home assessment





Effective Program Design

- Home Visits - Energy Assessments
  - 2 crew members, 1 full day (8 hours) per home
  - Residential survey
  - Residents participate in finding where energy is used and how to save
  - Review energy bills and potential savings
  - $300 of energy efficiency supplies installed



Home Visit



Crews Show Residents How to Save Energy and Money

$300 in Energy Efficiency Supplies



- Window insulation film
- Compact fluorescent lights
- Silicone and foam spray
- Weather stripping
- Jamb-up door kit and door sweep
- Foam tape and mounting tape
- Pipe insulation
- Faucet aerators, soap-up valve and low-flow shower heads
- Power strips with surge protectors
- Hygrometers
- Refrigerator thermometer and coil cleaners
- Outlet and light switch insulators, plug protectors
- Water heater blanket
- Fire alarm, extinguisher, and carbon monoxide detector

Energy Home Visits



Insulating outlets and switches

Installing water heater blankets and teaching maintenance



Applying window film



Installing door sweep and weather-stripping



Effective Program Design

- Follow-Up Education and Survey
  - 3 to 6 months after home assessment



2010 Energy Wise Results

- 120 rural Alaskans trained and employed
- 90% retention of crews
- 1,000 homes served
- 7,500 educated
- $$$ energy and money saved







2010 Outcomes – Sustained Change

Based on 700 follow-up home surveys:

- 86% reported they were still practicing energy efficiency and conservation measures
- 82% reported decreased home heating costs
- 80% reported decreased electric bills



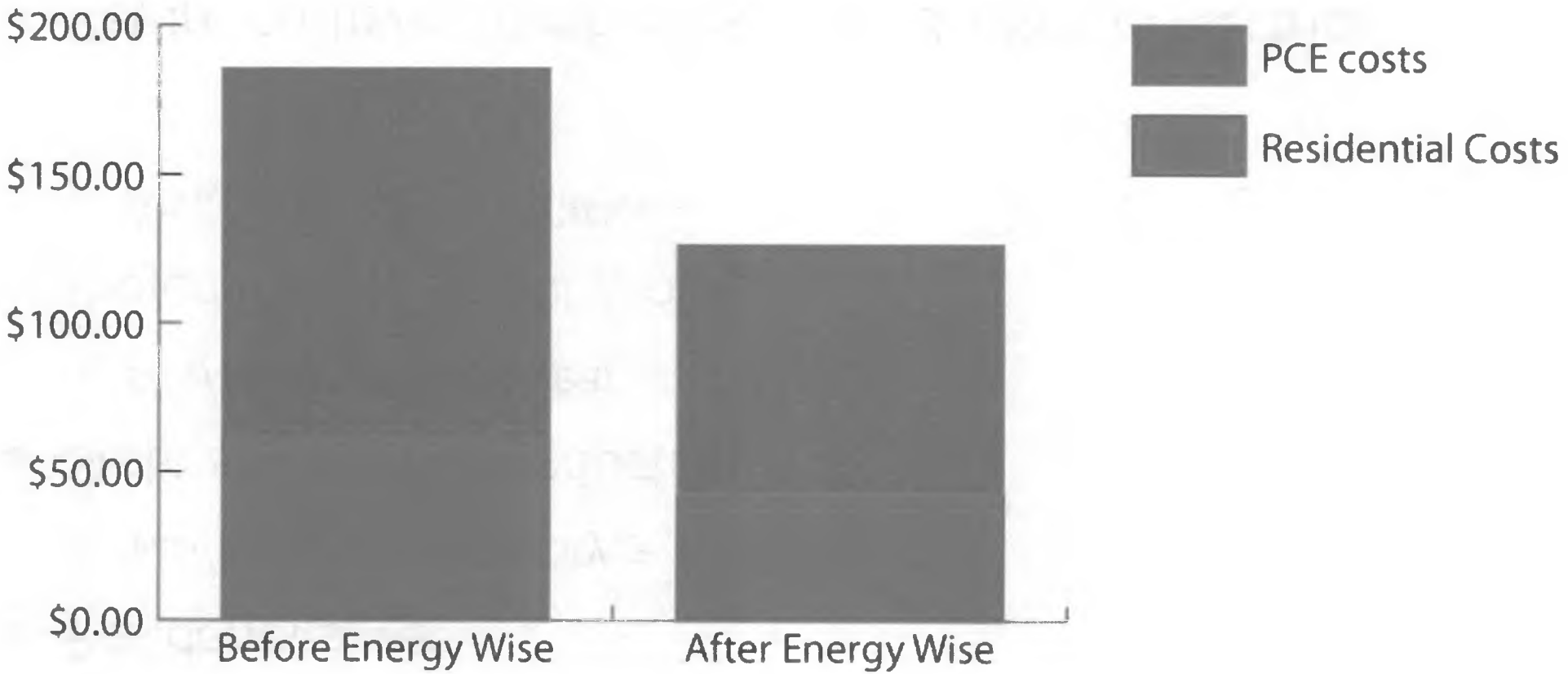
Kasigluk Case Study
2010 Average Monthly Electrical Savings

- Before Energy Wise:
  - $186 = 287 kWh/month
  - $63 paid by resident
  - $123 covered by PCE
- After Energy Wise:
  - $127 = 197 kWh/month
  - $43 by resident = **$20 savings**
  - $84 by PCE = **$39 savings**

After Energy Wise:

- **90 kWh/month reduction**
- **$59 savings in resident and PCE electricity costs**

KASIGLUK
2010 AVERAGE MONTHLY ELECTRICAL SAVINGS*



*Evaluation compiled by independent evaluator with AVEC data for Kasigluk 2009-2010; Energy Wise data reviewed by ISER

Return On Investment Based on Kasigluk Study

- Residents save:
  - $20/month in electricity = $240/year
- State saves - PCE reduction:
  - $39/month = $468/year
- Project cost is $2,000/home:
  - Annual savings = $708/year
- Return on Investment = less than 3 years in electrical savings alone

Energy Wise Budget Breakdown
$2,000/home

Energy Wise Budget Breakdown



Communities Receive:

- Up to 10 locally hired crew members employed for 8-12 weeks, receiving Weatherization Tech I certification
- On site 'Launch Week' for hiring and training local crews
- Energy Fair engaging residents, schools and organizations
- Homes receive:
  - Full day home visit from a trained, locally hired crew
  - Household energy/kilowatt consumption and cost assessment conducted with the resident
  - Education on energy cost-saving strategies
  - Home energy efficiency supplies installed ($300 value)
  - Follow-up visit and survey about project results by crew member 2-3 months after initial home visit

NANA - Energy Wise 2011-12 Partners

- NANA Regional Corporation
- Community Partners
- Northwest Arctic Borough
- Northwest Inupiat Housing Authority
- Denali Commission/Department of Labor
- U.S. Department of Energy, NREL
- Alaska Works Partnership

NANA - Energy Wise
2011-12 Outcomes

- 6 communities served: Ambler, Buckland, Kivalina, Noatak, Noorvik, and Shungnak
- 42 crew members received professional certification
- 50 crew members trained in energy efficiency and conservation techniques and community education
- 530 home visits; 99% participation rate
- Over 2,000 people received energy efficiency and conservation education and resources
- Energy bill savings

2011-12 Outcomes – Sustained Change

Results in NANA communities:

- Average electric bill the month before Energy Wise was $312
- Average savings on electrical bill after the Energy Wise visit was $35
- 82% reported that their homes felt warmer



Rural Alaska Community Action Program, Inc.'s

Energy Wise Program

Healthy People, Sustainable Communities, Vibrant Cultures

For more information, contact:

Ellen Kazary
Community Development Manager
(907) 865-7358
ekazary@ruralcap.com



3/29/11 Update: Alaska Stand Alone Gas Pipeline

<TARGET><BILL></BILL><SUBJECT>3-29-11 Update Alaska Stand Alone Gas Pipeline</SUBJECT><COMM>HENE27</COMM></TARGET>

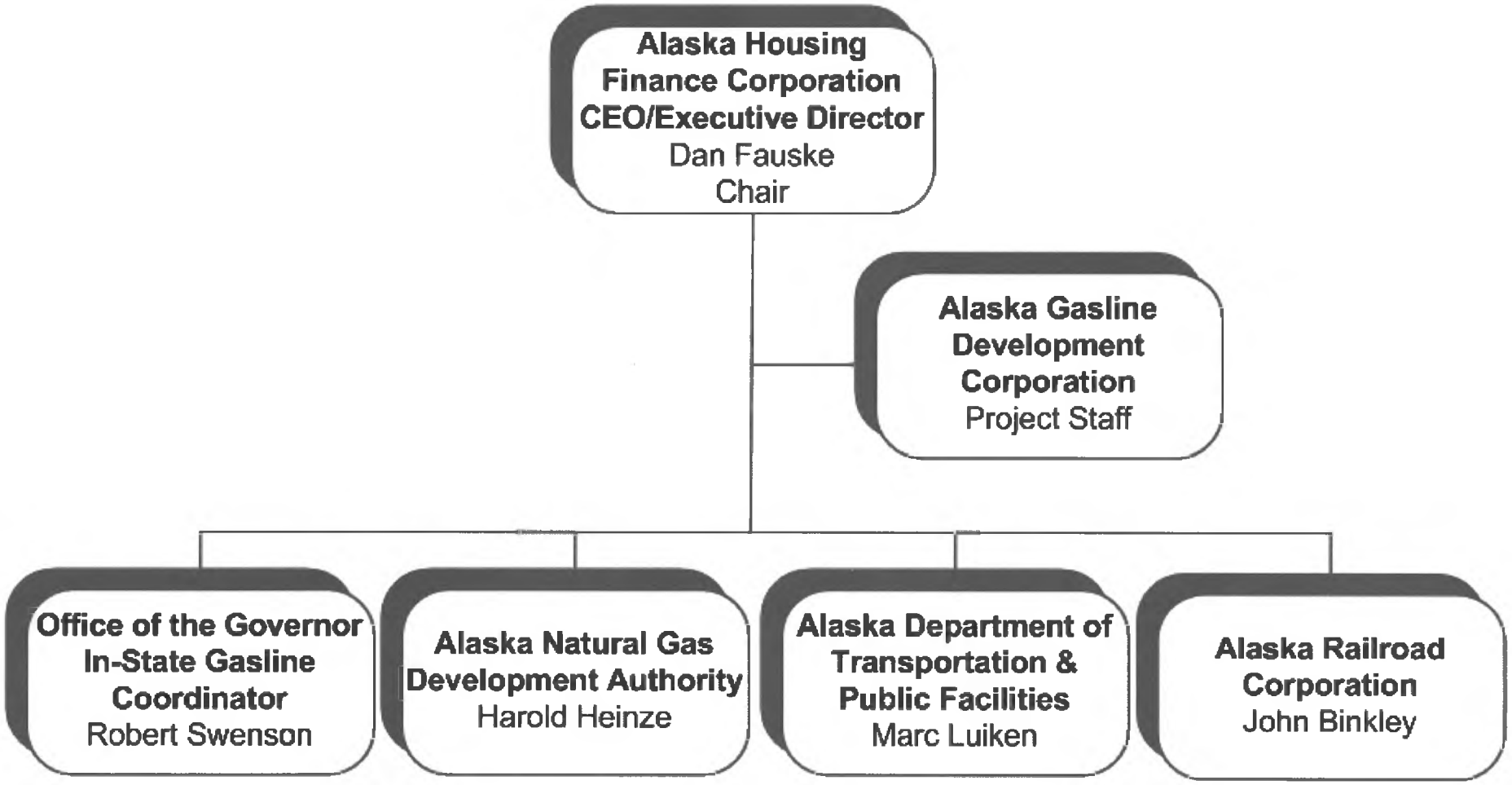
ALASKA GASLINE DEVELOPMENT CORP.
GAS FOR ALASKANS

Alaska Stand Alone Gas Pipeline/***ASAP***

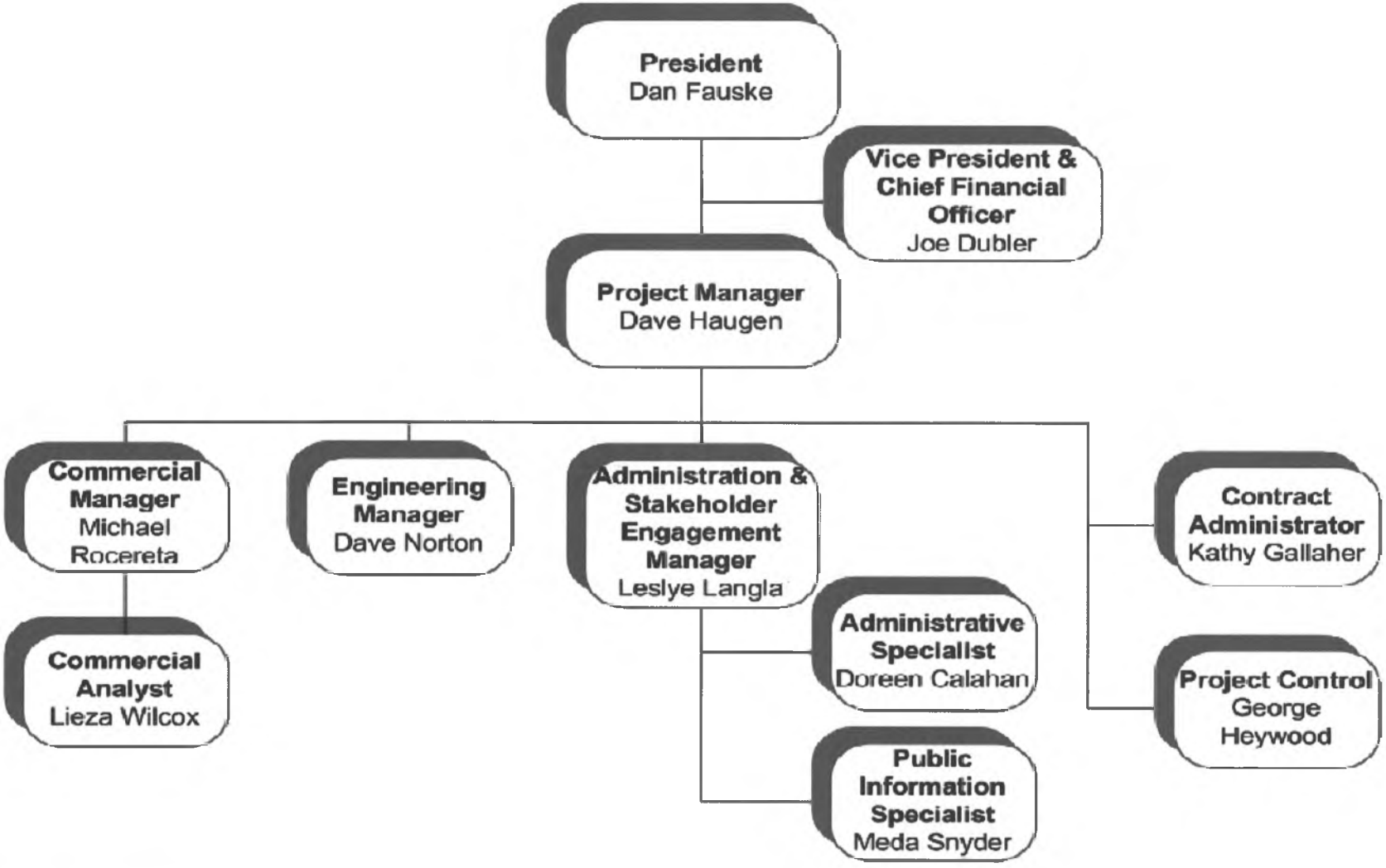
March 29, 2011

Tel. 907-277-4488 | Fax. 907-277-4484 | www.gasline.us.com

Joint In-State Gasline Development Team



AGDC Project Staff Organization



Project Management/Engineering

ACTIVITY	CONTRACTOR
Project Management	Hawk Consultants LLC
Engineering Services	Michael Baker Jr., Inc.
Legal Services	Birch Horton Bittner & Cherot
Project Pacing and Review	Independent Project Analysis (IPA)
Facilities Peer Review	WorleyParsons

Environmental/Regulatory

ACTIVITY	CONTRACTOR
Environmental Services	ASRC Energy Services (AES)
Third Party EIS	Cardno ENTRIX
Regulatory Advisor	Stoel Rives LLC

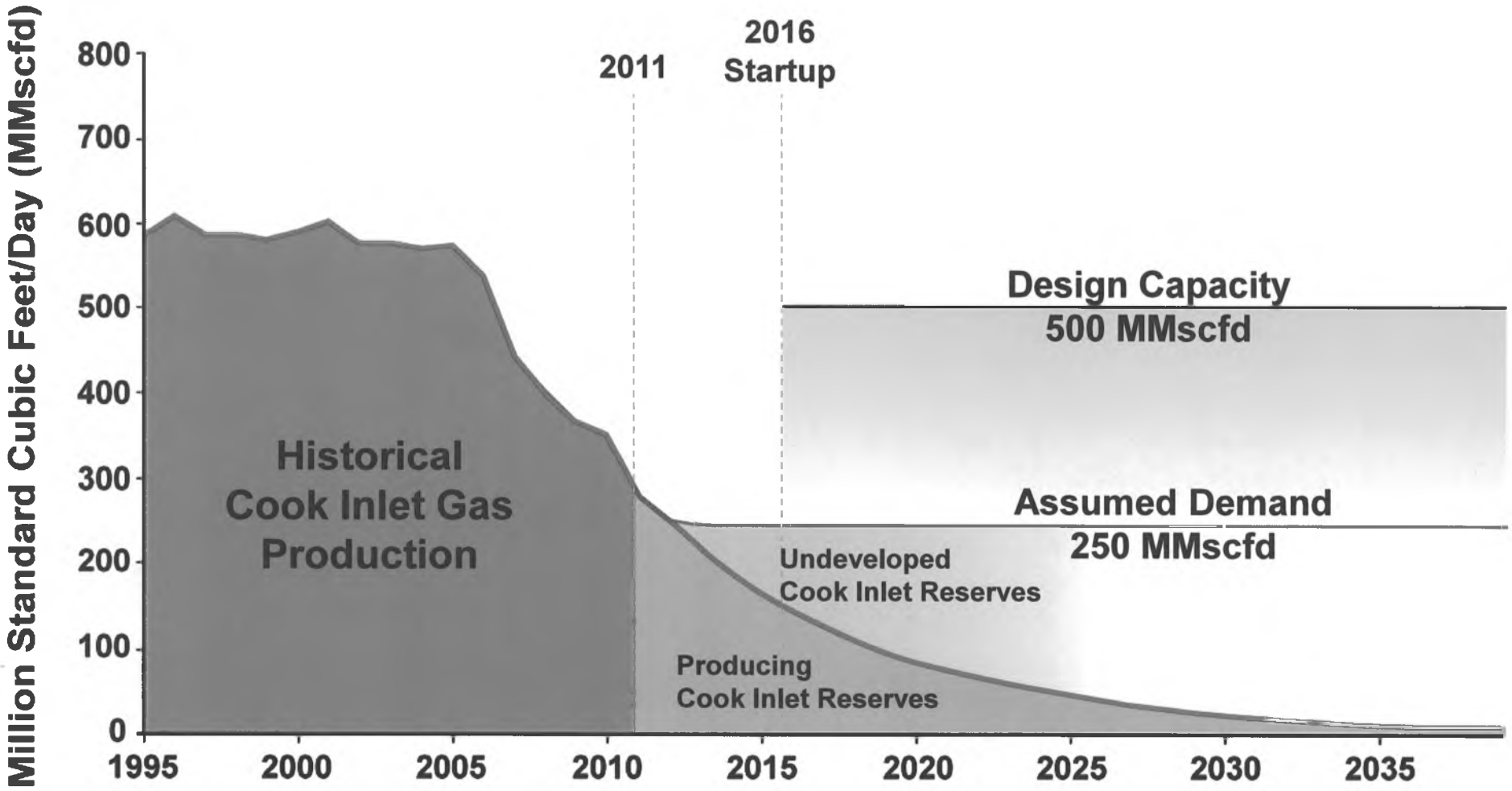
Financial

ACTIVITY	CONTRACTOR
Financial Advisor	Citigroup/Ramirez
Tariff Modeling	Black and Veatch
ECONOMIC/MARKET STUDIES:	
Gas to Liquids	Hatch Associates Consultants, Inc.
Liquefied Natural Gas	Science Applications International Corporation (SAIC)
Natural Gas Liquids	R.W. Beck Inc.

State and Federal Agency Contracts

ACTIVITY	CONTRACTOR
Federal BLM	Federal Lands Right-of-Way
Alaska Department of Natural Resources	State Pipeline Coordinator's Office: Right-of-Way Lease
Alaska Department of Natural Resources	Cook Inlet Gas Report
Alaska Department of Environmental Conservation	Air Quality Permitting
Alaska Railroad Corporation	Right-of-Way, Crossing & Materials

Cook Inlet Gas Production vs. Alaska Stand Alone Gas Pipeline Capacity

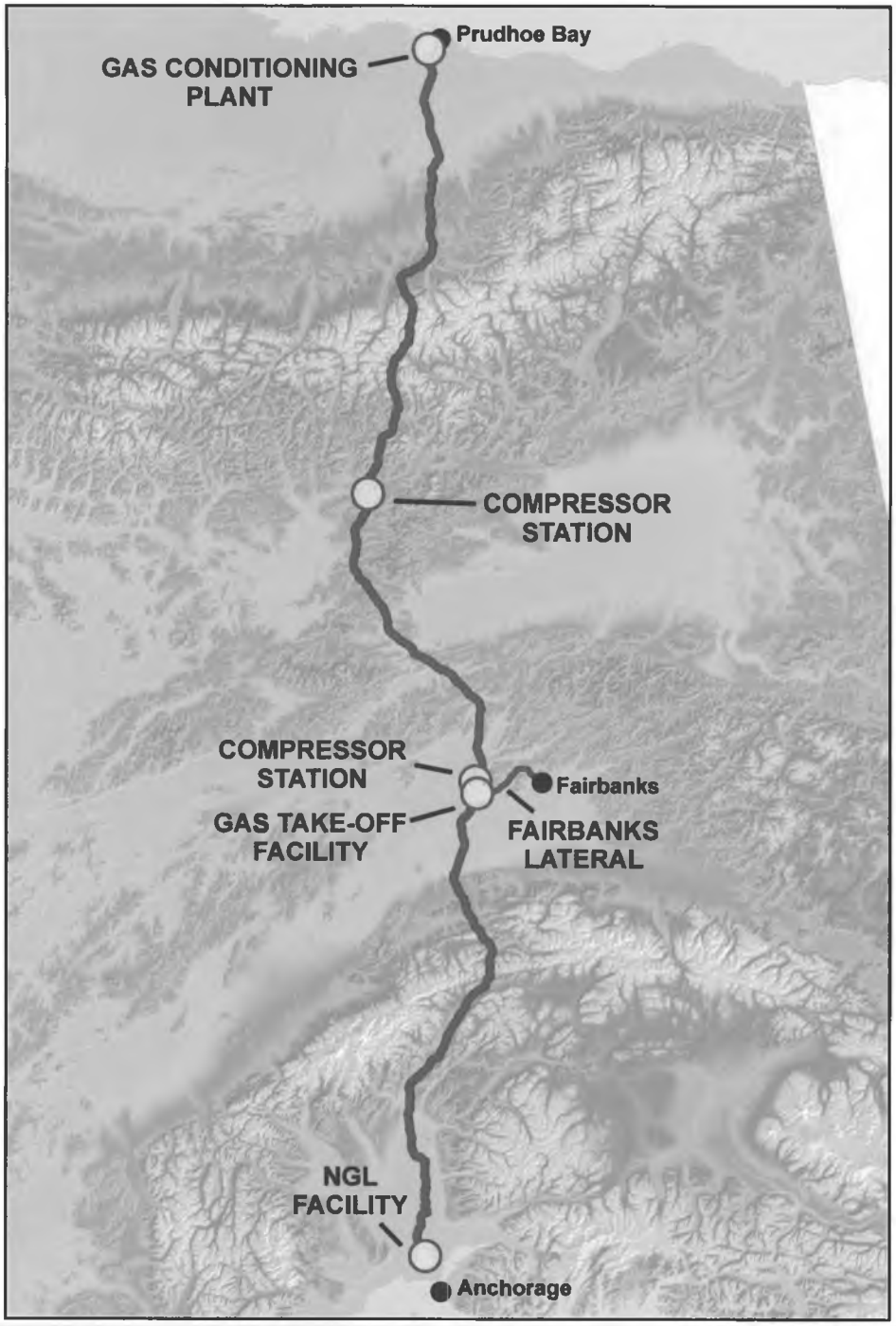


Project Features

- Design Capacity: 500 MMscfd (with NGLs)
- Mainline Pipeline
- Fairbanks Lateral
- Gas Conditioning Facility
- Two Compressor Stations
- NGL Extraction Plant
- Gas Take-off Facility/NGL Straddle Plant

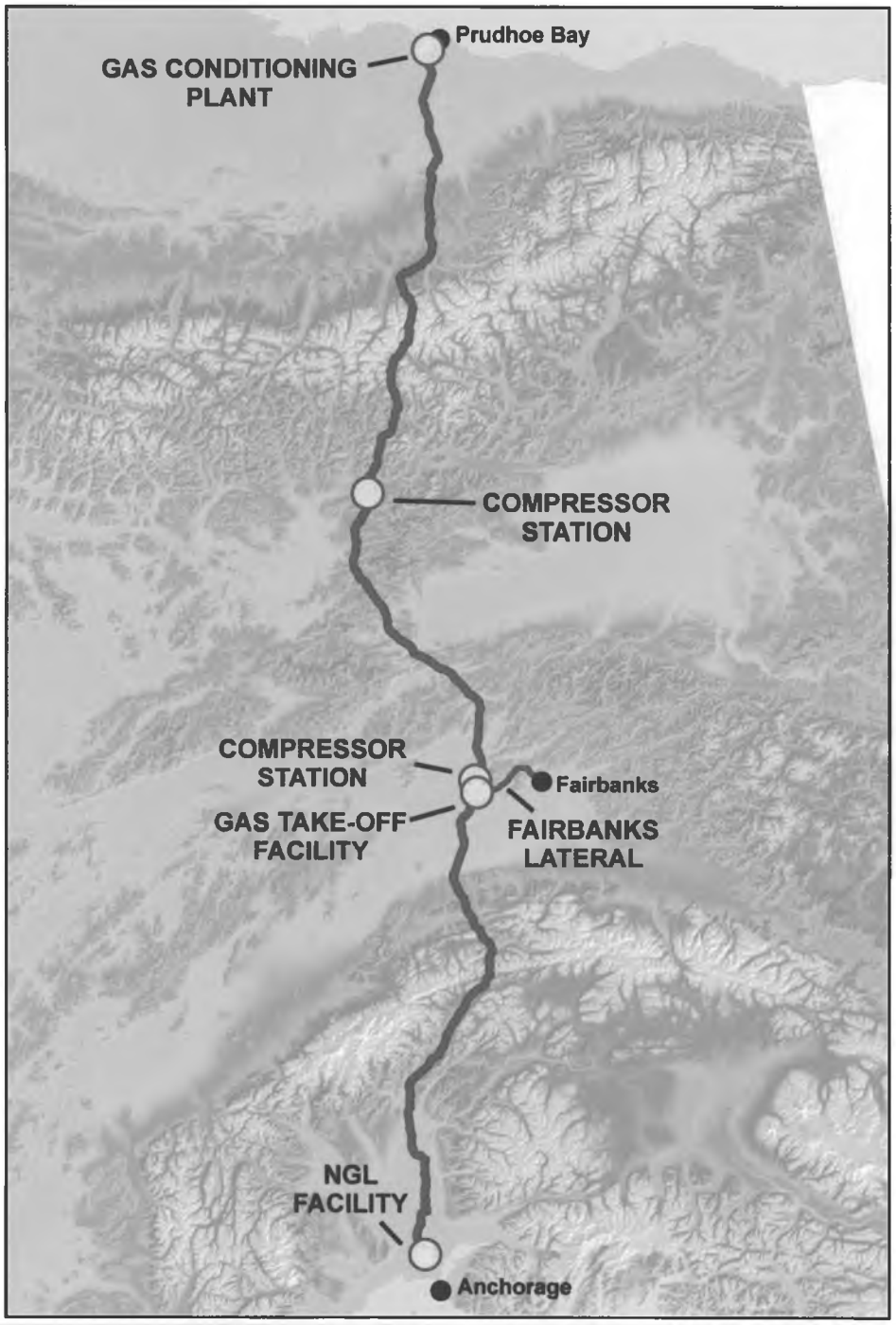
Pipeline

- Mainline:
  - 737 miles long
  - 24-inch-diameter
  - 2,500 psi maximum operating pressure
- Fairbanks Lateral:
  - 35 miles long
  - 12-inch-diameter
  - Tie-in with mainline at MP 458



Other Project Facilities

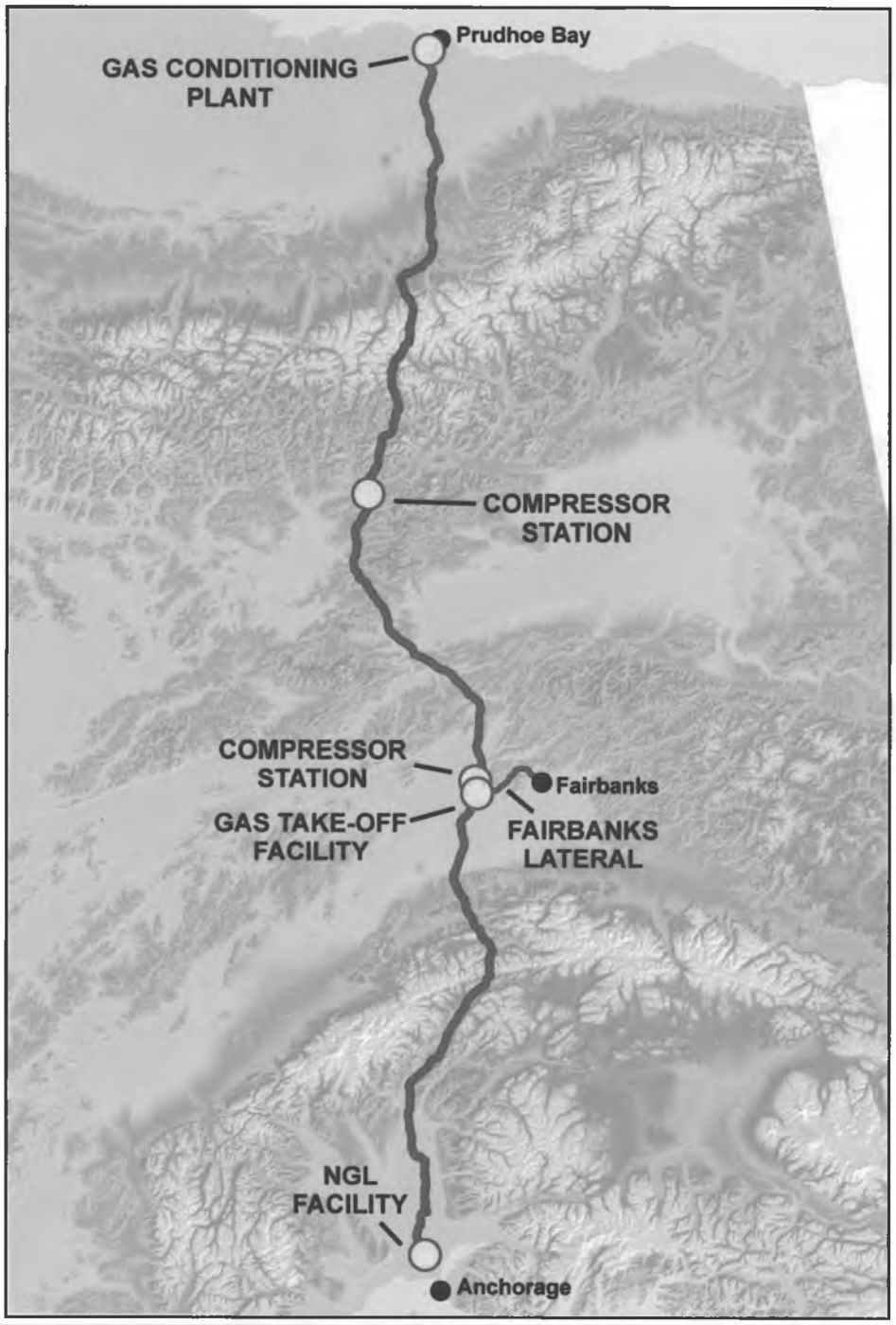
- Gas Conditioning Plant
  - At Prudhoe Bay
  - Remove carbon dioxide, hydrogen sulfide, and other impurities from the gas
- Two Compressor Stations
  - Gas-turbine-driven centrifugal compressors.
  - Gas-turbine-driven electric power generators



Other Permanent Facilities

- Gas take-off facility/NGL straddle plant
  - Gas for Fairbanks
  - Remove NGLs to provide dry gas for Fairbanks
  - Reinject NGLs into mainline
- NGL extraction plant
  - Remove NGLs for sale

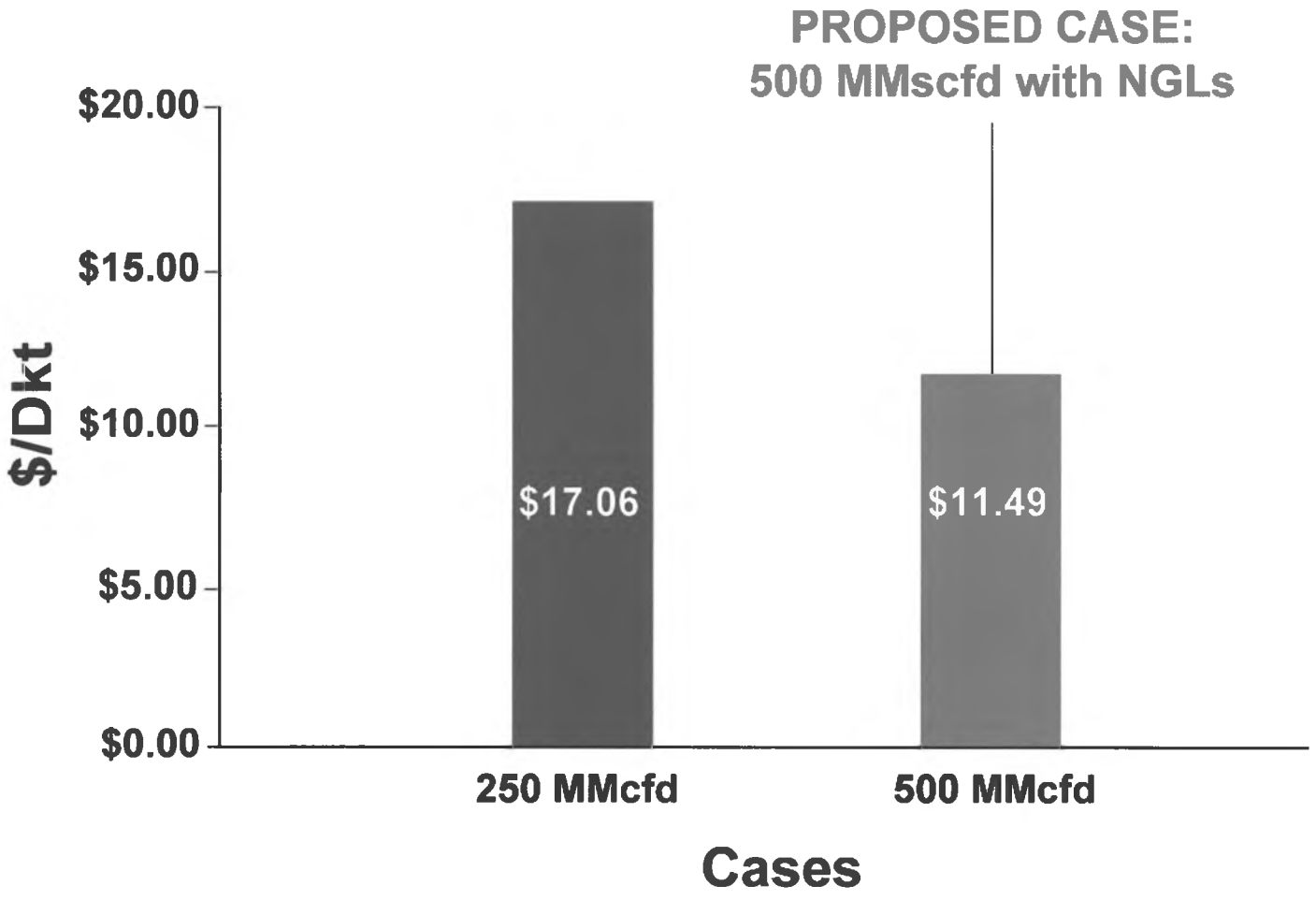
NOTE: Natural gas liquids (NGLs) include ethane, propane, and butane



Preliminary Capital Cost Estimates for Pipeline and Facilities

Flow Rate (MMscfd)	Spiked with NGL ($ Billion)
250	$6.9
500	$8.4

Transportation Tariff Comparison (July 2010)

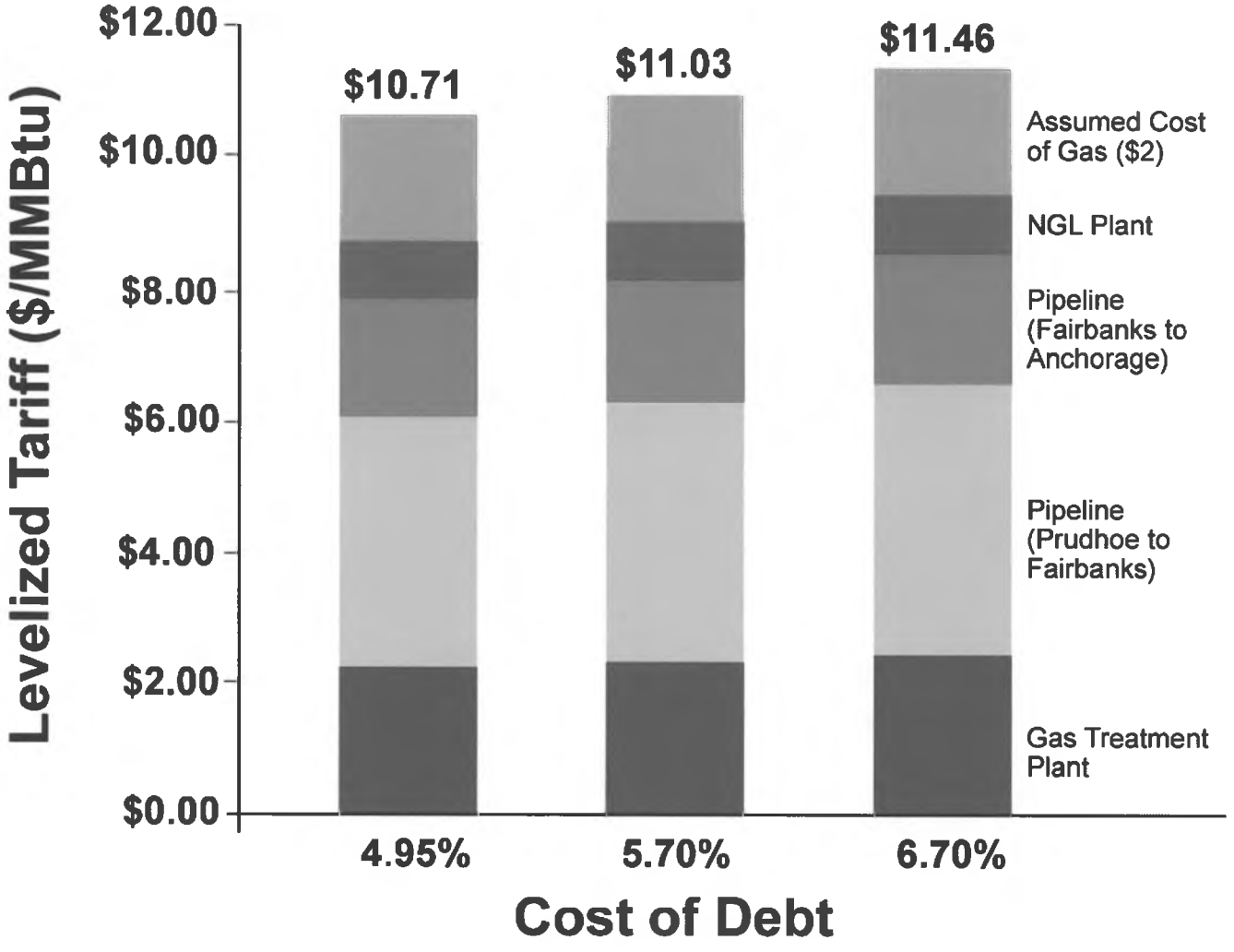


NOTE: All cases include assumed gas supply cost of $2 (negotiable)

Transportation Tariff Comparison (July 2010) ASSUMPTIONS

Debt/Equity	70%/30%
Return on Equity	11.31%
Cost of Debt	6.76%
Capital and O&M Escalation	3%
Contract & Depreciation Life	20 years
Levelized Tariffs	Based on deterministic capital cost estimate

Optimized Tariff (November 2010)



Commercial/Financing Options

- Cost of debt
- Project timeline
- Throughput
- Marketing of liquids
- State equity
- Line-fill contributed by state royalty

Key Commercial Activities

- Evaluate needs of anchor industrial users
- Find interested builder/owner/operators
- Optimize commercial interests and develop financing options

Potential Industrial Users

- Natural Gas Liquids (NGL) Export
  - Market study underway
- Gas to Liquids (GTL) Export
  - Market study in progress
- Liquefied Natural Gas (LNG) Export
  - Nikiski plant license extended 2 years
  - Market study underway
- Fertilizer Production
  - Agrium Nikiski plant shut down

Natural Gas Liquids (NGL) Export

- Extraction/fractionation/storage facility at Port MacKenzie or Nikiski
- Additional pipelines to berths and loading facility
- New commercial studies to determine full-value chain value and market viability by R.W. Beck

NATURAL GAS LIQUIDS (NGL)

When natural gas comes out of the well, it contains other hydrocarbons known as natural gas liquids, or NGLs, which are removed during processing. NGLs are valuable products that include ethane, propane, butane, pentane, and other hydrocarbons. NGLs are sources of energy and serve as raw materials for oil refineries or petrochemical plants.

Gas To Liquids (GTL) Export

- GTL facility either near Fairbanks or at tidewater at Cook Inlet
- Liquids transported to potential markets in Alaska and/or Pacific Rim
- Economic feasibility study underway by Hatch

GAS TO LIQUIDS (GTL)

Gas to liquids, or GTL, refers to a process to convert the components of natural gas into liquids such as diesel fuel, liquid petroleum gas, and naphtha. A gas to liquids refinery is required for this process, which combines the carbon and hydrogen in natural gas molecules to make the synthetic liquid hydrocarbons.

Liquefied Natural Gas (LNG) Export

- Current 2-train plant not fully loaded (240 MMscfd inlet cap) but operating under favorable sales contracts
- Depending on LNG viability, third train may be required to anchor throughput
- New full-value chain and market study underway from SAIC



LIQUEFIED NATURAL GAS (LNG)

Liquefied natural gas, or LNG, is produced by cooling natural gas to about -260°F so that it becomes a liquid that takes up about 600 times less volume than the gas. LNG can be shipped in special tank trucks or ocean-going tankers to terminals, where it is returned to a gas and sent through pipelines to consumers.

The LNG facility in Kenai is the country's oldest active LNG marine terminal (43 years of production).

Tier 1 Project Permits (Major)

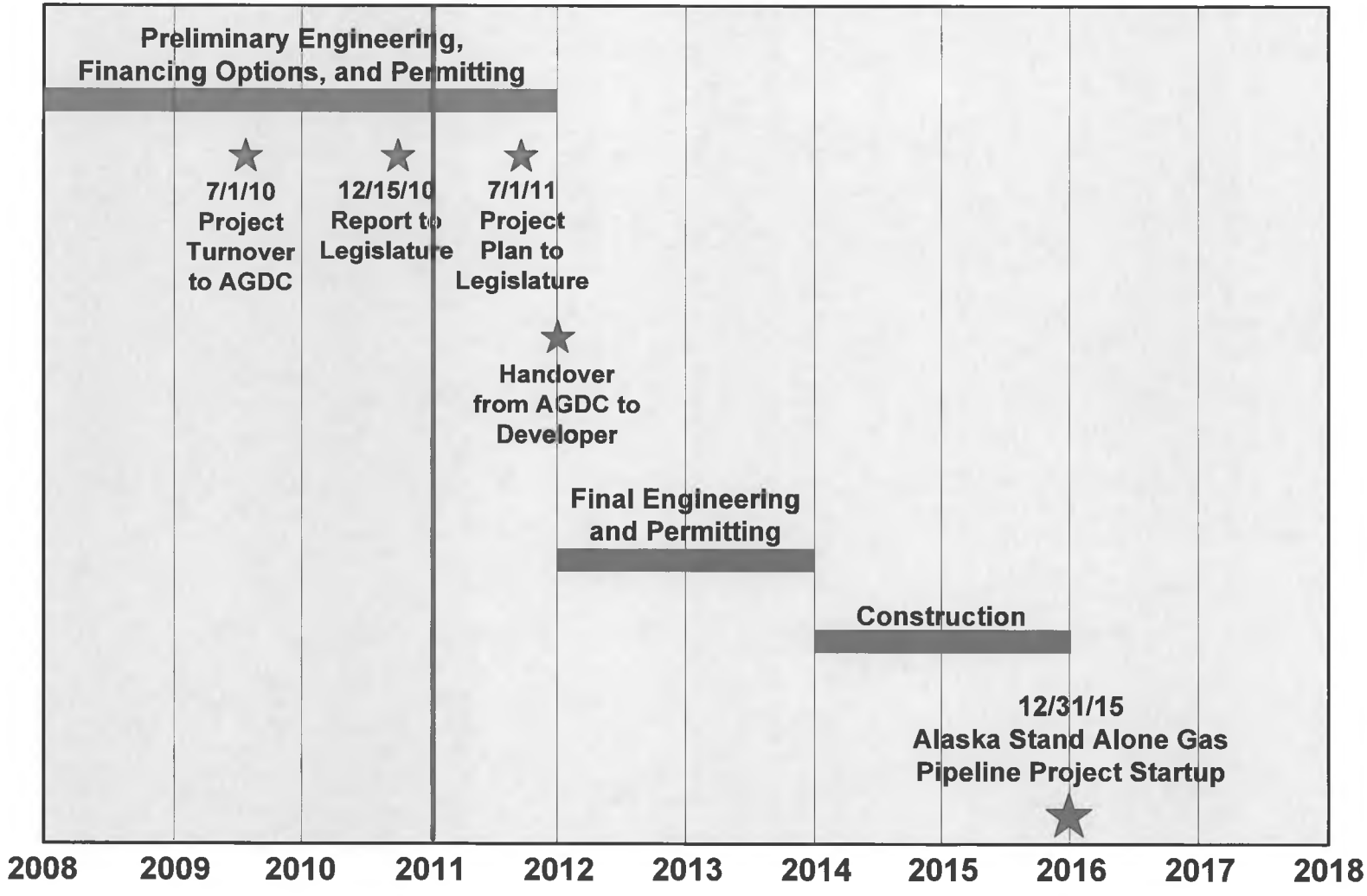
Agency	Permit Type	Submittal	Expected Issuance
BLM	Federal Pipeline Right-of-Way Grant	Nov. 2009; Resubmitted Aug. 2010	Jan. 2012
ADNR	State Pipeline Right-of-Way Lease	Nov. 2009; Resubmitted Aug. 2010	Jan. 2012
USACE	Section 404/Environmental Impact Statement	Nov. 2009; Resubmitted Aug. 2010	Jan. 2012

Tier 2 Project Permits (Long Lead Time)

Agency	Permit Type	Submittal	Expected Issuance
ADNR	Coastal Consistency Determination Permit to Appropriate Water Temporary Water Use Permit	April 2011*	Oct. 2011
ADEC	APDES Permit	April 2011*	Oct. 2011
Local	Land Use and/or Zoning Permits	April 2011*	Oct. 2011
USACE	Section 10 Obstruction to Navigable Water Permit	April 2011*	Jan. 2012
USCG	Section 9 Bridge Permit	April 2011*	Jan. 2012
ADF&G	Fish Habitat Protection Permits	April 2011*	Oct. 2012
ADEC	Prevention of Significant Deterioration (PSD)	TBD*	2012

*Based upon available data and agency requirements

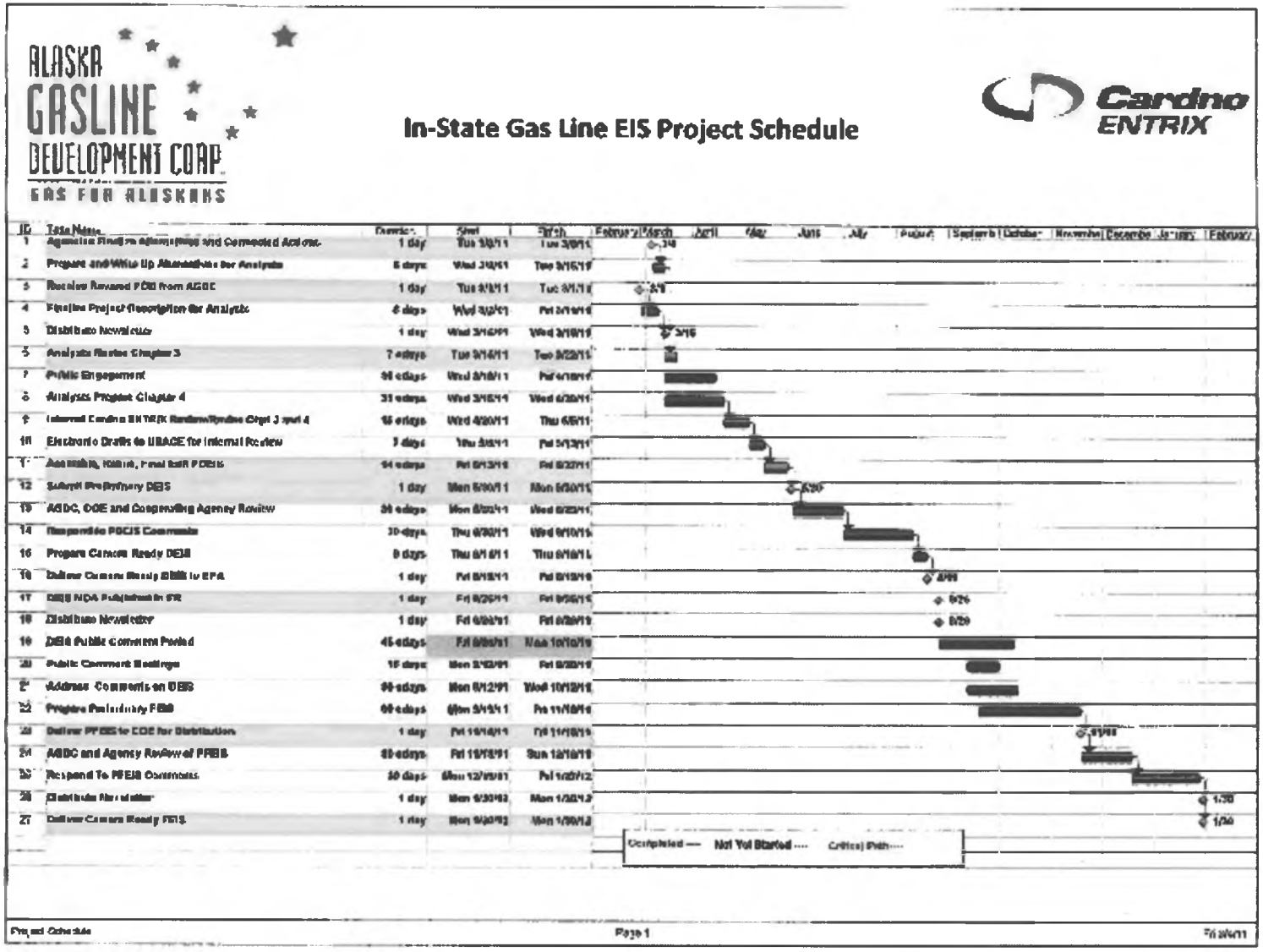
Project Schedule



ALASKA GASLINE DEVELOPMENT CORP.
GAS FOR ALASKANS

In-State Gas Line EIS Project Schedule

Cardno ENTRIX



ID	Task Name	Duration	Start	Finish
1	Agencies Finalize Alternatives and Connected Actions	1 day	Tue 3/8/11	Tue 3/8/11
2	Prepare and Write Up Alternatives for Analysis	5 days	Wed 3/9/11	Tue 3/15/11
3	Receive Revised PCN from AGDC	1 day	Tue 3/1/11	Tue 3/1/11
4	Finalize Project Description for Analysis	6 days	Wed 3/2/11	Fri 3/11/11
5	Distribute Newsletter	1 day	Wed 3/16/11	Wed 3/16/11
6	Analysis Review Chapter 3	7 edays	Tue 3/15/11	Tue 3/22/11
7	Public Engagement	90 edays	Wed 3/16/11	Fri 6/17/11
8	Analysis Prepare Chapter 4	33 edays	Wed 3/16/11	Wed 4/20/11
9	Internal Cardno ENTRIX Review/Update Chpt 3 and 4	15 edays	Wed 4/20/11	Thu 5/5/11
10	Electronic Drafts to USACE for Internal Review	3 days	Thu 5/5/11	Fri 5/13/11
11	Assemble, Edited, Final Draft PDEIS	94 edays	Fri 5/13/11	Fri 8/22/11
12	Submit Preliminary DEIS	1 day	Mon 5/30/11	Mon 5/30/11
13	AGDC, DOE and Cooperating Agency Review	36 edays	Mon 5/30/11	Wed 8/24/11
14	Respond to PDEIS Comments	30 edays	Thu 6/30/11	Wed 8/10/11
15	Prepare Camera Ready DEIS	9 days	Thu 8/11/11	Thu 8/18/11
16	Deliver Camera Ready DEIS to EPA	1 day	Fri 8/19/11	Fri 8/19/11
17	DEIS NOA Published in FR	1 day	Fri 8/26/11	Fri 8/26/11
18	Distribute Newsletter	1 day	Fri 8/26/11	Fri 8/26/11
19	DEIS Public Comment Period	45 edays	Fri 8/26/11	Mon 10/10/11
20	Public Comment Meetings	15 days	Mon 9/12/11	Fri 9/30/11
21	Address Comments on DEIS	90 edays	Mon 9/12/11	Wed 12/12/11
22	Prepare Preliminary FEIS	60 edays	Mon 9/12/11	Fri 11/18/11
23	Deliver PFEIS to DOE for Distribution	1 day	Fri 10/14/11	Fri 11/18/11
24	AGDC and Agency Review of PFEIS	30 edays	Fri 10/28/11	Sun 12/18/11
25	Respond To PFEIS Comments	30 days	Mon 12/19/11	Fri 1/27/12
26	Distribute Newsletter	1 day	Mon 1/30/12	Mon 1/30/12
27	Deliver Camera Ready FEIS	1 day	Mon 1/30/12	Mon 1/30/12

Completed — Not Yet Started ···· Critical Path ····

Project Schedule Page 1 7/13/11

Most Recent Activity

- Plan of Development published on United States Army Corps of Engineers website at the following link

http://www.asapeis.com/ProjectDocuments.aspx

Thank You!

PROPANE PRODUCTION, TRANSPORTATION AND UTILIZATION IN RURAL AND URBAN ALASKA

PREPARED FOR
ALASKA NATURAL GAS DEVELOPMENT AUTHORITY

BY PAUL FUHS
DECEMBER 2010



PROPANE PRODUCTION, TRANSPORTATION AND UTILIZATION IN RURAL AND URBAN ALASKA

ALASKA NATURAL GAS DEVELOPMENT AUTHORITY

PRINCIPAL FINDINGS:

This report considers and analyzes a number of transportation and technical issues related to potential large scale use of propane produced on the North Slope and consumed in rural and urban Alaska. The overall conclusion of this investigation is that it is feasible to transport and utilize large quantities of propane and save consumers money, if the product can be purchased and produced at a reasonable price on the North Slope, ideally below $1 per gallon.

The access point at which propane can be extracted from gas processing facilities on the North Slope has a dramatic effect on the price of producing propane. Negotiations are currently underway between ANGDA staff and the Prudhoe Bay Unit operator's group to gain access to the most favorable access point.

Transportation costs are reduced substantially when bulk shipping methods are used. As the recent Northern Economics report points out, propane use is expected to ramp up over the years as it is shown to produce cost savings to consumers. Once a tipping point is reached to justify bulk shipping, the additional transportation savings are substantial.

Propane can be used as a fuel for generating electricity and the maintenance profile for propane generators is much lower than diesel generators. In recent years the State of Alaska has focused on alternative electrical generation strategies. Propane generation of electricity should also be considered in the mix of alternatives. However, even if advances can be made in reducing electrical generation costs, there will still be a strong need for home heating and cooking fuel which could be even more important to reducing household energy costs than electricity.

According to the Alaska Energy Authority, In Western rural Alaska, households can spend as much as four times as much on home heating than they do for electricity. In Fairbanks, households spend twice as much on home heating as they do on electricity. In Southcentral Alaska, households spend about as much on home heating as they do for electricity. (for detailed data see Propane Residential Use section below.)

Even when any of the proposed gasline projects are completed there will still be a need for propane for home heating in urban areas where the housing densities are not high enough to justify the extension of local distribution systems.

The primary purpose of the ANGDA propane project is to provide an alternative energy source which results in cost savings to residential and business consumers in Alaska.

PROPANE PRODUCTION COSTS

According to the ANGDA North Slope propane acquisition team, there are several points of entry on the North Slope where propane can be extracted. The points at which propane is at its highest concentration in the gas processing facility are the points that will require the least amount of gas processing and result in the lowest priced propane. The ANGDA team is in the process of negotiating these agreements with the North Slope producers. NANA/Worley Parsons and CH2MHILL are on contract to provide costs estimates for the various scenarios. Since the negotiations with the producers have not been concluded, it is not possible to forecast a price for propane at the gate on the North Slope. This paper focuses on the transportation, storage and other costs associated with using propane. These costs would be added to the purchase/production cost of propane on the North Slope to estimate ultimate delivered costs.

If any of the proposed gasline proposals moves forward, propane can also be extracted anywhere along the line through a straddle plant which removes the desired gases for consumer use or value added processing and then puts the remainder back into the gasline. This would be similar to the operation of the Flint Hills refinery with the Trans Alaska Pipeline. The propane extraction facilities on the North Slope are designed so that they can be relocated if desired.

PRICING ISSUES COMPARED TO DIESEL FUEL

Propane starts with a thermal disadvantage to diesel fuel in that it contains one third less heating value compared to diesel. So to be competitive with diesel at $6/gallon, propane would have to be sold at $4/gallon. This will affect storage also in that you must store 50% more propane than diesel to create an equal amount of BTU's. If you required 2000 barrels of diesel storage, you would have to have 3000 barrels of propane storage. However, there are other advantages to using propane that mitigate this thermal disadvantage and they are discussed later in this report.

PRICING ISSUES RELATED TO COMPETITION

It appears that if ANGDA can obtain agreements to access propane at the most favorable offtake point on the North Slope, propane can be delivered at a very favorable price. What are the assurances that savings in producing and transporting propane would be ultimately passed on to consumers? There are several factors which could affect this outcome.

First, in the urban areas such as Fairbanks and in rural areas where there are competing suppliers, this unregulated competition should result in savings to consumers while providing a reasonable level of profit for the distributors.

In areas where there is no competition, it is more difficult to ensure that cost savings will be passed on to consumers. In these areas local entities have taken steps to achieve savings, primarily through consolidated purchase of fuel through a regulated utility, such as an electric utility. Most of these are non profit cooperatives that exist to provide the lowest cost of energy to their customers. In addition, most of them are regulated by the Regulatory Commission of Alaska which ensures that consumers will receive the lowest energy prices. Some of the larger rural electric utilities have even considered establishing their own fuel shipping operations.

At the AFN convention last year, there were several references made to forming a fuel purchasing coop to create more competitive conditions in these remote areas. This could also contribute to competition by combining the demand from many villages and then going out to bid for the service.

However, there are also issues of local distribution which could affect these savings. Although it has not received much publicity, in many cases, village fuel distribution is owned by the village native corporation or by the municipality or tribe. Fuel sales are one of their only sources of income and they are responsible for some of the high prices we have seen. While storage and distribution costs range from $0.25 to $1.00 per gallon, in many cases the local markups are from $2 to $4 per gallon. These are tough decisions to make when the viability of these organizations may hang on highly marked up fuel sales.

Propane could also be competitive when applied to a portion of the demand of a community, for instance, a school or new HUD housing development. In that case micro generators could provide the electricity and also provide waste heat for home heating, or refrigeration for community freezers. However, the impact on local utilities must be carefully weighed. If a school representing 1/3 of local electrical demand went off the local grid and generated its own power with propane, the local utility would lose 1/3 of its market and the remaining fixed costs they have would have to be spread among the remaining customers, increasing the energy costs to residential and business users.

In a recent development the Alaska Village Electric Coop (AVEC) which aggregates demand and makes bulk purchases of fuel for many villages in Western Alaska, has proposed to begin shipping its own fuel through its subsidiary Vitus Marine. This could provide a transportation service dedicated to its customers for all forms of fuel. In discussions with AVEC and Vitus Marine, they are interested in exploring shipping and utilizing propane for electrical generation and home use if the purchase price of propane at the Yukon River bridge or Nenana would result in savings to the utility and its customers.

The issue of competition and savings to customers will have to continue to be addressed as ANGDA proceeds with this project.

POTENTIAL USES OF PROPANE

RURAL RESIDENTIAL PROPANE USE

Propane is already in use in many residences in rural Alaska primarily for home cooking and some water heating. As previously stated, home heating costs far exceed electricity costs in Western Alaska by a factor of up to 4 to 1. If the delivered price of propane is competitive, it could be a practical alternative to diesel for home heating.

Alaska Energy Authority Regional Energy Cost Comparisons, August 2008
Average household energy costs by use category

Anchorage	Fairbanks
$1,371 Electricity	$1,912 Electricity
$1,086 Heating	$4,027 Heating
$5,726 Transportation	$3,521 Transportation
$8,182 Total Energy	$9,461 Total Energy
12.2% Percent of income	15.3% Percent of income
Southeast Alaska	**Rural Alaska**
$1,374 Electricity	$1,843 Electricity
$1,704 Heating	$7,715 Heating
$2,291 Transportation	$2,282 Transportation
$5,368 Total Energy	$11,840 Total Energy
8.5% Percent of income	20.2% Percent of income

The cost of converting a home to propane would be approximately $3,000, including a space heater with flush mount exhaust, an on demand water heater and a 250 gallon buried fuel tank which should last for about a month depending on the season.

As previously mentioned, a very efficient use of propane could be in a small housing development in which propane is used to generate electricity through a micro generator, the waste heat is used to heat homes, and waste heat is also used to provide refrigeration for a community freezer to keep subsistence foods. If this system were installed by the local utility, it would not detract from covering their fixed cost of operating the utility.

URBAN RESIDENTIAL PROPANE USE

When a gasline is eventually built, it will connect many Alaskan communities to gas that have never been connected before. However, as we have seen in Southcentral Alaska, there are still many residents who cannot connect to gas because they live in areas that are not dense enough to justify the extension of local distribution pipelines. It is estimated that in Fairbanks, about 20,000 residents would be connected to a local gas grid. The remaining 60,000 residents could use propane for home heating and cooking.

PROPANE USE BY ELECTRIC UTILITIES

Propane is a good fuel for electrical generation. It burns clean and the maintenance on propane turbines is a fraction of diesel generators. Diesel generator maintenance has been a persistent problem in rural Alaska. In addition, it appears that propane generators may be a more appropriate fit with the wind generation systems being deployed throughout rural Alaska. When large diesel generators are required to keep running to maintain maximum load when the wind generators are only partially meeting the need, the benefits of wind power are diminished. An array of smaller propane turbines could respond to fluctuating wind energy by switching entire units off.

Diesel engines can also be retrofitted by installing an input orifice on the intake manifold to inject propane in a mixture of up to 25% with diesel fuel without further modifications to the unit. The unit then burns cleaner due to the higher combustion achieved with the addition of the propane.

The bottom line for electrical utilities will be the delivered price of propane compared to diesel. Electrical prices in rural Alaska are already so high that a savings will have to be shown to entice utilities to convert to propane.

PROPANE USE BY MINES

Propane could be an attractive fuel for mines to use in electrical generation. The reduced emissions can help them achieve their air quality requirements. Propane generators also operate on a much lower maintenance schedule than diesel generators. As previously mentioned, existing diesel generators can be retrofitted to use up to 25% propane. The Donlin Creek mine is installing generators that can burn diesel, methane or propane.

The amount of fuel anticipated to be used in these mines is very large indicating that a pipeline may be the most efficient way to move propane. In fact, Nova Gold is proposing a gasline from Beluga to Crooked Creek to fuel its generators. If a propane solution can be shown to be a cost effective alternative, this mine and any others including the prospect at Livengood have said they would consider it. Delivered price will once again be crucial.

PROPANE AS A TRANSPORTATION FUEL

Propane has been used as a transportation fuel for many years. Roush Clean Tech has recently placed two Ford F250 trucks into service on Dalton Highway and North Slope operations. Over this winter they have performed very well. Using propane as a fuel is an alternative to the required use of ultra low sulfur diesel on the North Slope. If propane can be produced for a reasonable price in Alaska, it could be an alternative to gasoline and diesel fuel. It may also help communities reduce violations of the Clean Air Act.

BULK PROPANE TRANSPORTATION METHODS WITHIN ALASKA

RIVERINE MARINE TRANSPORTATION OF PROPANE

Self contained tanks: Propane is currently delivered in 100# to 1000 gallon tanks using existing barge and off loading equipment. The cost of shipping in 100# weights is listed below.

Representative prices for 100# weights to communities on the Yukon River.

These quotes were obtained from local barge shipping companies. These rates represent one time per 100# rates. If a regular trade is established and regular bulk shipments are made, these prices are traditionally lowered by 20% for long term customers.

Trucking costs to Nenana:

$.50 per gallon based on either a single bulk tank of 10,000 gallons or two 20 foot ISO's. These limits are consistent with weight restrictions on the Dalton Highway.

Marine component shipping rates including bulk rate reductions of 20%:

Nenana to Tanana - $11.34/100# = $.81/gallon minus 20% = $.64/gallon

Nenana to Galena - $14.00/100# = $1.00/gallon minus 20% = $.80/gallon

Nenana to Marshall - $24.26/100# = $1.75/gallon minus 20% = $1.40/gallon

Nenana to St Marys - $27.50/100# = $1.96/gallon minus 20% = $1.57/gallon

To obtain the total transportation cost add the $.50/gallon cost of trucking to Nenana.

It would be even more economical to utilize 20 foot ISO propane containers which can hold 5000 gallons of propane. These containers are post flats and can be stacked with other consumer goods on a barge. However, given the tank weight and product, these ISO's would weigh 30,000 pounds. Most villages do not have the equipment available locally to move items of this weight so the barge carrier would have to carry that equipment on board, for instance a Cat 988 loader (or equivalent) to move the tanks into the community.

An advantage of large, self contained tanks is that there is no local tank storage required. As demand ramps up, more containers can be supplied to accommodate the demand. 20 foot ISO containers cost in the range of $50,000.00 each used, or $65,000.00 each new.

A disadvantage of self contained tanks is that the cost of shipping the tanks themselves puts costs on the delivery system that does not produce any energy. Whether it is a 100# tank or a 2o foot ISO, the tank weight is approximately 30% of the total weight. Shippers charge by the pound so 30% of the cost of shipping the propane is the tank shipping cost. Then the container must be shipped back empty to be refilled. The carriers we contacted had an empty tank haul back rate of 50% of the shipping rate, resulting in an additional 15% charge on the total shipping weight, so this means that combined, 45% of the costs of shipping propane are tank shipping costs. How this compares to permanent local storage and bulk shipments of propane is discussed in the STORAGE ISSUES section below.

BULK RIVERINE TRANSPORTATION OF PROPANE

Bulk shipments of propane could result in substantial savings in transportation costs. Two scenarios are: dedicated bulk shipment of 20 foot ISO's deck loaded on top of a diesel delivery barge and a dedicated pressurized propane barge that would deliver in bulk to permanent onshore storage tanks.

While the resources were not available for this study at this time to do a detailed analysis of the costs of these shipments, I was able to obtain enough information from shippers to describe how the system would work and provide some preliminary numbers. Barge companies were reluctant to provide proprietary information so an independent analyis would need to be done.

The bulk shipment of 20 foot ISO's would be most efficient in conjunction with deilivery of diesel fuel. These barges would pick up diesel from distribution hubs like Bethel or take on loads from ocean going barges (the more common source) and then proceed up river to make deliveries of diesel. Following delivery of their most up river destination, they would proceed to the Yukon river bridge to take on a full deck load of 20 foot ISO's. To use the design of the Vitus Marine barges as an example, they would be able to carry 48 loaded ISO's of propane on one barge and 60 on the other. At 5,000 gallons of propane per ISO this translates into a total of 240,000 gallons and 300,000 gallons respectively.

They would then deliver these ISO's going down the river and pick up the empties on their way back up river making diesel deliveries. This would provide for maximum utilization of equipment and the lowest shipping costs. Although these loading operations could be accomplished with current conditions at the Yukon River crossing, they would be more efficient if mooring dolphins or an open cell sheet pile dock were installed at an estimated cost of $2-3 million. Loading at the Yukon River would also reduce trucking costs to $.35/gallon due to reduced mileage.

Propane could also be delivered in a pressurized tank barge and loaded to permanent onshore tanks through a discharge hose as is currently done with diesel fuel. Such a truck based operation was conducted in the 1990's with diesel being delivered by truck from the Flint Hills refinery in Fairbanks and then loaded to the barge at the Yukon River crossing via a floating hose. This service was discontinued due to refinery pricing issues, but it did show feasibility from an operations standpoint. Again, construction of a basic barge landing structure and storage tanks at the Yukon River crossing would improve the efficiency of the operation.

Offloading propane at communities would be accomplished by connecting discharge lines from the barge to headers on shore and then pumped to storage. Barge operators saw this as no different than discharging diesel.

Representative Inland River (Mississippi) Propane Barges
Dimensions, Draft and Capacity

USCG #	261064	262194	282474	271388
Dimension	195'x44'	195'x44'	210'x44'	210'x44'
Draft (ft)	6' 3"	6' 3"	8' 6"	7' 9"
Capacity (gal)	360,738	360,234	425,922	399,378
Pressure (PSI)	250	250	250	250

Source: Targa Midstream Services, LP

There is an established port operation in Nenana that currently ships limited amounts of propane. However, the Yukon river is deeper than the Tanana river out of Nenana and could allow for deeper draft barges for bulk shipments.

In doing basic calculations of bulk shipments by pressurized propane barge from Nenana to Tanana with tug boat and crew charges at $12,000.00 per day, the estimated cost of shipping to Tanana is $.40/gallon, about 2/3 of the cost of shipping via container.

SHIPMENT TO TIDEWATER IN SOUTHCENTRAL ALASKA

Propane can be moved to tidewater in southcentral Alaska through a combination of truck to Fairbanks and then rail to the Port of Anchorage. The railroad rate is $910.00 per 20 foot ISO which calculates to $.18/gallon. This would amount to a total cost of $.63/gallon from the North Slope to Southcentral. From there it could be shipped to other coastal communities by scheduled barge service. This service would be particularly appealing to southern coastal Alaska communities that are not icebound in the winter,

since they could receive regular shipments without having to incur the costs of substantial winter storage.

If a gasline is developed to tidewater in southcentral Alaska, propane could be extracted there and loaded directly onto barges for shipment to coastal Alaskan communities. Both southwestern and southeastern communities could be the beneficiaries of this propane distribution network. Although the concentration of propane in the gas stream of a gasline is low, (between 2% and 3%) these gases would have to be separated at tidewater to prepare methane for local distribution or for export, so these costs would be absorbed by the overall operation.

BULK PROPANE MARINE SHIPMENTS FROM THE NORTH SLOPE

While it is technically feasible to ship propane from the North Slope to coastal Alaska, there are a number of issues involved. First, the ocean depths on the North Slope are very shallow and would require the construction of a berthing facility, either ice deflecting dolphins or an open cell sheet pile dock. The cost of these facilities has not been estimated. There is an existing dock but it is extensively used during the short shipping season and it is also currently exempted from the Coast Guard port security requirements. Adding propane operations to the existing facility would change that designation and complicate its operation.

This option is further restrained by a short ice free shipping season typically of 7 to 8 weeks. Additional substantial storage would be required on the North Slope to store sufficient amounts to fill a barge with propane. The most likely customers for such shipments would be the Red Dog Mine or regional fuel hubs like Nome and Bethel.

Tug and Barge equipment would have to be leased since it could not sit idle during the iced in periods. Tugs in this area typically rent for $15,000.00 per day. Barge leasing would be an additional cost.

STORAGE

As previously mentioned, 50% more propane is needed to produce the same energy as diesel. This means that either 50%more storage is needed or that deliveries would have to be made on a more frequent basis. However, propane storage is less costly than diesel storage due to not needing extensive diking and cleanup equipment. Due to this, the cost of propane and diesel storage tanks on an equivalent basis are roughly equal.

Many millions of dollars have been spent rebuilding diesel tank farms in rural Alaska. In our meetings with the Denali Commission, they indicated that if propane can be shown to provide a cost savings and displace the need for diesel tank storage, that they would invest in propane storage. This would equalize the subsidies between diesel and propane.

PROPANE SHIPPING TO KUSKOKWIM RIVER

Shipping to the Kuskokwim river could be accomplished by two methods: 1) coming out of the Yukon River with a bulk propane barge and going South by sea, then upriver to Bethel then transferring to a smaller lighter barge as is currently done with diesel fuel, or 2) constructing a propane pipeline connecting to the Yukon river below St. Mary's and on over to the Kuskokwim (about 60 miles). The Denali Commission is currently contemplating building a road to connect the two rivers at this point which is about 60 miles. The resources were not available to estimate the cost of this pipeline. Some storage would also be required at the terminus of the line on the Kuskokwim River. From there, the same shipping and delivery practices can be employed as those on the Yukon River.

PROPANE VAPORIZATION ISSUES

Propane does not vaporize below -45 degrees. This will require making an arctic grade of propane spiked with ethane or other lighter gas. An alternative may be burying propane storage tanks. A study by the Cold Regions Research Facility in Fairbanks shows that at one foot of burial depth, the temperatures never exceeded -19 degrees. Cold weather would not affect storage or distribution operations but would need to be considered in final storage just before the consumption point.

SECURITY OF ALTERNATIVE SUPPLY

To justify large scale conversion to propane, users will have to be assured that an alternative supply of propane is available should there be a failure of production or other disruption of supply from the North Slope. This alternative is represented by a supply point at Prince Rupert, British Columbia, connected to the Alaska rail system by the Hydrotrain barge system currently operating out of Whittier, Alaska. 10,000 gallon propane rail cars would be barged into Whittier, transferred to the Alaska Railroad and then railed to Nenana. While this supply option would incur an approximately 20% greater cost of service than North Slope propane, it could still serve as a secure supply of propane until North Slope operations could resume.

TRAINING

Training for everyone involved in the transportation and handling of propane will be necessary. Propane is regularly handled in the millions of gallons every day across the US and Alaska. However, it has some characteristics different from diesel that will require training to ensure safe operations. A class for 20 rural fuel handlers was held in Fairbanks last year but this will need to be expanded.

CONCLUSION

All the technical issues listed above can be handled with proper facilities and trained personnel. The costs of diesel remain high, opening the door to a more affordable energy source such as propane. The costs of transporting propane appear to be reasonable and are similar to or less than transporting and storing diesel. The determining factor in cost savings from use of propane in Western Alaska will be the purchase and production costs of propane on the North Slope, ensuring competitive or RCA regulated markets and reaching high enough utilization rates to justify bulk shipping methods.

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PROPANE PRODUCTION, TRANSPORTATION AND UTILIZATION IN RURAL AND URBAN ALASKA

BY PAUL FUHS
FOR ALASKA NATURAL DEVELOPMENT AUTHORITY



PROPANE PRODUCTION

- ON NORTH SLOPE, COST DEPENDENT ON OFFTAKE LOCATION 2% TO 35% CONCENTRATION
- STRADDLE PLANT AT YUKON RIVER
- AT FAIRBANKS AS PART OF CONDITIONING GAS FOR LOCAL USE
- AT TIDEWATER, AS PART OF CONDITIONING GAS FOR LOCAL USE OR EXPORT

PRICING ISSUES

- PROPANE 2/3 BTU VALUE OF DIESEL
- PROPANE 2.5 TIMES BTU VALUE OF METHANE
- COMPETITION EXISTS BETWEEN DISTRIBUTORS IN MOST MARKETS
- UTILITIES AND COOPS CAN MAKE AGGREGATED PURCHASES TO INCREASE COMPETITION
- LOCAL DISTRIBUTION CAN ADD TO COST

POTENTIAL USES

- RESIDENTIAL HEATING - RURAL ALASKA 4 TIMES AS MUCH SPENT AS ON ELECTRICITY - FBKS TWICE AS MUCH
- URBAN RESIDENTIAL USE EVEN IF GASLINE
- ELECTRIC UTILITIES AS PRIMARY OR SECONDARY FUEL - AND WITH WIND
- USE BY MINES - REGULATORY ISSUES
- TRANSPORTATION FUEL

MARINE TRANSPORTATION OF PROPANE

- TRUCK TO NENANA $0.50 PER GALLON
- 100# weight - $0.64/GAL TO TANANA - $1.57 TO ST. MARYS
- 20' ISO CONTAINER ECONOMY OF SCALE
- BULK TANK BARGE ALSO EFFICIENT $0.40/GAL TO TANANA
- SHIPMENT FROM TIDEWATER TO SOUTHEAST
- DIRECT SHIPMENTS FROM NORTH SLOPE

TECHNICAL ISSUES

- STORAGE - 50% MORE STORAGE THAN DIESEL REQUIRED - DENALI COMMISSION
- VAPORIZATION - ARCTIC GRADE PROPANE - BURIED TANKS
- SECURITY OF ALTERNATIVE SUPPLY - PRINCE RUPERT BC BY RAIL
- TRAINING

3/31/11 Overview by Alaska Natural Gas Development Authority: Alaska Propane Project

<TARGET><BILL></BILL><SUBJECT>3-31-11 Overview by Alaska Natural Gas Development Authority Alaska Propane Project</SUBJECT><COMM>HENE27</COMM></TARGET>

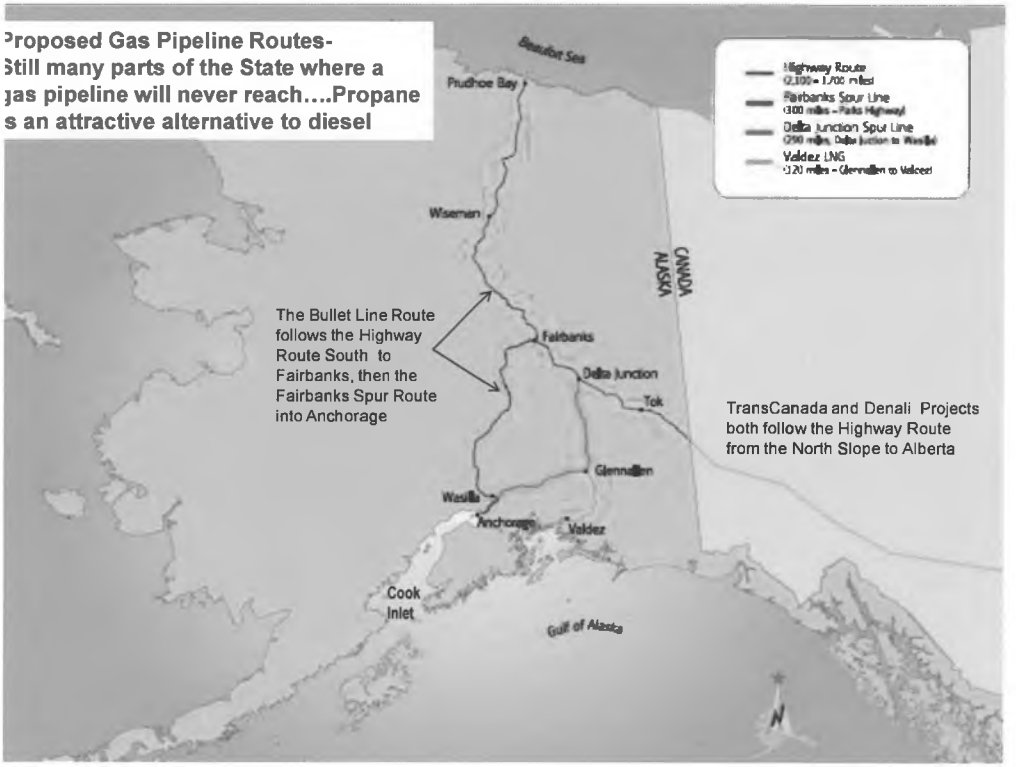
Alaska North Slope Propane Conference

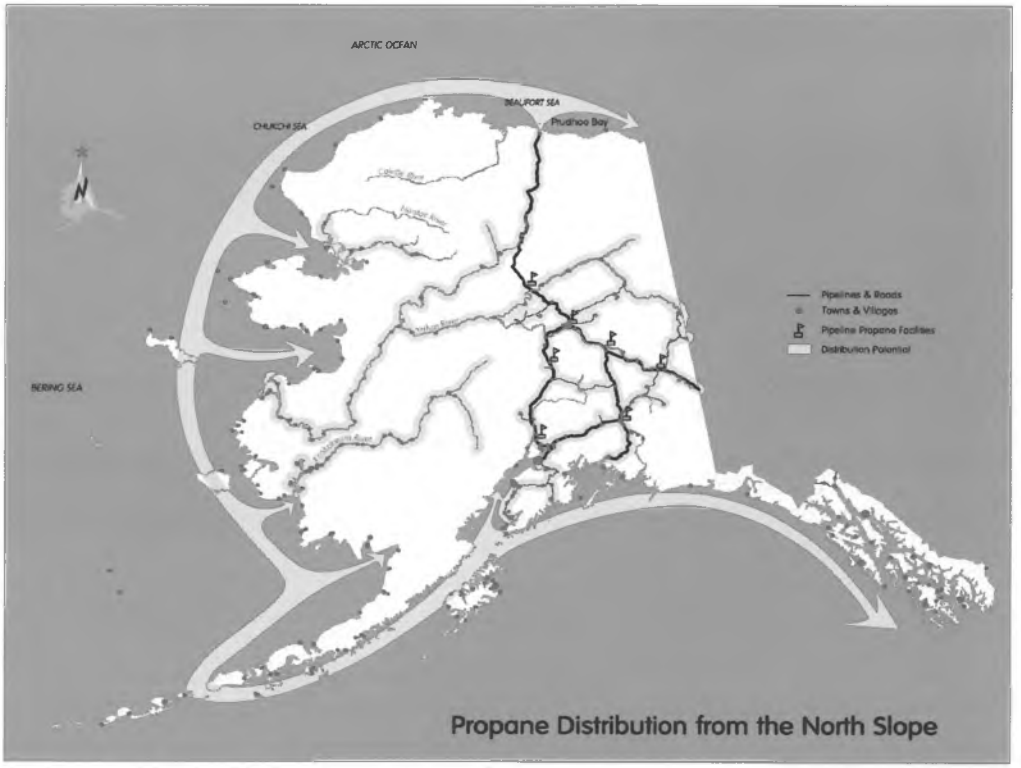
March 31, 2011 - April 1, 2011

Presentation by Mary Ann Pease, Consultant

Alaska Natural Gas Development Authority (ANGDA)

"Connecting Alaskans To Their Natural Gas"





Propane's Benefits and Opportunities

- Alternative clean fuel for rural Alaska
- Price advantage of North Slope gas btu value
- Extends reach to Alaskans that transcends gas pipeline route.
- Opportunities
  - World class C_3 volumes currently produced and injected in PBU
  - Gas pipeline is designed to transport entire C_3 production stream
  - Current CGF configuration captures only one-third of C_3 processed

North Slope Propane Opportunity

- With no market for C_3, CGF operational target is maximum NGL (C_4+) in TAPS and enough C_3 for miscible injection
- A petrochemical market of 20 k bpd C_3 can be supplied by direct marine export due to reduced polar ice extent & thickness
- ANGDA is willing to facilitate logistical & market (both in-state & export) development consistent with the PBU developing a propane delivery point

LPG's & NGL's in North Slope Pipeline

North Slope Gas Pipeline Flow --- 4.5 BCFPD

Component		Mole Percent	Bbls/Day	Thousand Tonnes Per Year
C2	Ethane	7.23	206,000	4,250
C3	Propane	3.76	110,250	3,250
C4	Butane	0.76	26,250	900
C5+	Pentanes	0.03	1,250	45

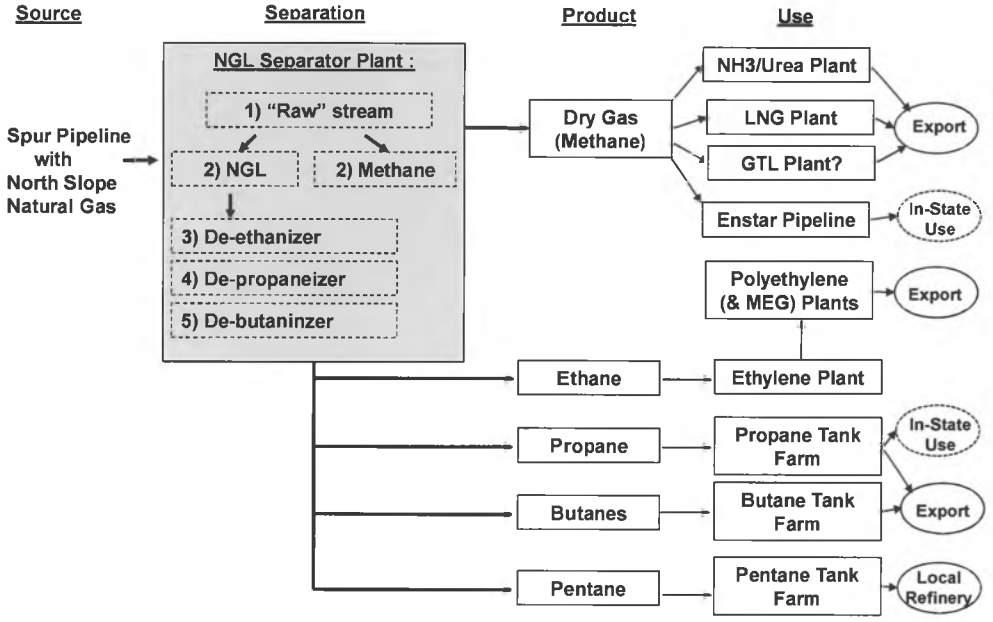
Feedstock Based Cracker Production Capacities

Carbon Number Product Name		C2 Ethane	C3 Propane	C4 Butane	C5+ Pentanes
Concentration	Mole Pct	7.23	3.76	0.76	0.03
Volume of Feedstock	Bbbls/Day	206,000	110,250	26,250	1,250
Total Available Feedstock	KTA	4,250	3,250	900	45
After Liquids Separation	KTA	1,934	1,479	410	21
Feed Used/MT of Ethylene	MT/MT	1.29	2.38	2.50	3.25
Ethylene Capacity	KTA	1,500	621	164	6
Propylene/MT of Ethylene	MT/MT	0.04	0.40	0.43	0.53
Propylene Capacity	KTA	54	248	71	3

There'll Be Enough Ethane for Three World Scale PE Plants (or Two PE + One Ethylene Glycol Plant), But Not Enough Other Feeds for a World Scale Propylene Derivative Plant, Even if They All are Used

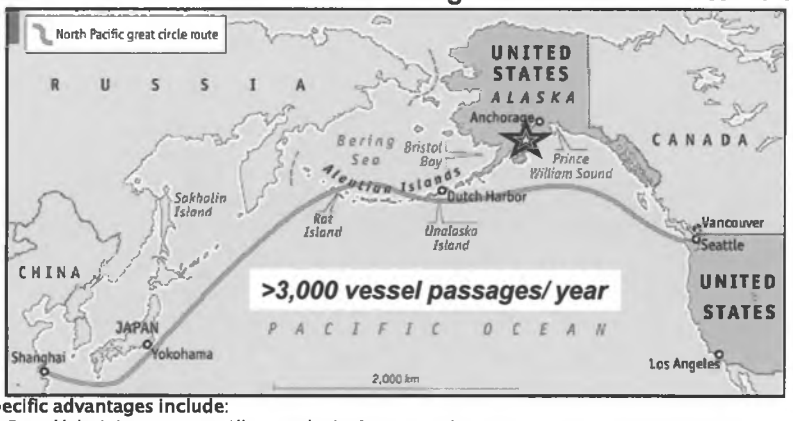
Composition Based on ANGTS – *Alaska ROW Application (June 1, 2004) – Page 9 of 34*

Alaska Gas & NGL Potential Uses



Logistics to Asia & US West Coast

Cook Inlet has advantaged logistics to the US West Coast and Asia due to its location in the middle of the great circle route, with the potential for additional backhaul freight rate reductions to Asia.



- Specific advantages include:
  - Favorable logistics costs versus Alberta production for Asian markets
  - Favorable logistics costs versus Asian production for US West Coast markets
  - Competitive logistics costs versus USGC for US West Coast markets

Channel to Market Issues– Export

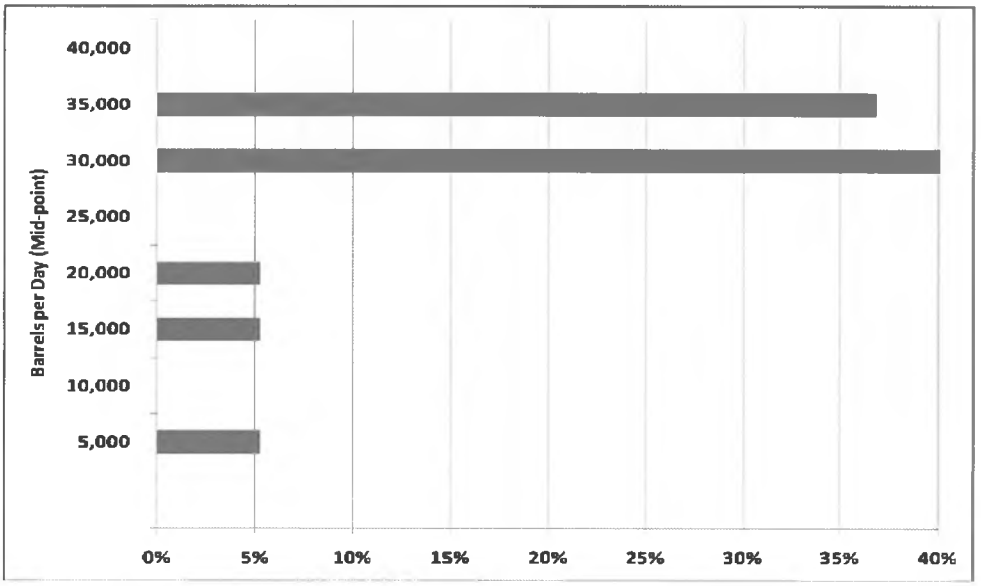
- An Asian company would be considered a domestic supplier in the US market if it has production capacity in Alaska, which could help in marketing to customers and in its dealings with the government.
- An Alaskan plant would not only have duty free access to the entire US market, but would also be able to participate in the North American Free Trade Agreement with Canada and Mexico, as well.
- The first mover on petrochemical investment in Alaska will understand the local situation better than latecomers will, and is better positioned for additional future petrochemical and downstream investments.
- Partnering with or buying a US company could facilitate market development activities for an Alaskan plant's owner (IPIC bought Nova, and SABIC bought GE Plastics).

ANGDA's Ask of PBU owners

- PBU Operator to perform technical evaluations of:
  - CGF Process shift to increase C_3
  - Design concept for new C_3 separation facilities
  - VROM Cost Estimate of modifications & new construction
- PBU to consider development of a non-unit logistical facility to receive individual owner C_3 sales

Potential Alaska In-State Demand For Propane
(Alaska Pipeline Project In-State Gas Study)

Figure 25. Chances of Propane Demand, Alberta Route, Years 10-15



Source: Northern Economics, Inc.

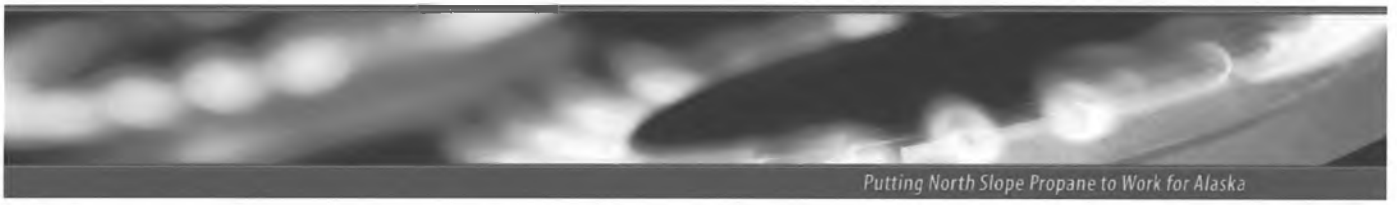
In-State and North Slope Opportunity

- Potential Fleet Services operation on the North Slope converted to less expensive N.S. propane rather than trucked ULSD
- Utilization of propane for new development staging facilities
- Transitional development from in-state and N.S. use to longer-term export
- Industrial applications, such as generation
- Rural community and village opportunity for home heating

Propane Barging / Tankering Direct From North Slope

- **Mining operations**
- **Cook Inlet Utilities**
- **The Gas Company in Hawaii**
- **Petrochemical Manufacturing Plants**
- **Lower 48 for peak seasonal demand**
- **Other worldwide applications and markets**

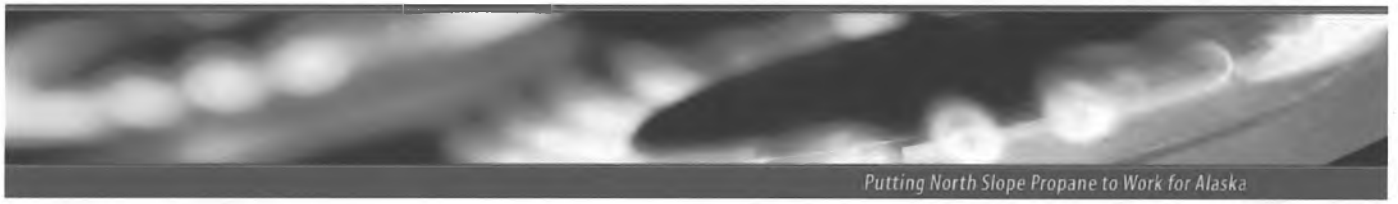
Alaska North Slope Propane Conference



Commons Building, University of Alaska
3700 Sharon Gagnon Lane
Anchorage, Alaska

Thursday, March 31st, 2011

9:00 – 10:00	**Welcome and Introduction** Mayor Dan Sullivan, City of Anchorage Chancellor Tom Case, University of Alaska Anchorage Scott Heyworth, ANGDA Board Chairman
	Update on the North Slope Propane Project – Stakeholders in the Discussion Mary Ann Pease, ANGDA
10:00 – 10:45	**Alternative Energy for a Sustainable Future** Lt. Governor Mead Treadwell
	---------15 Minute Break--------
11:00 – 11:30	**Technical Discussions** Mary Ann Pease, ANGDA
11:30 – 12:00	**Infrastructure Status – ISO Containers and Storage** Pat Malara, Western Cascade
12:00 – 1:00	***LUNCH*** **Keynote Speaker: Propane Sourcing – Alaskan and National Perspective** Randy Bradford, Amerigas
1:00 – 3:00	**Transportation Opportunities and Issues with Deliveries to Rural Alaska** Randy Breaux, Crowley **Opportunities for Propane Expansion – North Slope Operations, Mining, etc.** Chris Birch, NANA
	---------15 Minute Break--------
3:15 – 4:00	**AIDEA Financing Opportunities** Jim Hemsath, AIDEA Randall Finken, First Southwest
4:00 – 5:00	**Distribution and Equipment** CleanFuel USA, ABS Alaskan, Rural Energy Enterprises, and Yanmar



Friday, April 1st, 2011

9:00 – 9:30	**Welcome and Recap from Day One** Mary Ann Pease, ANGDA Chancellor Tom Case, University of Alaska Anchorage
9:30 – 10:30	**Demonstration Projects – Current Projects in Alaska, Proposed Future Projects and National/International Applications** ***New technologies and Rural Applications*** Baron Glassgow, National Propane Gas Association Larry Osgood, Propane Education & Research Council
	---------15 Minute Break--------
10:45 – 11:45	**Private Sector Opportunity for Resource Development** Dave Harbour, Publisher, Northern Gas Pipelines
11:45 – 12:00	**Letter from Senator Murkowski** Robert Dillon, US Senate Energy and Natural Resources
12:00 – 1:00	***LUNCH*** **Keynote Address: Propane Fueled Vehicles for Fleet and Oil Field Services** Todd Mouw, ROUSH CleanTech
1:00 – 1:30	**Alaskan Petrochemical Investment Opportunities** Bill Popp, Anchorage Economic Development Corporation
1:30 – 3:00	**Rural Energy Needs – A Community Perspective** Chris Rose, Renewable Energy Alaska Project Ingemar Mathiasson, Northwest Arctic Borough Bear Ketzler, City of Tanana Gwen Holdmann, Alaska Center for Energy and Power, UAF Paul Fuhs, Fuhs Professional Services
	---------15 Minute Break--------
3:15 – 4:00	**Legislative Roundtable – Update from Juneau on Energy**
4:00 – 5:00	**NPGA Discussion – Initiatives, Opportunities and Next Steps**

PROPANE PRODUCTION, TRANSPORTATION AND UTILIZATION IN RURAL AND URBAN ALASKA

PREPARED FOR
ALASKA NATURAL GAS DEVELOPMENT AUTHORITY

BY PAUL FUHS
DECEMBER 2010



PROPANE PRODUCTION, TRANSPORTATION AND UTILIZATION IN RURAL AND URBAN ALASKA

ALASKA NATURAL GAS DEVELOPMENT AUTHORITY

PRINCIPAL FINDINGS:

This report considers and analyzes a number of transportation and technical issues related to potential large scale use of propane produced on the North Slope and consumed in rural and urban Alaska. The overall conclusion of this investigation is that it is feasible to transport and utilize large quantities of propane and save consumers money, if the product can be purchased and produced at a reasonable price on the North Slope, ideally below $1 per gallon.

The access point at which propane can be extracted from gas processing facilities on the North Slope has a dramatic effect on the price of producing propane. Negotiations are currently underway between ANGDA staff and the Prudhoe Bay Unit operator's group to gain access to the most favorable access point.

Transportation costs are reduced substantially when bulk shipping methods are used. As the recent Northern Economics report points out, propane use is expected to ramp up over the years as it is shown to produce cost savings to consumers. Once a tipping point is reached to justify bulk shipping, the additional transportation savings are substantial.

Propane can be used as a fuel for generating electricity and the maintenance profile for propane generators is much lower than diesel generators. In recent years the State of Alaska has focused on alternative electrical generation strategies. Propane generation of electricity should also be considered in the mix of alternatives. However, even if advances can be made in reducing electrical generation costs, there will still be a strong need for home heating and cooking fuel which could be even more important to reducing household energy costs than electricity.

According to the Alaska Energy Authority, In Western rural Alaska, households can spend as much as four times as much on home heating than they do for electricity. In Fairbanks, households spend twice as much on home heating as they do on electricity. In Southcentral Alaska, households spend about as much on home heating as they do for electricity. (for detailed data see Propane Residential Use section below.)

Even when any of the proposed gasline projects are completed there will still be a need for propane for home heating in urban areas where the housing densities are not high enough to justify the extension of local distribution systems.

The primary purpose of the ANGDA propane project is to provide an alternative energy source which results in cost savings to residential and business consumers in Alaska.

PROPANE PRODUCTION COSTS

According to the ANGDA North Slope propane acquisition team, there are several points of entry on the North Slope where propane can be extracted. The points at which propane is at its highest concentration in the gas processing facility are the points that will require the least amount of gas processing and result in the lowest priced propane. The ANGDA team is in the process of negotiating these agreements with the North Slope producers. NANA/Worley Parsons and CH2MHILL are on contract to provide costs estimates for the various scenarios. Since the negotiations with the producers have not been concluded, it is not possible to forecast a price for propane at the gate on the North Slope. This paper focuses on the transportation, storage and other costs associated with using propane. These costs would be added to the purchase/production cost of propane on the North Slope to estimate ultimate delivered costs.

If any of the proposed gasline proposals moves forward, propane can also be extracted anywhere along the line through a straddle plant which removes the desired gases for consumer use or value added processing and then puts the remainder back into the gasline. This would be similar to the operation of the Flint Hills refinery with the Trans Alaska Pipeline. The propane extraction facilities on the North Slope are designed so that they can be relocated if desired.

PRICING ISSUES COMPARED TO DIESEL FUEL

Propane starts with a thermal disadvantage to diesel fuel in that it contains one third less heating value compared to diesel. So to be competitive with diesel at $6/gallon, propane would have to be sold at $4/gallon. This will affect storage also in that you must store 50% more propane than diesel to create an equal amount of BTU's. If you required 2000 barrels of diesel storage, you would have to have 3000 barrels of propane storage. However, there are other advantages to using propane that mitigate this thermal disadvantage and they are discussed later in this report.

PRICING ISSUES RELATED TO COMPETITION

It appears that if ANGDA can obtain agreements to access propane at the most favorable offtake point on the North Slope, propane can be delivered at a very favorable price. What are the assurances that savings in producing and transporting propane would be ultimately passed on to consumers? There are several factors which could affect this outcome.

First, in the urban areas such as Fairbanks and in rural areas where there are competing suppliers, this unregulated competition should result in savings to consumers while providing a reasonable level of profit for the distributors.

In areas where there is no competition, it is more difficult to ensure that cost savings will be passed on to consumers. In these areas local entities have taken steps to achieve savings, primarily through consolidated purchase of fuel through a regulated utility, such as an electric utility. Most of these are non profit cooperatives that exist to provide the lowest cost of energy to their customers. In addition, most of them are regulated by the Regulatory Commission of Alaska which ensures that consumers will receive the lowest energy prices. Some of the larger rural electric utilities have even considered establishing their own fuel shipping operations.

At the AFN convention last year, there were several references made to forming a fuel purchasing coop to create more competitive conditions in these remote areas. This could also contribute to competition by combining the demand from many villages and then going out to bid for the service.

However, there are also issues of local distribution which could affect these savings. Although it has not received much publicity, in many cases, village fuel distribution is owned by the village native corporation or by the municipality or tribe. Fuel sales are one of their only sources of income and they are responsible for some of the high prices we have seen. While storage and distribution costs range from $0.25 to $1.00 per gallon, in many cases the local markups are from $2 to $4 per gallon. These are tough decisions to make when the viability of these organizations may hang on highly marked up fuel sales.

Propane could also be competitive when applied to a portion of the demand of a community, for instance, a school or new HUD housing development. In that case micro generators could provide the electricity and also provide waste heat for home heating, or refrigeration for community freezers. However, the impact on local utilities must be carefully weighed. If a school representing 1/3 of local electrical demand went off the local grid and generated its own power with propane, the local utility would lose 1/3 of its market and the remaining fixed costs they have would have to be spread among the remaining customers, increasing the energy costs to residential and business users.

In a recent development the Alaska Village Electric Coop (AVEC) which aggregates demand and makes bulk purchases of fuel for many villages in Western Alaska, has proposed to begin shipping its own fuel through its subsidiary Vitus Marine. This could provide a transportation service dedicated to its customers for all forms of fuel. In discussions with AVEC and Vitus Marine, they are interested in exploring shipping and utilizing propane for electrical generation and home use if the purchase price of propane at the Yukon River bridge or Nenana would result in savings to the utility and its customers.

The issue of competition and savings to customers will have to continue to be addressed as ANGDA proceeds with this project.

POTENTIAL USES OF PROPANE

RURAL RESIDENTIAL PROPANE USE

Propane is already in use in many residences in rural Alaska primarily for home cooking and some water heating. As previously stated, home heating costs far exceed electricity costs in Western Alaska by a factor of up to 4 to 1. If the delivered price of propane is competitive, it could be a practical alternative to diesel for home heating.

Alaska Energy Authority Regional Energy Cost Comparisons, August 2008
Average household energy costs by use category

Anchorage	Fairbanks
$1,371 Electricity	$1,912 Electricity
$1,086 Heating	$4,027 Heating
$5,726 Transportation	$3,521 Transportation
$8,182 Total Energy	$9,461 Total Energy
12.2% Percent of income	15.3% Percent of income
Southeast Alaska	**Rural Alaska**
$1,374 Electricity	$1,843 Electricity
$1,704 Heating	$7,715 Heating
$2,291 Transportation	$2,282 Transportation
$5,368 Total Energy	$11,840 Total Energy
8.5% Percent of income	20.2% Percent of income

The cost of converting a home to propane would be approximately $3,000, including a space heater with flush mount exhaust, an on demand water heater and a 250 gallon buried fuel tank which should last for about a month depending on the season.

As previously mentioned, a very efficient use of propane could be in a small housing development in which propane is used to generate electricity through a micro generator, the waste heat is used to heat homes, and waste heat is also used to provide refrigeration for a community freezer to keep subsistence foods. If this system were installed by the local utility, it would not detract from covering their fixed cost of operating the utility.

URBAN RESIDENTIAL PROPANE USE

When a gasline is eventually built, it will connect many Alaskan communities to gas that have never been connected before. However, as we have seen in Southcentral Alaska, there are still many residents who cannot connect to gas because they live in areas that are not dense enough to justify the extension of local distribution pipelines. It is estimated that in Fairbanks, about 20,000 residents would be connected to a local gas grid. The remaining 60,000 residents could use propane for home heating and cooking.

PROPANE USE BY ELECTRIC UTILITIES

Propane is a good fuel for electrical generation. It burns clean and the maintenance on propane turbines is a fraction of diesel generators. Diesel generator maintenance has been a persistent problem in rural Alaska. In addition, it appears that propane generators may be a more appropriate fit with the wind generation systems being deployed throughout rural Alaska. When large diesel generators are required to keep running to maintain maximum load when the wind generators are only partially meeting the need, the benefits of wind power are diminished. An array of smaller propane turbines could respond to fluctuating wind energy by switching entire units off.

Diesel engines can also be retrofitted by installing an input orifice on the intake manifold to inject propane in a mixture of up to 25% with diesel fuel without further modifications to the unit. The unit then burns cleaner due to the higher combustion achieved with the addition of the propane.

The bottom line for electrical utilities will be the delivered price of propane compared to diesel. Electrical prices in rural Alaska are already so high that a savings will have to be shown to entice utilities to convert to propane.

PROPANE USE BY MINES

Propane could be an attractive fuel for mines to use in electrical generation. The reduced emissions can help them achieve their air quality requirements. Propane generators also operate on a much lower maintenance schedule than diesel generators. As previously mentioned, existing diesel generators can be retrofitted to use up to 25% propane. The Donlin Creek mine is installing generators that can burn diesel, methane or propane.

The amount of fuel anticipated to be used in these mines is very large indicating that a pipeline may be the most efficient way to move propane. In fact, Nova Gold is proposing a gasline from Beluga to Crooked Creek to fuel its generators. If a propane solution can be shown to be a cost effective alternative, this mine and any others including the prospect at Livengood have said they would consider it. Delivered price will once again be crucial.

PROPANE AS A TRANSPORTATION FUEL

Propane has been used as a transportation fuel for many years. Roush Clean Tech has recently placed two Ford F250 trucks into service on Dalton Highway and North Slope operations. Over this winter they have performed very well. Using propane as a fuel is an alternative to the required use of ultra low sulfur diesel on the North Slope. If propane can be produced for a reasonable price in Alaska, it could be an alternative to gasoline and diesel fuel. It may also help communities reduce violations of the Clean Air Act.

BULK PROPANE TRANSPORTATION METHODS WITHIN ALASKA

RIVERINE MARINE TRANSPORTATION OF PROPANE

Self contained tanks: Propane is currently delivered in 100# to 1000 gallon tanks using existing barge and off loading equipment. The cost of shipping in 100# weights is listed below.

Representative prices for 100# weights to communities on the Yukon River.

These quotes were obtained from local barge shipping companies. These rates represent one time per 100# rates. If a regular trade is established and regular bulk shipments are made, these prices are traditionally lowered by 20% for long term customers.

Trucking costs to Nenana:

$.50 per gallon based on either a single bulk tank of 10,000 gallons or two 20 foot ISO's. These limits are consistent with weight restrictions on the Dalton Highway.

Marine component shipping rates including bulk rate reductions of 20%:

Nenana to Tanana - $11.34/100# = $.81/gallon minus 20% = $.64/gallon

Nenana to Galena - $14.00/100# = $1.00/gallon minus 20% = $.80/gallon

Nenana to Marshall - $24.26/100# = $1.75/gallon minus 20% = $1.40/gallon

Nenana to St Marys - $27.50/100# = $1.96/gallon minus 20% = $1.57/gallon

To obtain the total transportation cost add the $.50/gallon cost of trucking to Nenana.

It would be even more economical to utilize 20 foot ISO propane containers which can hold 5000 gallons of propane. These containers are post flats and can be stacked with other consumer goods on a barge. However, given the tank weight and product, these ISO's would weigh 30,000 pounds. Most villages do not have the equipment available locally to move items of this weight so the barge carrier would have to carry that equipment on board, for instance a Cat 988 loader (or equivalent) to move the tanks into the community.

An advantage of large, self contained tanks is that there is no local tank storage required. As demand ramps up, more containers can be supplied to accommodate the demand. 20 foot ISO containers cost in the range of $50,000.00 each used, or $65,000.00 each new.

A disadvantage of self contained tanks is that the cost of shipping the tanks themselves puts costs on the delivery system that does not produce any energy. Whether it is a 100# tank or a 2o foot ISO, the tank weight is approximately 30% of the total weight. Shippers charge by the pound so 30% of the cost of shipping the propane is the tank shipping cost. Then the container must be shipped back empty to be refilled. The carriers we contacted had an empty tank haul back rate of 50% of the shipping rate, resulting in an additional 15% charge on the total shipping weight, so this means that combined, 45% of the costs of shipping propane are tank shipping costs. How this compares to permanent local storage and bulk shipments of propane is discussed in the STORAGE ISSUES section below.

BULK RIVERINE TRANSPORTATION OF PROPANE

Bulk shipments of propane could result in substantial savings in transportation costs. Two scenarios are: dedicated bulk shipment of 20 foot ISO's deck loaded on top of a diesel delivery barge and a dedicated pressurized propane barge that would deliver in bulk to permanent onshore storage tanks.

While the resources were not available for this study at this time to do a detailed analysis of the costs of these shipments, I was able to obtain enough information from shippers to describe how the system would work and provide some preliminary numbers. Barge companies were reluctant to provide proprietary information so an independent analyis would need to be done.

The bulk shipment of 20 foot ISO's would be most efficient in conjunction with deilivery of diesel fuel. These barges would pick up diesel from distribution hubs like Bethel or take on loads from ocean going barges (the more common source) and then proceed up river to make deliveries of diesel. Following delivery of their most up river destination, they would proceed to the Yukon river bridge to take on a full deck load of 20 foot ISO's. To use the design of the Vitus Marine barges as an example, they would be able to carry 48 loaded ISO's of propane on one barge and 60 on the other. At 5,000 gallons of propane per ISO this translates into a total of 240,000 gallons and 300,000 gallons respectively.

They would then deliver these ISO's going down the river and pick up the empties on their way back up river making diesel deliveries. This would provide for maximum utilization of equipment and the lowest shipping costs. Although these loading operations could be accomplished with current conditions at the Yukon River crossing, they would be more efficient if mooring dolphins or an open cell sheet pile dock were installed at an estimated cost of $2-3 million. Loading at the Yukon River would also reduce trucking costs to $.35/gallon due to reduced mileage.

Propane could also be delivered in a pressurized tank barge and loaded to permanent onshore tanks through a discharge hose as is currently done with diesel fuel. Such a truck based operation was conducted in the 1990's with diesel being delivered by truck from the Flint Hills refinery in Fairbanks and then loaded to the barge at the Yukon River crossing via a floating hose. This service was discontinued due to refinery pricing issues, but it did show feasibility from an operations standpoint. Again, construction of a basic barge landing structure and storage tanks at the Yukon River crossing would improve the efficiency of the operation.

Offloading propane at communities would be accomplished by connecting discharge lines from the barge to headers on shore and then pumped to storage. Barge operators saw this as no different than discharging diesel.

Representative Inland River (Mississippi) Propane Barges
Dimensions, Draft and Capacity

USCG #	261064	262194	282474	271388
Dimension	195'x44'	195'x44'	210'x44'	210'x44'
Draft (ft)	6' 3"	6' 3"	8' 6"	7' 9"
Capacity (gal)	360,738	360,234	425,922	399,378
Pressure (PSI)	250	250	250	250

Source: Targa Midstream Services, LP

There is an established port operation in Nenana that currently ships limited amounts of propane. However, the Yukon river is deeper than the Tanana river out of Nenana and could allow for deeper draft barges for bulk shipments.

In doing basic calculations of bulk shipments by pressurized propane barge from Nenana to Tanana with tug boat and crew charges at $12,000.00 per day, the estimated cost of shipping to Tanana is $.40/gallon, about 2/3 of the cost of shipping via container.

SHIPMENT TO TIDEWATER IN SOUTHCENTRAL ALASKA

Propane can be moved to tidewater in southcentral Alaska through a combination of truck to Fairbanks and then rail to the Port of Anchorage. The railroad rate is $910.00 per 20 foot ISO which calculates to $.18/gallon. This would amount to a total cost of $.63/gallon from the North Slope to Southcentral. From there it could be shipped to other coastal communities by scheduled barge service. This service would be particularly appealing to southern coastal Alaska communities that are not icebound in the winter,

since they could receive regular shipments without having to incur the costs of substantial winter storage.

If a gasline is developed to tidewater in southcentral Alaska, propane could be extracted there and loaded directly onto barges for shipment to coastal Alaskan communities. Both southwestern and southeastern communities could be the beneficiaries of this propane distribution network. Although the concentration of propane in the gas stream of a gasline is low, (between 2% and 3%) these gases would have to be separated at tidewater to prepare methane for local distribution or for export, so these costs would be absorbed by the overall operation.

BULK PROPANE MARINE SHIPMENTS FROM THE NORTH SLOPE

While it is technically feasible to ship propane from the North Slope to coastal Alaska, there are a number of issues involved. First, the ocean depths on the North Slope are very shallow and would require the construction of a berthing facility, either ice deflecting dolphins or an open cell sheet pile dock. The cost of these facilities has not been estimated. There is an existing dock but it is extensively used during the short shipping season and it is also currently exempted from the Coast Guard port security requirements. Adding propane operations to the existing facility would change that designation and complicate its operation.

This option is further restrained by a short ice free shipping season typically of 7 to 8 weeks. Additional substantial storage would be required on the North Slope to store sufficient amounts to fill a barge with propane. The most likely customers for such shipments would be the Red Dog Mine or regional fuel hubs like Nome and Bethel.

Tug and Barge equipment would have to be leased since it could not sit idle during the iced in periods. Tugs in this area typically rent for $15,000.00 per day. Barge leasing would be an additional cost.

STORAGE

As previously mentioned, 50% more propane is needed to produce the same energy as diesel. This means that either 50%more storage is needed or that deliveries would have to be made on a more frequent basis. However, propane storage is less costly than diesel storage due to not needing extensive diking and cleanup equipment. Due to this, the cost of propane and diesel storage tanks on an equivalent basis are roughly equal.

Many millions of dollars have been spent rebuilding diesel tank farms in rural Alaska. In our meetings with the Denali Commission, they indicated that if propane can be shown to provide a cost savings and displace the need for diesel tank storage, that they would invest in propane storage. This would equalize the subsidies between diesel and propane.

PROPANE SHIPPING TO KUSKOKWIM RIVER

Shipping to the Kuskokwim river could be accomplished by two methods: 1) coming out of the Yukon River with a bulk propane barge and going South by sea, then upriver to Bethel then transferring to a smaller lighter barge as is currently done with diesel fuel, or 2) constructing a propane pipeline connecting to the Yukon river below St. Mary's and on over to the Kuskokwim (about 60 miles). The Denali Commission is currently contemplating building a road to connect the two rivers at this point which is about 60 miles. The resources were not available to estimate the cost of this pipeline. Some storage would also be required at the terminus of the line on the Kuskokwim River. From there, the same shipping and delivery practices can be employed as those on the Yukon River.

PROPANE VAPORIZATION ISSUES

Propane does not vaporize below -45 degrees. This will require making an arctic grade of propane spiked with ethane or other lighter gas. An alternative may be burying propane storage tanks. A study by the Cold Regions Research Facility in Fairbanks shows that at one foot of burial depth, the temperatures never exceeded -19 degrees. Cold weather would not affect storage or distribution operations but would need to be considered in final storage just before the consumption point.

SECURITY OF ALTERNATIVE SUPPLY

To justify large scale conversion to propane, users will have to be assured that an alternative supply of propane is available should there be a failure of production or other disruption of supply from the North Slope. This alternative is represented by a supply point at Prince Rupert, British Columbia, connected to the Alaska rail system by the Hydrotrain barge system currently operating out of Whittier, Alaska. 10,000 gallon propane rail cars would be barged into Whittier, transferred to the Alaska Railroad and then railed to Nenana. While this supply option would incur an approximately 20% greater cost of service than North Slope propane, it could still serve as a secure supply of propane until North Slope operations could resume.

TRAINING

Training for everyone involved in the transportation and handling of propane will be necessary. Propane is regularly handled in the millions of gallons every day across the US and Alaska. However, it has some characteristics different from diesel that will require training to ensure safe operations. A class for 20 rural fuel handlers was held in Fairbanks last year but this will need to be expanded.

CONCLUSION

All the technical issues listed above can be handled with proper facilities and trained personnel. The costs of diesel remain high, opening the door to a more affordable energy source such as propane. The costs of transporting propane appear to be reasonable and are similar to or less than transporting and storing diesel. The determining factor in cost savings from use of propane in Western Alaska will be the purchase and production costs of propane on the North Slope, ensuring competitive or RCA regulated markets and reaching high enough utilization rates to justify bulk shipping methods.

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Energy Analysis

Propane from the North Slope: Could It Reduce Energy Costs in the Interior?

By Scott Goldsmith and Nick Szymoniak

University of Alaska Anchorage • Institute of Social and Economic Research • October 2009

Alaska Natural Gas Development Authority

Could propane from the North Slope cut energy costs in Fairbanks and other Interior communities that heat buildings or generate electricity with fuel oil or naphtha? The Alaska Natural Gas Development Authority (ANGDA) thinks it could.

That's because a North Slope producer has agreed to sell ANGDA propane for considerably less than what it might otherwise cost, if there were a natural gas pipeline. Propane is a component of North Slope natural gas—and right now there's no way to get that gas to market.*

Naphtha and fuel oil, by comparison, are refined from oil—so their prices are closely tied to the volatile price of crude oil. ANGDA hopes getting a price break on propane could make it cheaper, at least until a pipeline is built—and it asked ISER to analyze the potential effects of one idea.

That idea is to build a plant on the North Slope, extract 2,000 barrels of propane a day from natural gas, and transport the propane to Fairbanks in tanker trucks. It assumes ANGDA would buy the propane, but that a private entity would build the plant, at a cost of $74 million, and then operate the plant and truck the propane to Fairbanks, at a cost of $16 million a year.

We analyzed how fuel prices in Fairbanks might compare, under those assumptions and at different crude oil prices. We estimated the price of propane delivered to Fairbanks, the wholesale price of fuel oil in Fairbanks, and the price of the naphtha that Golden Valley Electric Association (the Fairbanks utility) burns to generate electricity.

These aren't prices residential customers would pay. The propane price doesn't include costs of storing and distributing propane in Fairbanks, and we tried to make the fuel oil price comparable to that. This analysis is intended just to show relative fuel prices, given ANGDA's assumptions.

What Did We Find?

• *At current crude oil prices, propane could be cheaper than either naphtha or fuel oil, for equivalent amounts of energy*. Liquid propane contains less energy per gallon than either naphtha or fuel oil, so to make fair comparisons we have to look at prices for equivalent amounts of energy. With crude oil at $64 a barrel—close to what it was in mid-2009—a gallon of propane in Fairbanks would cost $1.16. The energy-equivalent amount of naphtha would cost $1.32 and fuel oil $1.47.

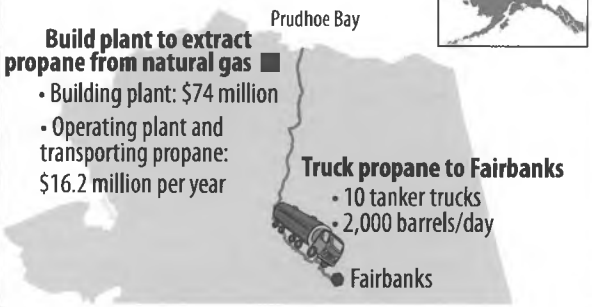
• *Propane would be more attractive at higher oil prices*. That's because fuel oil prices would increase much more than propane prices, as crude oil prices increased. So for equivalent amounts of energy, propane would cost 79% as much as fuel oil, at a crude oil price of $64 a barrel—but it would cost only 61% as much, at a crude oil price of $100 a barrel.

• *Replacing naphtha with 2,000 barrels of propane per day could save about $5.1 million a year*, and replacing fuel oil could save $7.6 million, assuming a crude oil price of $64 per barrel.

*Some propane is liquefied and shipped through the oil pipeline, but quantities are limited by the amount of vapor pressure that pipeline can withstand. Under terms and conditions that have been agreed on with a North Slope producer, ANGDA would pay the same price for propane that the producers pay each other, when they buy propane to fuel their North Slope operations.

The ANGDA Idea





How Might Fuel Prices in Fairbanks Compare at Different Oil Prices?

	Price of North Slope crude oil	
	$64/barrel	$100/barrel
Fuel prices per gallon		
Propane at Fairbanks[a]	$1.16	$1.34
GVEA naphtha[b]	$1.85	$2.76
Wholesale fuel oil[c]	$2.13	$3.18
Prices for an amount of energy equivalent to a gallon of propane		
Propane at Fairbanks	$1.16	$1.34
GVEA naphtha	$1.32	$1.97
Wholesale fuel oil	$1.47	$2.19
Propane price as percent of price of other fuels		
GVEA naphtha	88%	68%
Wholesale fuel oil	79%	61%

How Much Might Annual Savings Be From Propane?

(Use of 2,000 Barrels Propane Daily and Crude Oil at $64 per Barrel)

	Annual Savings
Replaced GVEA naphtha[d]	$5.1 million
Replaced fuel oil[d]	$7.6 million

[a]Price for propane delivered to Fairbanks, not including costs of storing and distributing it in Fairbanks. The price assumes the cost of the extraction plant is amortized at a 6% annual interest rate over 10 years and that the system is operating at full capacity year-round.

[b]Price paid by Golden Valley Electric Association for naphtha it burns to generate electricity.

[c]We roughly estimated wholesale fuel oil prices by adjusting retail prices, based on mark-up data from the Energy Information Administration. Actual wholesale prices are not available.

[d]2,000 barrels of propane generates 7,661 mmBTUs of energy

How Would ANGDA Get the Propane?

Oil and gas are intermingled in the North Slope fields, so natural gas, —which contains propane—is produced with the oil. But without a gas pipeline, almost all the gas produced has been re-injected into the fields, to help increase the amount of oil that can ultimately be recovered. Under this proposal, ANGDA would pull off a small share of the gas when it was produced, leaving the rest to be compressed and re-injected.

Why Propane?

Propane used in Alaska today is almost all barged in from Outside, making it more expensive than other fuels. The U.S. Energy Administration estimates that propane accounts for about 1% of Alaska's residential energy use. Besides price, propane has other potential advantages and drawbacks Alaskans might want to consider, if North Slope propane became available.

• *Propane and natural gas can be used in many of the the same appliances and facilities*, without major modifications. So if Fairbanks consumers switched to propane, they could convert to natural gas later.

• *Propane condenses to a liquid under relatively little pressure, so it can be transported more easily by truck or barge than natural gas*. Natural gas is mostly methane, which requires more pressure to condense. But it can, with adequate pressure, also be liquefied and then trucked or barged. The Alaska Gasline Port Authority (made up of several municipalities) has announced it will try to sell revenue bonds, so it can build a plant to liquefy natural gas on the North Slope—and then truck the gas to Fairbanks. A Fairbanks company already trucks some Cook Inlet natural gas to Fairbanks.

• *Propane reverts to a gas when released from pressure, so spills are not a problem*, as they are with fuel oil. But because propane is heavier than air, it can be a fire threat if accidentally released.

• *Propane takes more space to transport and store than an equivalent amount of energy in fuel oil*. That's because liquid propane produces less energy, per gallon, than fuel oil or naphtha. Propane would require pressurized storage tanks, and more of them.

• *Residential propane tanks and lines need to be well-insulated from the cold*, because at very cold temperatures, propane turns from gas to liquid —meaning whatever was fueled by the propane would stop working.

• *Propane burns cleaner than fuel oil or naphtha.* But natural gas is even cleaner (see table).

Conclusions and Limits of This Analysis

Propane could be a less-expensive bridge fuel to the time North Slope natural gas is available to many Alaskans who currently have to rely on fuel oil. Once a pipeline is built, propane might lose its advantage, because: (1) its price would be determined by the market; and (2) natural gas would become available along the pipeline route.

A gas pipeline is at least a decade away, and there's no guarantee it will be built by then. In our analysis, we assumed the costs of a propane extraction plant would be recovered in 10 years. But if the pipeline were delayed, the plant could operate longer and the costs be spread out over a longer time, which would also reduce propane prices in Fairbanks. Also, some Alaska places won't have access to gas, even after a pipeline is built. And even at market prices, propane might have some advantages over fuel oil.

We analyzed one idea for using North Slope propane. It's by no means a complete analysis of propane's potential in Alaska. But it demonstrates that propane is worth considering, to help reduce and stabilize energy costs.

Energy Content and CO_2 Emissions of Selected Fuels

	Content by Volume (BTUs per Gallon)	CO_2 Emissions (Pounds per Million BTUs)
Propane	91,200	139
Naphtha	127,500	161
Fuel Oil	132,669	161
Natural gas	N/A*	117

*Natural gas isn't sold by the gallon. But as measured by standard cubic foot (scf), the heating value of propane is more than twice that of methane.

Sources: ANGDA, personal communication; U.S. Energy Information Administration; Michael Baker Jr., Inc., *Transport of Natural Gas to Tidewater*, April 2005

What is Natural Gas?

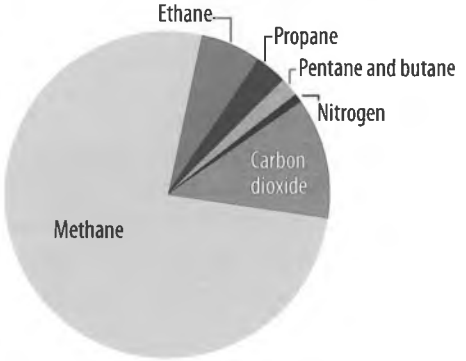
Finally, to help put propane in context, here we take a brief look at the overall composition of North Slope natural gas. Many Alaskans probably think of North Slope natural gas as some single, specific kind of gas—and it is true that it's mostly methane. But it also contains carbon dioxide, nitrogen, and various gases known collectively as natural gas liquids (NGLs).

Propane is one of those NGLs, which also include ethane, butane, and pentane. They're called "natural gas liquids" because they condense from gas to liquid at much lower pressure than methane. They're valuable as part of the natural gas mix—they have higher heating values, by volume, than methane. Also, they can be separated from the mix and sold on their own for many uses.

It is known that North Slope gas contains significant quantities of propane, ethane, and butane. But the exact composition isn't public information. The leaseholders consider that proprietary information. Also, as a report prepared for ANGDA points out, the composition of North Slope gas can vary from one field to the next.

The pie chart shows an estimate, done for ANGDA in 2005, of the general composition of North Slope natural gas before processing. We're including it here just to help readers understand what's in natural gas. Most of the carbon dioxide—which has no heating value —is taken out of the mix during processing.

Estimated Composition of North Slope Natural Gas*



*Before processing. The actual composition of North Slope natural gas is proprietary information of the leaseholders. Also, the composition varies among individual gas fields. This figure is intended only to show a general picture of the gases that make up natural gas.

Source: *Transport of Natural Gas to Tidewater*. Prepared for Alaska Natural Gas Development Authority by Michael Baker Jr., Inc., April 2005

To get more Alaskans thinking about North Slope propane, ANGDA held a conference in Fairbanks last June, inviting potential propane users and distributors and financial institutions. ISER did this analysis for that conference. To learn more about the conference, go to ANGDA's Web site: www.angda.state.ak.us

4/05/11 Update of 2008 Report by Cold Climate Housing Research Center: Alaska Energy Efficiency Policy

<TARGET><BILL></BILL><SUBJECT>4-05-11 Update of 2008 Report by Cold Climate Housing Research Center Alaska Energy Efficiency Policy</SUBJECT><COMM>HENE27</COMM></TARGET>



Alaska Energy Efficiency Policy

Update of 2008 Report by CCHRC

Dr. John N. Davies
Senior Researcher – Energy Policy
Cold Climate Housing Research Center

presentation to the

Alaska Legislature
House CRA and Energy Committees

April 5, 2011
Juneau, Alaska

CCHRC
COLD CLIMATE HOUSING RESEARCH CENTER



Presentation Outline

- 2008 Study and Report to Legislature
- 2008 Results - SB 289/330
- 2010 Results - HB 306 & SB 220
- Recommendations from Experts Working Group of March 2, 2011
- Significance of energy efficiency as a resource



2008 Alaska Energy Efficiency
Program & Policy Recommendations

Project managed by:
Cold Climate Housing Research Center

Project funded by:
Alaska Energy Authority
Alaska Housing Finance Corporation

Project staffed by:
Information Insights



Energy Efficiency Edge

✓We can do it now!

✓Same output for less input:
- Same heat less fuel
- Same light less electricity

✓Efficiency relies on advancing *technologies which are becoming more plentiful, rather than fossil fuels which are being depleted*

✓Saving energy *costs less than buying it*

✓Pollution and CO_2 reduction



2008 Recommendations Presented in Nine Categories:

- State Leadership
- Funding Energy Efficiency
- Public Education and Outreach
- Baseline Data
- Existing Residential Buildings
- New Residential Construction
- Existing Commercial Buildings
- New Commercial Construction
- Public Buildings



Senate Bill 287/330 (2008)

Expand Weatherization Program
- Increase eligibility
- Appropriate $200 million

Create Energy Efficiency Rebate Program
- No income qualification
- Appropriate $100 million
- Supplemental $60 million



House Bill 306 (2010)
Establishing a State Energy Policy

Legislative Intent for Alaska State

- 15% increase in EE (per capita) between 2010 and 2020
- 50% of electric generation from RE and AE sources by 2025
- Reliable in-state gas supply
- Power Project Fund for energy projects
- Continue petroleum and natural gas production
- Become a leader in RE and AE development



House Bill 306 (2010)
Establishing a State Energy Policy

Policy Preamble

Prosperity dependent on available, reliable, and affordable energy

Supply and demand for fossil fuels and concerns about climate change will affect the price of fossil fuels in Alaska and exported from the state to other markets

In establishing a state energy policy, the state recognizes the immense diversity of the state's geography, cultures, and resource availability



House Bill 306 (2010)
State Energy Policy

I. Support energy efficiency and conservation by

(A) Encouraging statewide energy efficiency codes

(B) Decreasing public building energy consumption

(C) Supporting a public education program on EE and RE



House Bill 306 (2010)
State Energy Policy

II. Encourage economic development by

(A) Developing RE and AE resources - geothermal, wind, solar, hydrokinetic, tidal, & biomass

(B) Efficient use of non-RE and AE resources - natural gas, coal, oil, gas hydrates, heavy oil, and nuclear energy

(C) Working with communities to identify and assist with development of the most cost-effective, long-term sources of energy

(D) Maintaining a fiscal regime and regulatory climate that encourage private-sector development of the state's energy resources

(E) Promoting the efficient use of energy for transportation



House Bill 306 (2010)
State Energy Policy

III. Support energy research, education, and workforce development through

(A) Training and education programs that address energy conservation, efficiency, and availability

(B) Applied energy research and development of alternative and emerging technologies, including university programs



House Bill 306 (2010)
State Energy Policy

IV. Coordinate governmental functions by

(A) Reviewing and streamlining regulatory processes while protecting the public interest

(B) Using one office to manage energy-related functions to avoid fragmentation and to increase effectiveness

(C) Collaborating with federal agencies to achieve the state's energy and emissions goals



Senate Bill 220 (2010) Sustainable Energy Act (1 of 3)

Alaska Energy Efficiency Revolving Loan Fund – energy efficiency improvements to public buildings

The Southeast Energy Fund – grants for energy projects

Emerging Energy Technology Fund – grants for demonstration projects

Alternative Energy Conservation Revolving Loan Fund – Alternative energy development and energy conservation improvements in public buildings

Alaska Affordable Heating Program – The *Alaska Heating Assistance Program* is renamed and the relationship to LIHEAP and new limits up to 225 and 250% of the federal poverty level are established.



Senate Bill 220 (2010) Sustainable Energy Act (2 of 3)

Public Facilities & Building Energy Use Database – ADOT/PF shall retrofit 25% of all public facilities. Retrofits and new construction shall meet ASHRAE 90.1. OMB shall develop methodology to collect building energy data.

Public Vehicles – The ADOT/PF shall convert vehicles to use alternative fuels or purchase energy efficient vehicles whenever practicable.

Nuclear Power may be considered as "alternative power." US & DEC licenses or permits are required. DEC may not issue a permit until the municipality with jurisdiction approves. Legislature designates site for facility, and shall act to protect the public health and safety.



Senate Bill 220 (2010) Sustainable Energy Act (3 of 3)

Public Education - AEA to promote EE & AE through training and public education.

State Land Leases - The cost of a state land lease with an electric utility may not be based on the amount of renewable energy produced by the utility.

Energy Codes and Standards - AHFC may provide technical assistance to municipalities related to residential and commercial building energy codes and energy efficiency standards.

Municipal Taxes - A municipality may exempt from taxation residential renewable (non-fossil or nuclear) energy systems.



Score Sheet for 2008 Report

Recommendation	2008	2010	% Done	Goals
I. State Leadership			60	
A. Governor Vision(HB 306)		i	90	
B. Governor Subcabinet		i	10	G
II. Funding Energy Efficiency			60	
A. Legislative Appropriation	$$$	FFF	50	$
B. RCA - system benefit charges		i	10	G
C. Legislative endowment			0	
D. Matching grants to munis			0	
III. Public Education and Outreach				
A. Legislative approp = $1 million		i	30	G



Score Sheet for 2008 Report

Recommendation	2008	2010	% Done	Goals
IV. Baseline Data			**80**	
A. Survey of Res & Com Bldgs		AEA	75	$
B. Public Bldg Database		I	90	
V. Existing Residential Buildings			**80**	
A. Increase funds for Weatherization	$$$		100	$
B. Training Program for EE workers		i	50	G
C. Fund audits and loan for retrofits (rebates)	$$$		100	$
D. Fund pilot smart meter program			50	$
VI. New Residential Buildings			**30**	
A. BEES statewide energy codes			50	G
B. Statewide building code			0	G



Score Sheet for 2008 Report

Recommendation	2008	2010	% Done	Goals
VII. Existing Commercial Buildings			**20**	
A. AEA audits and loans for retrofits		F	30	$
B. RCA require utilities to offer PAYS			10	G
VIII. New Commercial Buildings				
A. AEA develop com. energy code		AHFC	**80**	$
IX. Public Buildings			**90**	
A. Gov.: 20% reduction by 2020		f	90	
B. BOR: 20% reduction by 2020		f	90	
C. Fund audit for all public schools		f	**90**	
D. Conservation matching grants K-12			0	
E. Low-int.Loan prog for Public Bldgs		FFF	100	



Top Five Recommendations from 2011 Working group

1. Statewide Energy Efficiency Code
2. Sustainably fund Wx and Rebate Programs
1. Education – outreach, training, K-U courses
1. Utilities-based End-Use Electrical Efficiency Programs, consider decoupling mechanisms
2. Legislate efficiency as a priority



Policy Recommendations - State Leadership

Implement a statewide energy code for all building types.

Empower RCA to develop end-use energy efficiency programs, including funding mechanisms.

Require an integrated approach to the development of energy systems.

- Treat both electricity and space heating.
- Prioritize the EE resource – always reduce the supply needed by reducing demand first, before developing more capacity.



Statewide Energy Efficiency Code

- Number One Recommendation of Experts Panel
- Needed by AHFC
- Supported by ASHBA



Policy Recommendations – Education, Training, & Outreach

Fund schools and universities provide education, research, and training to advance our understanding of energy efficiency and conservation as a resource.

Fund workforce training entities to produce a highly qualified workforce to deliver energy efficiency and conservation services.

Fund state agencies and non-governmental organizations to develop sustained public outreach. The *Energy Efficiency and Conservation Working Group* now lead by AEA is a good example.

Establish a *Green Schools Caucus* in the legislature



Policy Recommendations – Residential Buildings

Continue to fund the *Home Energy Rebate* and *Weatherization* programs.

Set the bar higher in programs such as the AHFC Five-Star-Plus rebates and mortgage rate reductions.

RCA develop programs to encourage the use of more energy efficient lights, appliances, etc.

RCA develop programs that eliminate the "throughput incentive" by decoupling the amount of energy sold from utility profits.

Develop a home energy-use labeling system to assist homebuyers in finding the best value and to help transform the market place by making transactions more transparent.



Policy Recommendations – Commercial Buildings

Establish an energy-use index and labeling system to encourage owners to reduce the amount of energy (both electrical and thermal) consumed by their buildings.

Expand and fund the commercial audit pilot program to include loans and consider rebates as well .

Encourage the use of combined heat and power units and other waste heat recovery wherever feasible.



Policy Recommendations – Public Buildings

Continue to fund the Village Energy Efficiency Program.

Every public building should get an energy audit and commissioning of its energy systems.



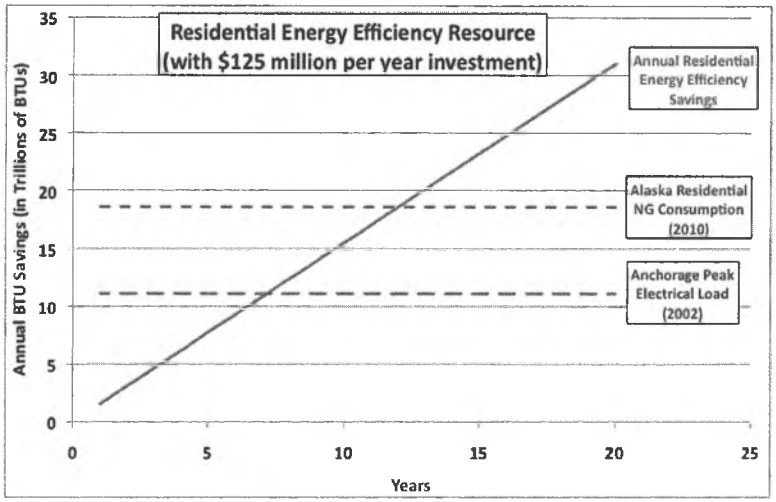
Policy Recommendations – Community and Regional Planning

AEA should expand its community and regional planning efforts to assist communities with the development of solid energy planning initiatives and fund energy efficiency and renewable energy projects that make good technical and economic sense.

CCHRC should continue its *Sustainable Northern Communities* program to assist communities in the design of highly energy efficient housing.



Energy Efficiency as a Resource





Conclusions

It is imperative that we use our present wealth to develop an economy that is much less reliant on fossil fuels to assure a healthy and sustainable future.

One of the most cost-effective resources we have is energy efficiency and conservation.

The sustained energy and cost savings to businesses and homeowners from EE will result in reinvestment in Alaska's economy and stimulation of substantial economic growth.

Bottom Line - Sustained investment in EE will foster a more sustainable and vibrant economy.



Last slide – Questions?

Cold Climate Housing Research Center
http://www.cchrc.org/

Alaska Energy Authority
http://www.akenergy.org

Alaska Housing Finance Corporation
http://www.ahfc.state.ak.us/home/index.cfm

Information Insights Inc.
http://www.iialaska.com

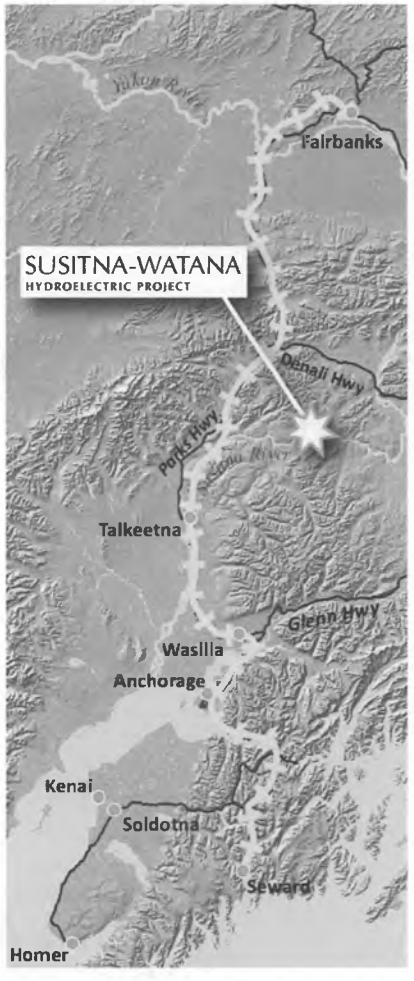
1/26/12 Presentation by Alaska Energy Authority: Susitna- Watana Hydroelectric Project

<TARGET><BILL></BILL><SUBJECT>1-26-12 Presentation by Alaska Energy Authority Susitna- Watana Hydroelectric Project</SUBJECT><COMM>HENE27</COMM></TARGET>

SUSITNA-WATANA
HYDROELECTRIC PROJECT

House Energy Committee
Thursday, January 26, 2012

ALASKA ENERGY AUTHORITY

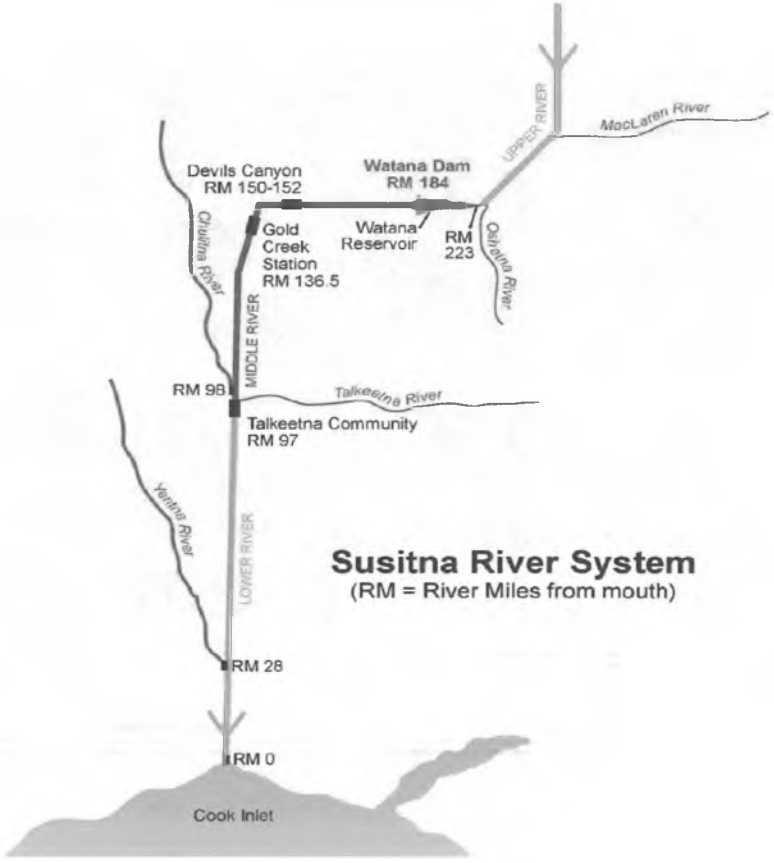


Project Overview

- Location: river mile 184, above Devils Canyon
- Size: ~700 foot-high dam
- Reservoir 39 miles long, 2 miles wide (at widest)
- Supply: ~50% of Railbelt electrical demand
- Capacity: 600 MW installed capacity, annual average 2,500, 000 MWh
- Project life: 100+ years, providing long-term, stable rates

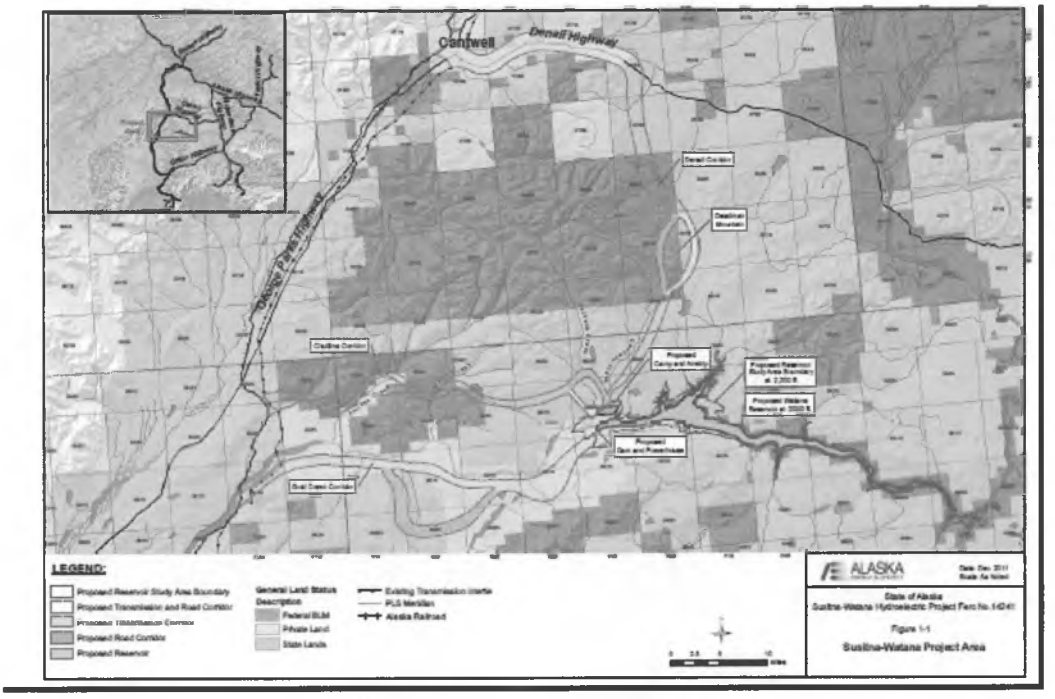
ALASKA ENERGY AUTHORITY

Locations and River Miles



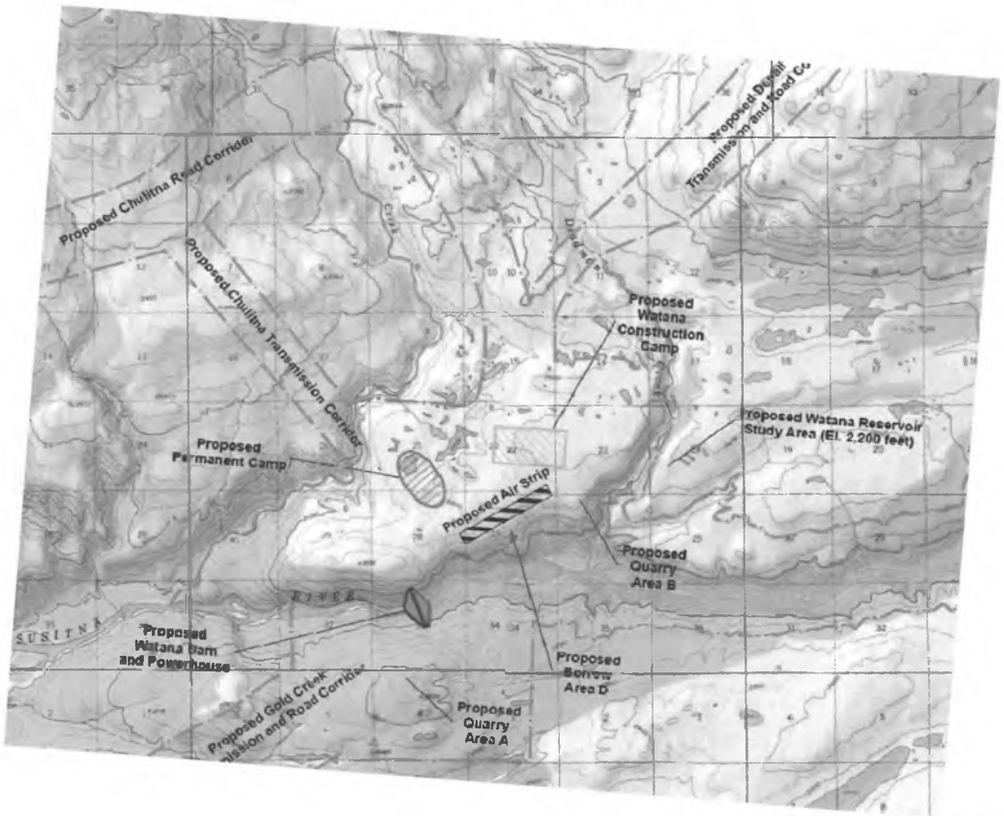
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Project Area



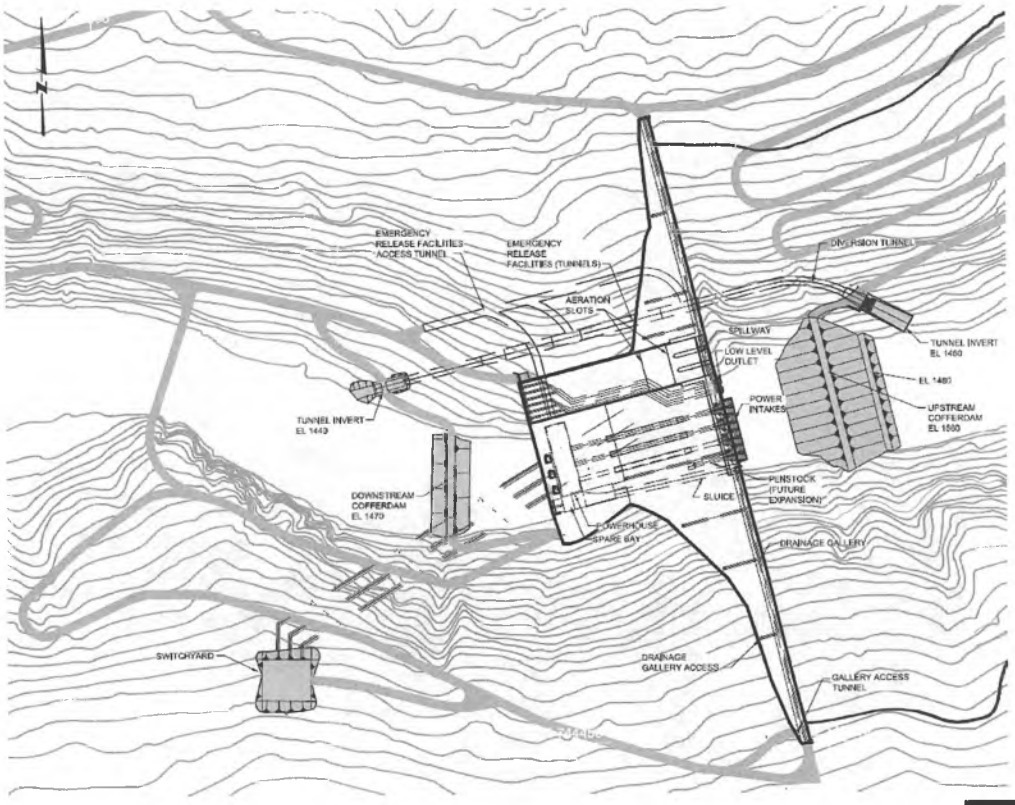
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Project Site



ALASKA ENERGY AUTHORITY

Conceptual Site Plan



ALASKA ENERGY AUTHORITY

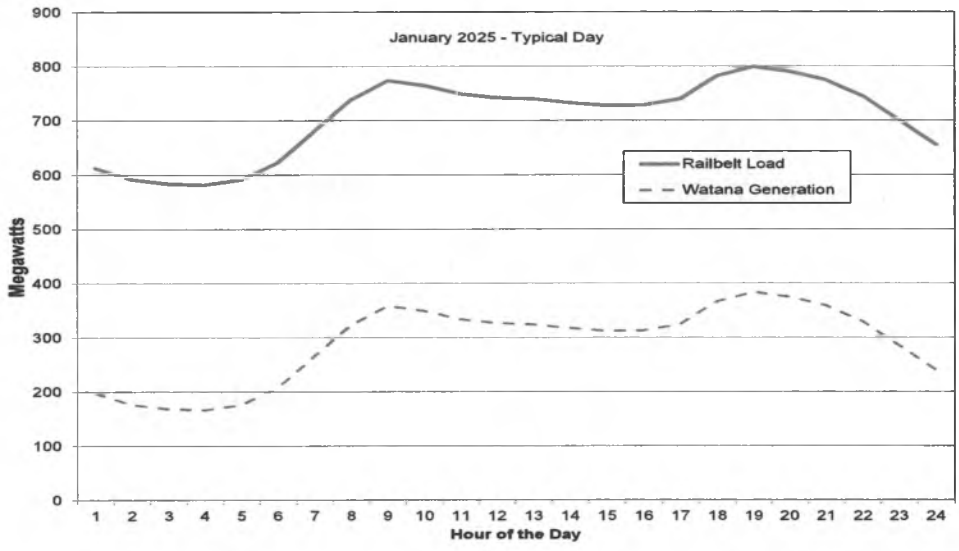
Operating Objectives

Primary Operating Objectives:

- Maximize firm power generation Nov.- April
- Generate power while meeting minimum flows
- Maximize power generation May-Oct.
- Generate power to meet Railbelt demand

ALASKA ENERGY AUTHORITY

Project Daily Operation



- Load-following to provide system stability and responsiveness to energy demand

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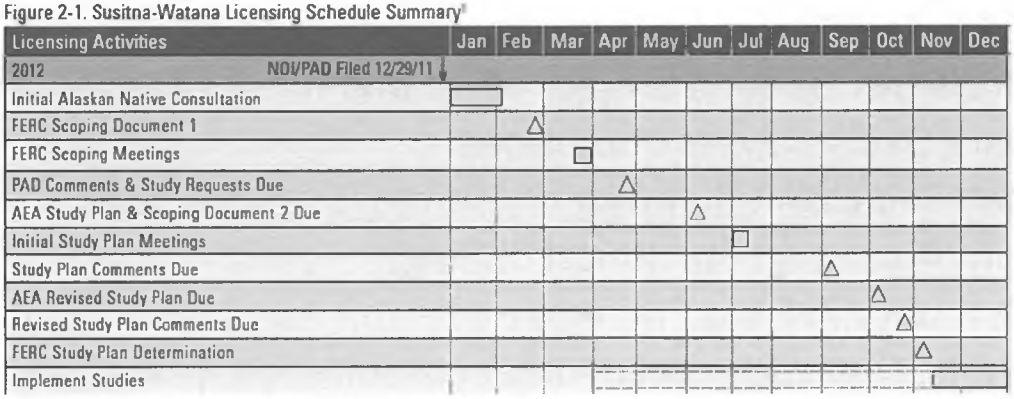
2011 Activities and Accomplishments

- Oct/Nov.: Opened project office and hired experienced staff
- Data Gap Analyses Completed
- Detailed LiDAR mapping of Susitna River drainage
- July/August: geotechnical drilling
- October 27: Filed Preliminary Permit Application with FERC
- Public Outreach: stakeholder consultation, public meetings, agency workshops, site visits, presentations
- December 29: Filed Pre-Application Document with FERC

ALASKA ENERGY AUTHORITY

Licensing Status

Figure 2-1. Susitna-Watana Licensing Schedule Summary[1]



Public Scoping Meetings

- March 27: Anchorage and Wasilla
- March 28: Talkeetna
- March 29: Fairbanks
- March 30: Glennallen

ALASKA ENERGY AUTHORITY

2012 Engineering Studies

- Hydrology & Power Operations
- Loads & Resources Modeling (RIRP)
- Feature Layouts & Optimization
- Transmission System Reliability & Stability Modeling
- Geotechnical Investigations
- Formation of Board of Consultants
- Update of Construction Cost Estimates
- Feasibility Report

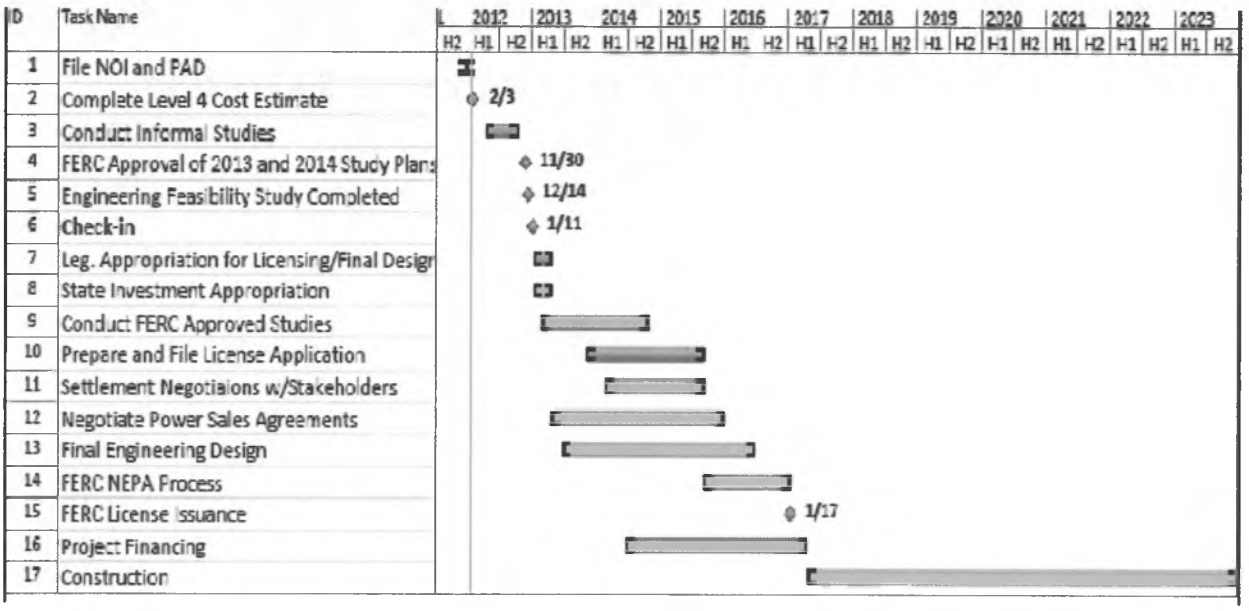
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2012 Environmental Studies

- Geomorphology/Sediment Transport
- Ice Studies
- Project Operation Studies
- Water Quality
- Fisheries
- Wildlife
- Botanical
- Cultural Resources
- Recreation

ALASKA ENERGY AUTHORITY

Susitna-Watana Schedule



ALASKA ENERGY AUTHORITY

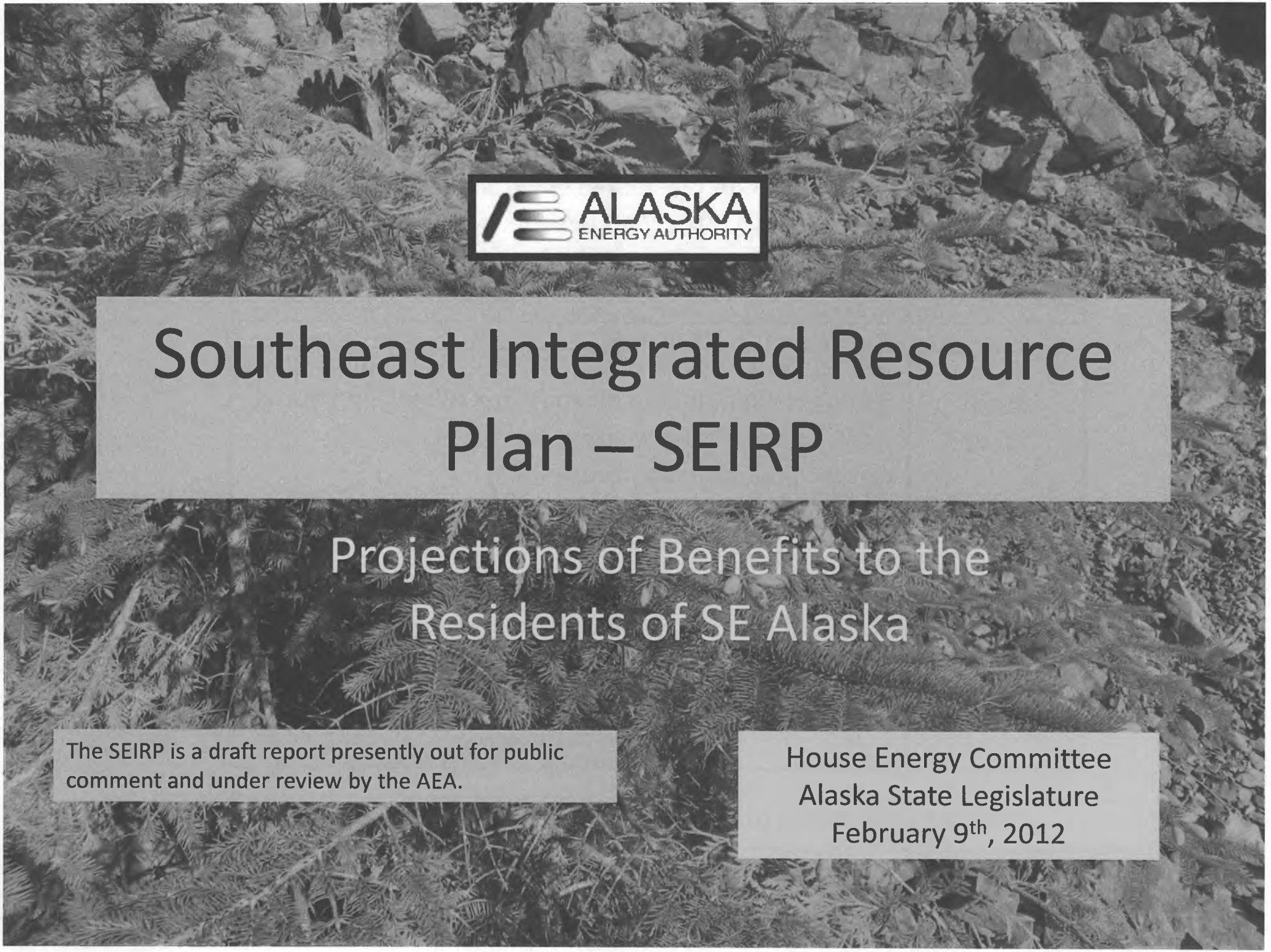
SUSITNA-WATANA
HYDROELECTRIC PROJECT

Susitna-watanahydro.org/

ALASKA ENERGY AUTHORITY

2/09/12 Presentation by Alaska Energy Authority: Southeast Integrated Resource Plan

<TARGET><BILL></BILL><SUBJECT>2-09-12 Presentation by Alaska Energy Authority Southeast Integrated Resource Plan</SUBJECT><COMM>HENE27</COMM></TARGET>



Southeast Integrated Resource Plan – SEIRP

Projections of Benefits to the Residents of SE Alaska

The SEIRP is a draft report presently out for public comment and under review by the AEA.

House Energy Committee
Alaska State Legislature
February 9th, 2012

Yearly energy costs as a percentage of household income

Angoon	($)	(% of income)
Yearly Household Income:	$28,479	
Yearly Utility Costs 2011:	$9,067	31.8%
Yearly Utility Costs 2016 (no implementation):	$9,980	35.0%
Yearly Utility Costs 2016 (full implementation):	$6,958	24.4%

Prince of Wales Island (Craig)	($)	(% of income)
Yearly Household Income:	$28,479	
Yearly Utility Costs 2011:	$7,057	24.8%
Yearly Utility Costs 2016 (no implementation):	$8,782	30.8%
Yearly Utility Costs 2016 (full implementation):	$5,762	20.2%

Juneau	($)	(% of income)
Yearly Household Income:	$48,062	
Yearly Utility Costs 2011:	$7,073	14.7%
Yearly Utility Costs 2016 (no implementation):	$8,124	16.9%
Yearly Utility Costs 2016 (full implementation):	$5,858	12.2%

Angoon Home Budget

2016 Full Implementation

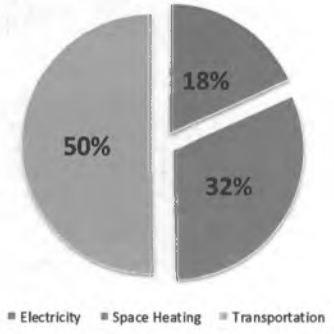
Input

Location:	Angoon	
Building Size:	1200	sq feet
Space Heating Type:	Biomass, Pellets	
Space Heating Cost:	$350.00	per TON
Residential Electricity Rate:	$0.61	per kWh
PCE Eligible	YES	
PCE Rate	$0.41	per kWh
Gasoline Price:	$4.53	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$1,267	$106
Heating Costs	$2,192	$183
Transportation Costs	$3,499	$292
TOTAL	**$6,958**	**$580**



2/9/2012

30.3% realized savings over "No Implementation"

2011 Base Case

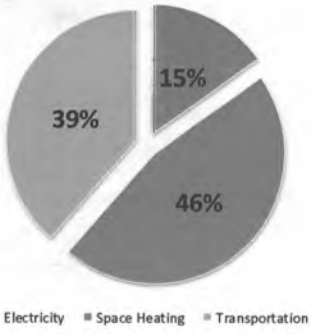
Input

Location:	Angoon	
Building Size:	1200	sq feet
Space Heating Type:	Heating Fuel #1	
Space Heating Cost:	$4.60	per gallon
Residential Electricity Rate:	$0.61	per kWh
PCE Eligible	YES	
PCE Rate	$0.41	per kWh
Gasoline Price:	$4.53	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$1,370	$114
Heating Costs	$4,198	$350
Transportation Costs	$3,499	$292
TOTAL	**$9,067**	**$756**



ALASKA ENERGY AUTHORITY

SEIRP - draft plan analysis

2016 No Implementation

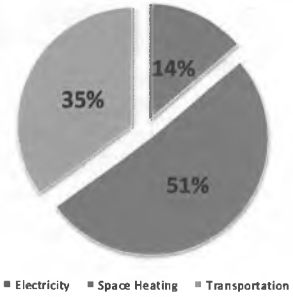
Input

Location:	Angoon	
Building Size:	1200	sq feet
Space Heating Type:	Heating Fuel #1	
Space Heating Cost:	$5.60	per gallon
Residential Electricity Rate:	$0.61	per kWh
PCE Eligible	YES	
PCE Rate	$0.41	per kWh
Gasoline Price:	$4.53	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$1,370	$114
Heating Costs	$5,111	$426
Transportation Costs	$3,499	$292
TOTAL	**$9,980**	**$832**



10.1% increase from 2011

POW Island (Craig) Home Budget

2016 Full Implementation

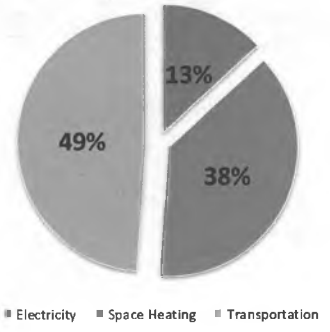
Input

Location:	Prince of Wales (Craig)	
Building Size:	1200	sq feet
Space Heating Type:	Biomass, Pellets	
Space Heating Cost:	$350.00	per TON
Residential Electricity Rate:	$0.22	per kWh
PCE Eligible	YES	
PCE Rate	$0.07	per kWh
Gasoline Price:	$3.64	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$759	$63
Heating Costs	$2,192	$183
Transportation Costs	$2,811	$234
TOTAL	**$5,762**	**$480**



34.4% realized savings over "No Implementation"

2011 Base Case

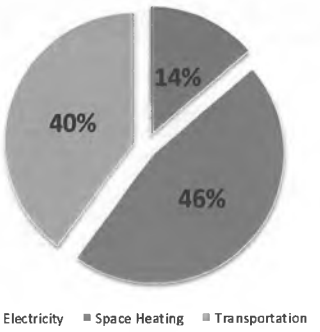
Input

Location:	Prince of Wales (Craig)	
Building Size:	1200	sq feet
Space Heating Type:	Heating Fuel #1	
Space Heating Cost:	$3.59	per gallon
Residential Electricity Rate:	$0.22	per kWh
PCE Eligible	YES	
PCE Rate	$0.07	per kWh
Gasoline Price:	$3.64	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$970	$81
Heating Costs	$3,277	$273
Transportation Costs	$2,811	$234
TOTAL	**$7,057**	**$588**



ALASKA ENERGY AUTHORITY

2016 No Implementation

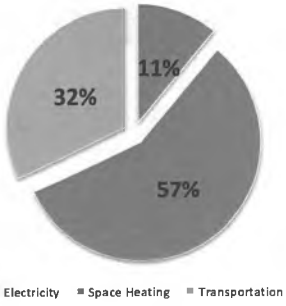
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Location:	Prince of Wales (Craig)	
Building Size:	1200	sq feet
Space Heating Type:	Heating Fuel #1	
Space Heating Cost:	$5.48	per gallon
Residential Electricity Rate:	$0.22	per kWh
PCE Eligible	YES	
PCE Rate	$0.07	per kWh
Gasoline Price:	$3.64	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$970	$81
Heating Costs	$5,002	$417
Transportation Costs	$2,811	$234
TOTAL	**$8,782**	**$732**



24.5% increase from 2011

Juneau Home Budget

2016 Full Implementation

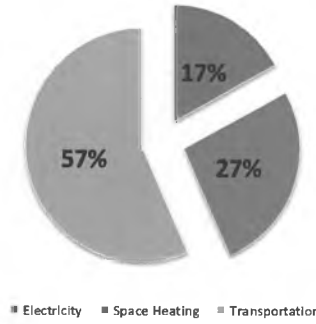
Input

Location:	Juneau	
Building Size:	1600	sq feet
Space Heating Type:	Biomass, Pellets	
Space Heating Cost:	$310.00	per TON
Residential Electricity Rate:	$0.11	per kWh
PCE Eligible	NO	
PCE Rate	$0.00	per kWh
Gasoline Price:	$3.43	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$994	$83
Heating Costs	$1,553	$129
Transportation Costs	$3,311	$276
TOTAL	**$5,858**	**$488**



27.9% realized savings over "No Implementation"

2011 Base Case

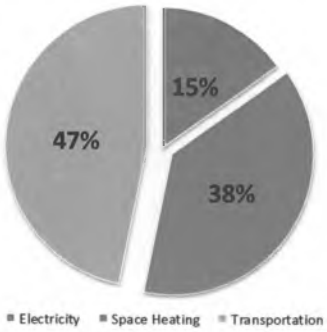
Input

Location:	Juneau	
Building Size:	1600	sq feet
Space Heating Type:	Heating Fuel #1	
Space Heating Cost:	$3.69	per gallon
Residential Electricity Rate:	$0.11	per kWh
PCE Eligible	NO	
PCE Rate	$0.00	per kWh
Gasoline Price:	$3.43	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$1,067	$89
Heating Costs	$2,694	$225
Transportation Costs	$3,311	$276
TOTAL	**$7,073**	**$589**



ALASKA ENERGY AUTHORITY

2016 No Implementation

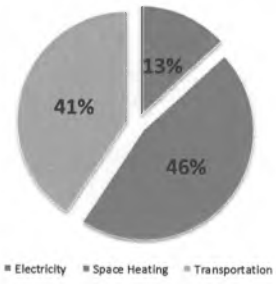
Input

Location:	Juneau	
Building Size:	1600	sq feet
Space Heating Type:	Heating Fuel #1	
Space Heating Cost:	$5.13	per gallon
Residential Electricity Rate:	$0.11	per kWh
PCE Eligible	NO	
PCE Rate	$0.07	per kWh
Gasoline Price:	$3.43	per gallon

Note: If Space Heating Type is Electricity, Space Heating Costs should equal Residential Electricity Rate

Output

	Annual Costs	Monthly Costs
Electricity Costs	$1,067	$89
Heating Costs	$3,746	$312
Transportation Costs	$3,311	$276
TOTAL	**$8,124**	**$677**



14.9% increase from 2011

BUILDING A WORLD OF DIFFERENCE

Southeast Alaska IRP

House Energy Committee

9 February 2012

BLACK & VEATCH
Building a world of difference.

Key Findings

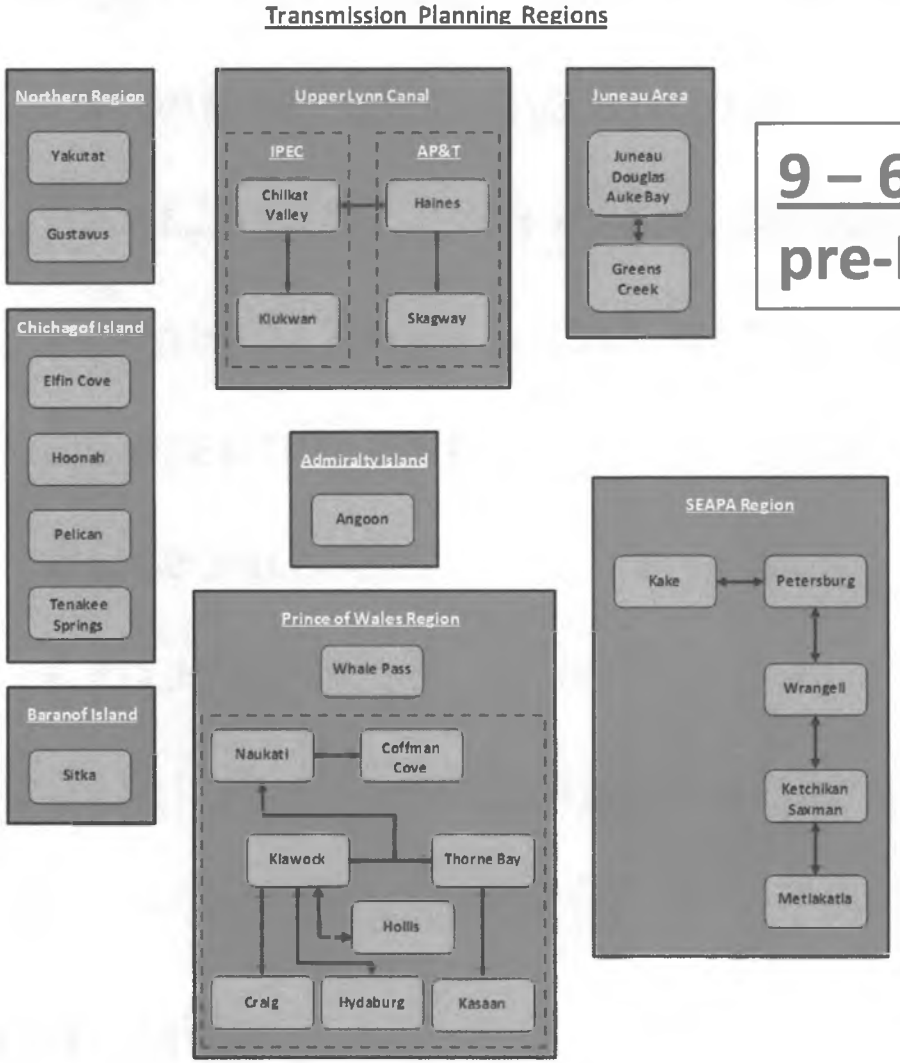
- **Key Drivers**
  - ✓**Limited Size** — 20% - size of SE region relative to Railbelt
  - ✓**Economic Realities and Population Trends**
  - ✓**Limited Transmission**
  - ✓**Diesel Fuel Prices** — 60% - 75% - space heating portion of monthly energy bill

Key Findings

- Key Drivers (continued)
  - ✓Significant uncertainties exist, including:
    - Loads
    - Resources
    - Potential transmission additions
    - Level of State financial assistance
  - ✓Uncertainties lead to the need to:
    - Develop multiple options
    - Move towards a more balanced resource portfolio
    - Maintain flexibility

Key Findings (continued)

- **Subregional Differences Require Solutions for Each Subregion**



9 – 60+ cents/kWh – range of pre-PCE cost of electricity

Key Findings (continued)

- Shortage of Storage Hydro
- Space Heating Conversions
- Limitations Due to Quality and Inclusiveness of Project-Specific Information
  - ✓Need to base analysis on generic hydro projects
  - ✓Inability to make definitive selection
- 2 Integrated Cases:
  - ✓Optimal Hydro/Transmission Case
  - ✓Optimal DSM/EE, Biomass, Other Renewables Case

300/24 – number of hydro projects considered/passed screen

Key Findings (continued)

- Phased Approach to the Future
- Aggressive Pursuit of DSM/EE Delays Need for Incremental Hydro
- Aggressive Pursuit of Biomass Conversion will Result in Very Significant Space Heating Savings

RESOURCES	PHASE 1 (2012-2016)	PHASE 2 (2017 AND BEYOND)
Committed Resources	√	
DSM/EE Programs	√	√
Biomass Conversion Programs	√	√
Next Increment of Hydro and Other Renewable Projects		√

Key Findings (continued)

Committed Resources

PROJECT	DISCUSSION	TOTAL CAPITAL COST ($ MILLION)	ESTIMATED REMAINING CAPITAL COST ($ MILLION)
Blue Lake Expansion Hydro (Sitka, City of Sitka Electric)	Expansion will increase the capacity of the existing Blue Lake Hydro Project by an estimated 8 MW and increase the average annual energy from the project by approximately 34,500 MWh.	$96.5	$1.0 (Note 1)
Gartina Falls Hydro (Hoonah, IPEC)	New run-of-river project near Hoonah that will provide an estimated 0.44 MW of capacity and approximately 1,800 MWh of average annual energy.	$6.3	$5.5
Reynolds Creek Hydro (Hydaberg, Haida Energy and AP&T)	New storage project located that will provide an estimated 5 MW of capacity and approximately 19,300 MWh of average annual energy.	$28.6	$0.0 (Note 2)
Thayer Creek Hydro (Angoon, Kootznoowoo, Inc.)	New run-of-river project that will provide an estimated 1 MW of capacity and approximately 8,400 MWh of average annual energy.	$15.2	$6.0 (Note 3)
Whitman Lake Hydro (Ketchikan, KPU)	New storage project at an existing lake located that will provide an estimated 4.6 MW of capacity and approximately 15,900 MWh of average annual energy.	$25.8	$3.3 (Note 1)
Kake – Petersburg Intertie (Kwsan Electric Transmission Intertie Cooperative)	New 69 kV overhead and submarine cable transmission line connecting Kake and Petersburg.	$53.8	$48.3
Ketchikan – Metlakatla Intertie (Metlakatla Indian Community)	New 34.5 kV overhead and submarine cable transmission line connecting Ketchikan and Metlakatla.	$12.7	$8.2
	Totals	**$238.9**	**$72.3**

Notes:

1. Local bonding under way. Community request pending.
2. Authorized loans being negotiated.
3. $7.0 million Renewable Energy Round 5 award recommendation.

Key Findings (continued)

- Economic Realities of SE Intertie Concept
  - ✓ **Built upon previous studies, including SE Intertie Study**
  - ✓ **Two cases**
    - **Economic Case**
    - **Public Benefit Case**
  - ✓ **Insufficient loads to justify expansion of transmission network beyond transmission Committed Resources**

0 – number of transmission segments with unit costs less than diesel under Economic Case

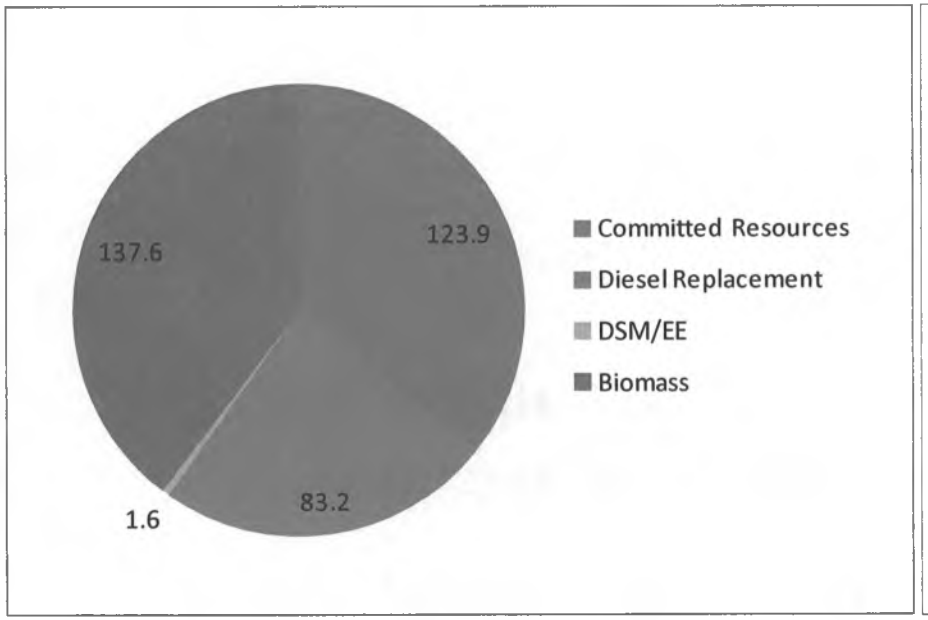
0.10 – 0.32 – benefit-cost ratios of transmission segments under Public Benefit Case

Key Findings (continued)

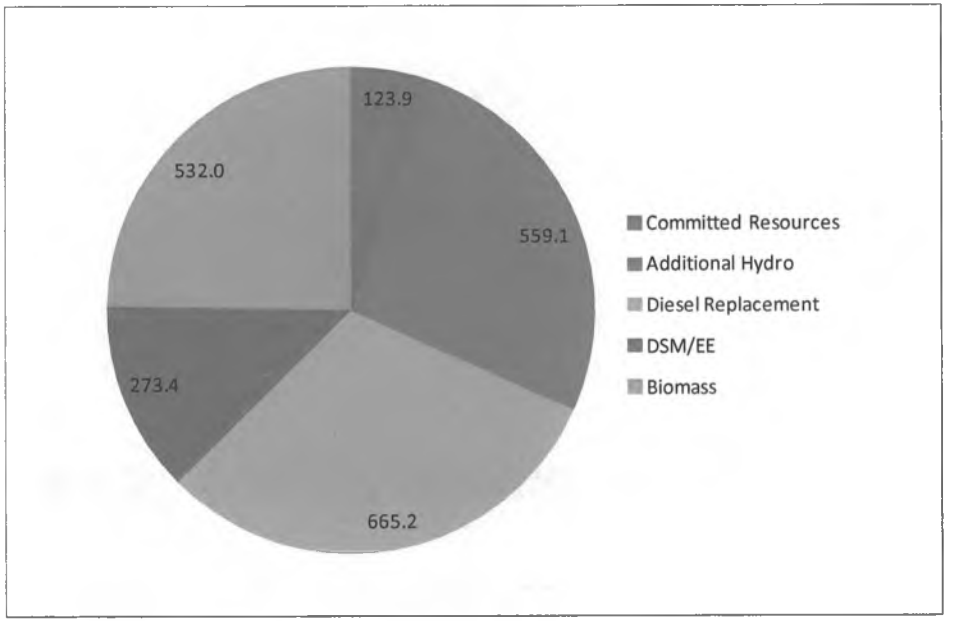
- AK-BC Intertie
  - ✓Screening level analysis of both import and export scenarios
  - ✓Not justified based upon current market conditions
  - ✓Significant uncertainties exist – most would have adverse impact

Capital Investment by Category

Capital Investment by Category
2012 - 2014



Capital Investment by Category
2012 - 2061



Total Capital Investments

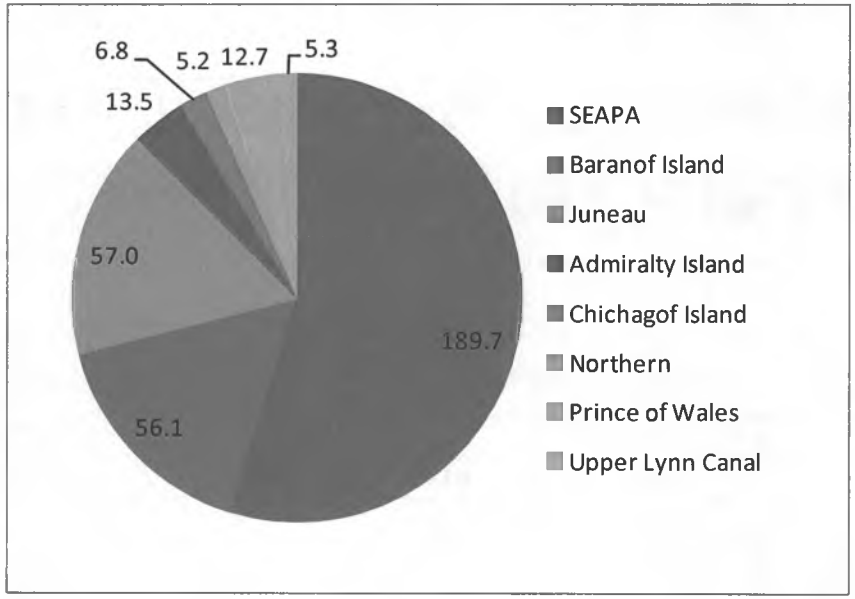
2012 – 2014 – $346 million
2012 – 2061 – $2.15 billion

Hydro Included in Recommended Resource Portfolio

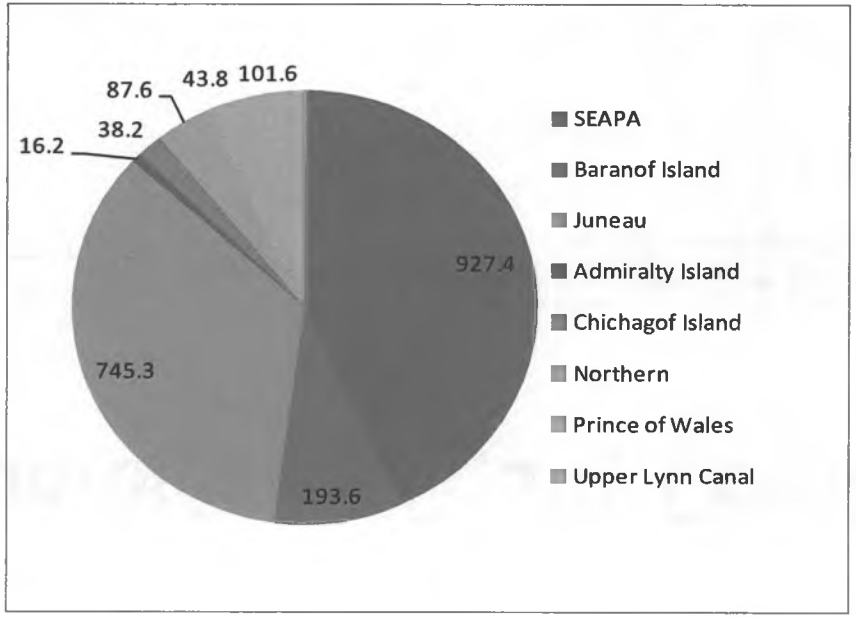
- **19 MW – Committed Resources**
- **50 MW – other hydro**

Subregional Equity Considerations

Capital Investment by Subregion – 2012 - 2014



Capital Investment by Subregion – 2012 - 2061



Capital Investment per Capita

	2012 - 2014	2012 - 2061
Urban Areas		
SEAPA	$12,495	$61,086
Baranof Island	$6,313	$21,796
Juneau	$1,824	$23,830
Urban Area Average	$5,472	$33,725
Rural Areas		
Admiralty Island	$29,417	$35,336
Chichagof Island	$6,854	$38,216
Northern	$4,670	$79,314
Prince of Wales	$3,820	$13,180
Upper Lynn Canal	$1,507	$28,732
Rural Area Average	$4,620	$30,496
Regional Average	$5,348	$33,255

Subregional Equity Considerations

OPTIMAL DSM/EE, BIOMASS AND OTHER RENEWABLES CASE - SAVINGS RELATIVE TO STATUS QUO CASE						
	Total Cumulative Net Present Value (CNPV) Savings – 2012 - 2061 ($'000)					
	Utility System Plus DSM Costs[1]		Oil Space Heating Plus Biomass Costs		Total	
	$	%	$	%	$	%
SEAPA	221,430	49%	418,993	43%	640,423	45%
Admiralty Island	(22)	0%	9,592	43%	9,570	32%
Baranof Island	1,671	2%	216,746	47%	218,417	39%
Chichagof Island	13,218	22%	29,950	51%	43,168	37%
Juneau	185,117	50%	977,503	46%	1,162,620	47%
Northern	33,670	38%	77,923	53%	111,593	47%
Prince of Whales	3,313	14%	180,036	49%	183,349	47%
Upper Lynn Canal	18,925	41%	172,791	50%	191,716	49%
Total Southeast Region	**477,322**	41%	**2,083,534**	46%	**2,560,856**	45%

[1]Includes savings from generic hydro projects.

Electric / Space Heating / Total Savings

- **41% / 46% / 45%** – Recommended vs. Status Quo Cases
- **17% / 46% / 42%** – Recommended vs. Optimal Hydro Cases

Regional Supporting Studies and Other Actions

DESCRIPTION	TIME FRAME	ESTIMATED COST
General Public Outreach/Education Program	2012	$250,000
Regional DSM/EE Program Start-up Costs	2012-2013	$2,325,000
Regional Biomass Conversion Program Start-up Costs	2012-2013	$2,225,000
Formation of Regional DSM/EE Entity Start-up Costs	2012	$500,000
Formation of Regional Biomass Conversion Entity Start-up Costs	2012	$500,000
Hydro Project-specific High Level Reconnaissance Studies	2012-2013	$2,000,000
Hydro Project-specific FERC License Application Preparation	2012-2014	$10,000,000
Regional Technical/Economic Market Potential Assessment of Non-Hydro Renewable Technologies	2012	$500,000
Other Renewable Project-specific High Level Reconnaissance Studies	2012-2014	$1,000,000
Support Tidal/Wave Technology Development	2012-2014	$1,000,000
Develop Standard Power Sales Agreement	2012	$200,000
Consider Development of Open Access Policy and Related Tariff (including terms and conditions of service)	2012	$250,000
Update Southeast Alaska IRP in 2014	2014	$750,000
Support Development of Tariff Structures That Better Reflect Costs	2012-2013	$1,550,000
Support Development of Weather Normalized Load Forecasts	2013	$375,000
Total		$23,425,000

Overall Summary

- 20% - size of SE region relative to Railbelt
- 60-75% - space heating portion of monthly energy bill
- 9 – 60+ cents/kWh – range of pre-PCE cost of electricity
- 300/24 – number of hydro projects considered/passed screen
- 0 – number of transmission segments with unit costs less than diesel under Economic Case
- 0.10 – 0.32 – benefit-cost ratios of transmission segments under Public Benefit Case

Overall Summary (continued)

- **Hydro Included in Recommended Resource Portfolio**
  - ✓ **19 MW – Committed Resources**
  - ✓ **50 MW – other hydro**

- **Electric / Space Heating / Total Savings**
  - ✓ **41% / 46% / 45% – Recommended vs. Status Quo Cases**
  - ✓ **17% / 46% / 42% – Recommended vs. Optimal Hydro Cases**

Building a world of difference.®

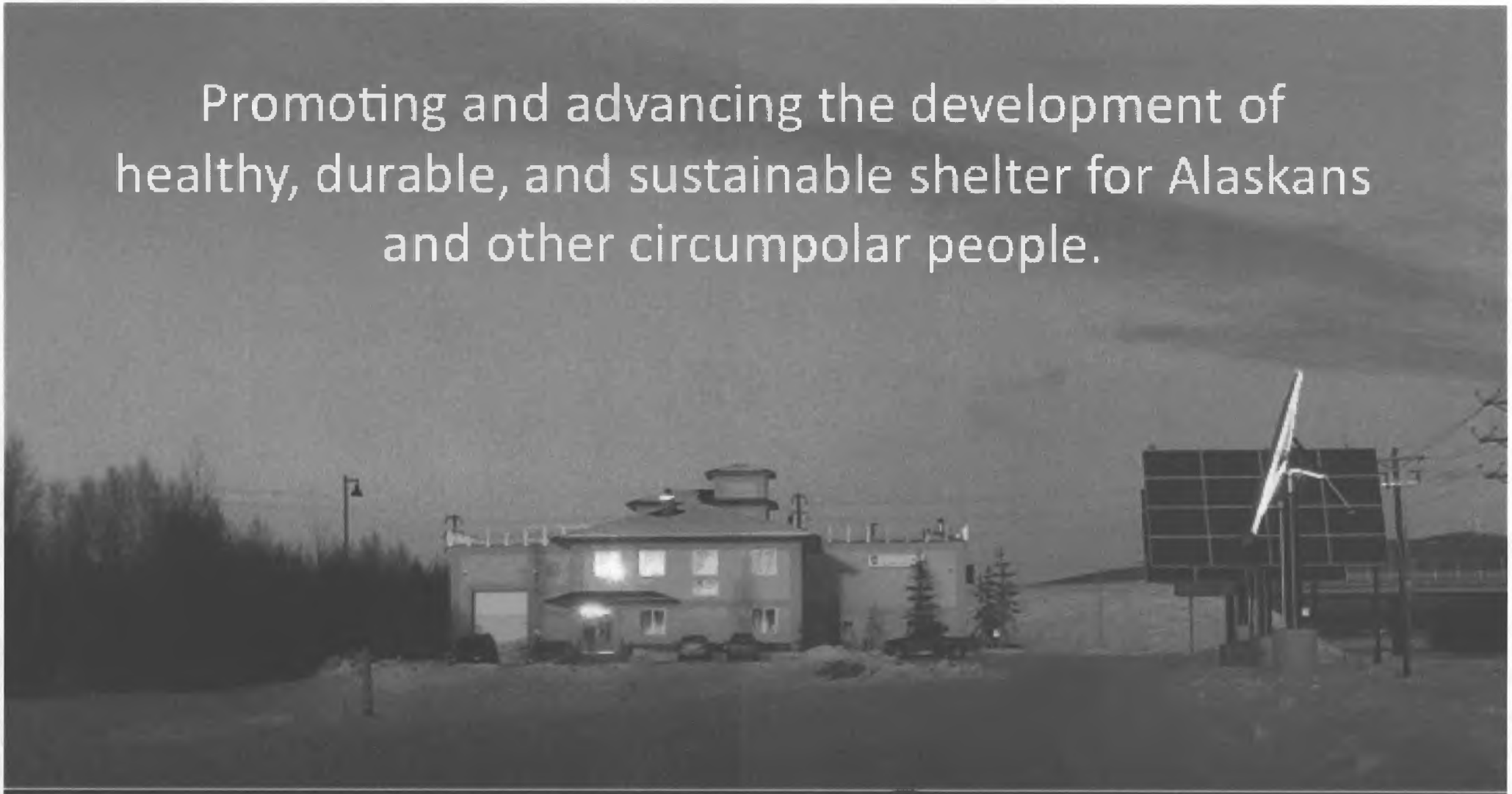
Together

BLACK & VEATCH

2/14/12 Overview by Cold Climate Housing Research Center

<TARGET><BILL></BILL><SUBJECT>2-14-12 Overview by Cold Climate Housing Research Center</SUBJECT><COMM>HENE27</COMM></TARGET>

Promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other circumpolar people.



Research • Innovation • Education

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The Challenge

- Cost of energy going up
- Cost of building going up
  - Construction and maintenance
- Weather and climate change
- Cost of poor housing
  - Health and safety hazards
  - Continuous burden to the state







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Alaskan Shelter–a matter of life and death

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  - Psychological and financial burden









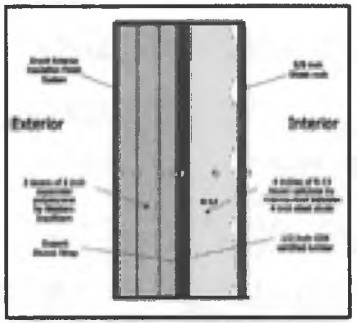
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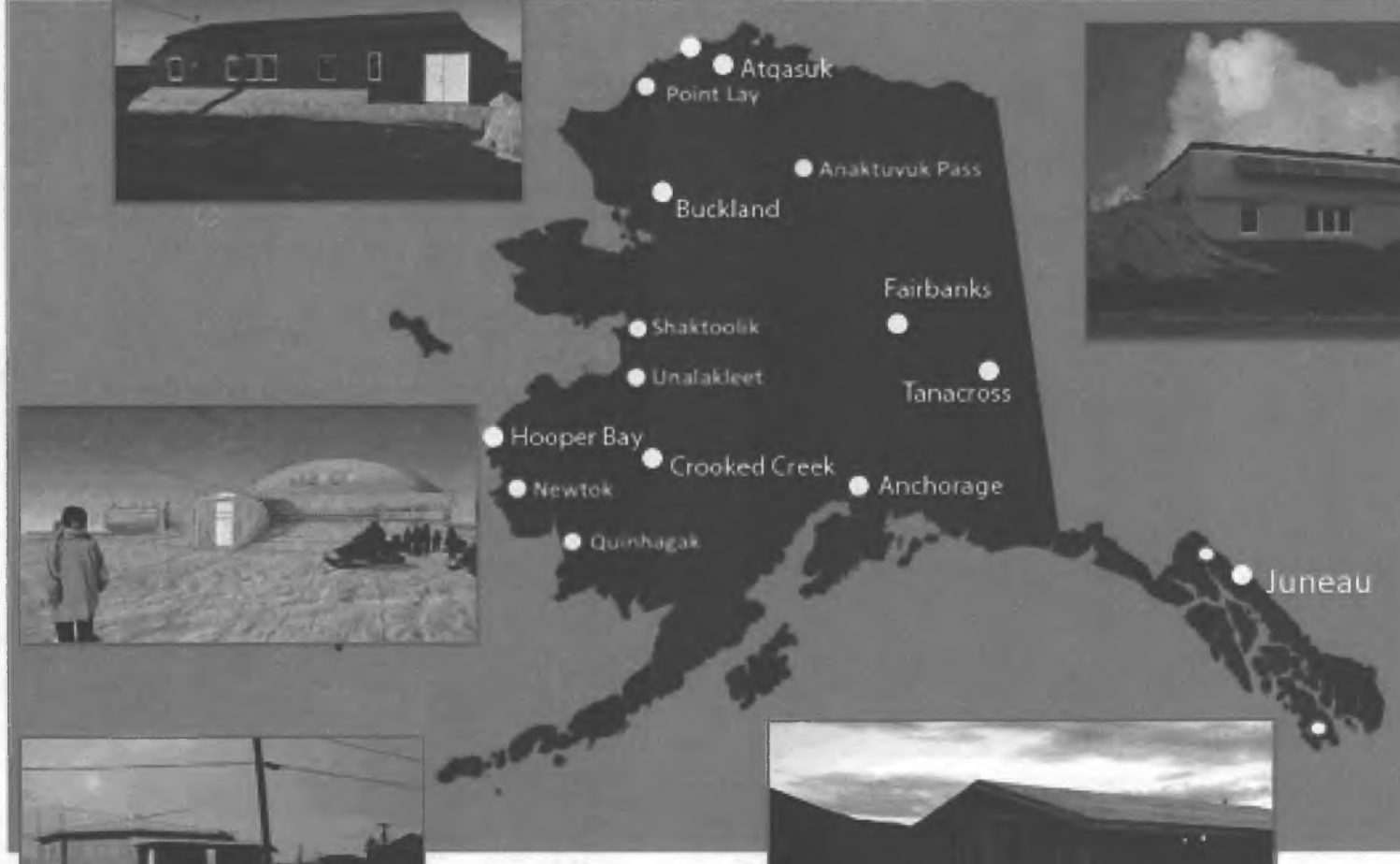
Helping communities statewide



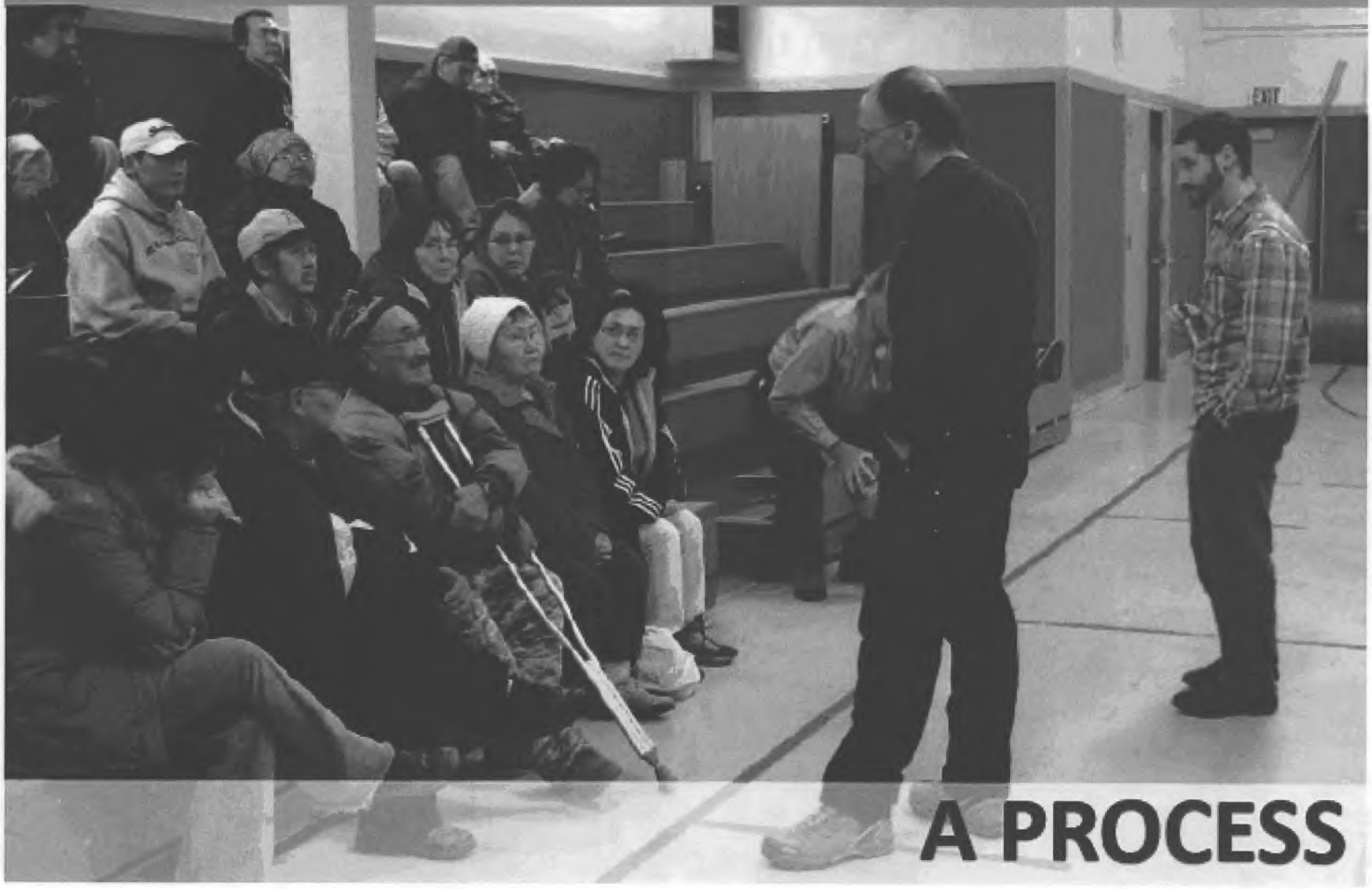








SUSTAINABLE NORTHERN SHELTER



A PROCESS

SUSTAINABLE NORTHERN SHELTER

LEARN FROM THE PAST





Our Question is not "Should we go back to living in Sod Igloos,"
But "What can we learn from how they worked?"

SUSTAINABLE NORTHERN SHELTER
ADAPT TO THE PRESENT





"My house is always full. I have 37 grandchildren. We need to build for the young people. Our people moved from site to site until the state told us to live here for school for our children. So now, we need to build up this site, here where we are, for our children."

Nathan Hadley Sr, Buckland, AK

SUSTAINABLE NORTHERN SHELTER PREPARE FOR THE FUTURE



Anaktuvuk Pass Prototype

Energy and Cost Efficient













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Anaktuvuk Pass Prototype

Challenges

- 16,000 HDD
- Electricity 60 cents/kWh
- Heating oil $8/gallon
- 1,400 gallons/year
- New house is $750,000
- Last house built 10 years ago
- Transportation costs

Outcomes

- Cost over 50% less than new home quotes.
- Less than 150 gallons fuel in 2009
- Completed in four weeks.
- Local workforce
- Approaches net zero





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Quinhagak

Energy efficient, healthy solutions for an aging housing stock







COLD CLIMATE HOUSING RESEARCH CENTER

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Quinhagak

Constructability



Design





Local labor



Prototype

- 171 gallons a year
- Storm-Proof
- Healthy indoor AQ



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The Sustainable Village at the University of Alaska Fairbanks

A development at UAF that demonstrates new building technologies and serves as a living and learning center for UAF students.

- Renewable energy
- Resource efficiency
- Food production

SPRING 2012

"A dynamic and evolving community at UAF, committed to the tenets of sustainability, demonstrating what can be achieved to secure an enduring future for people of the circumpolar north."





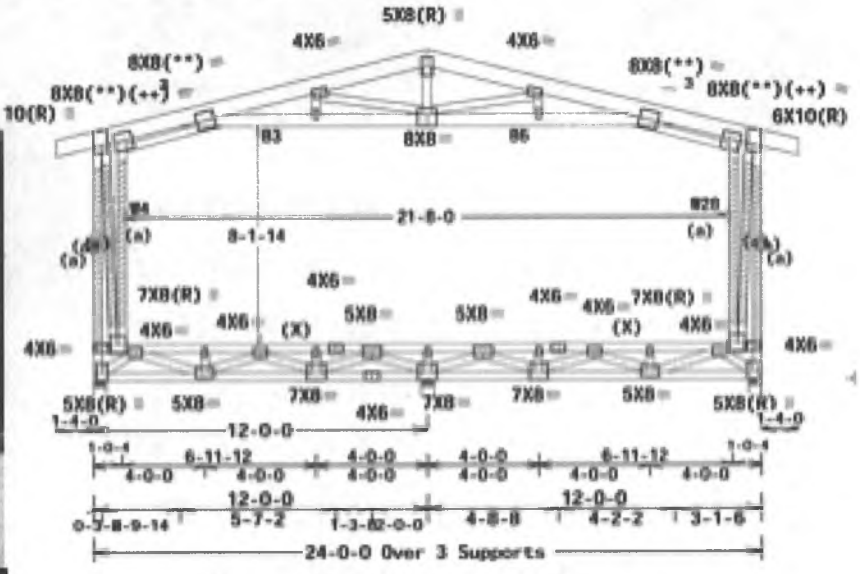
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Innovation

Developing solutions for the future





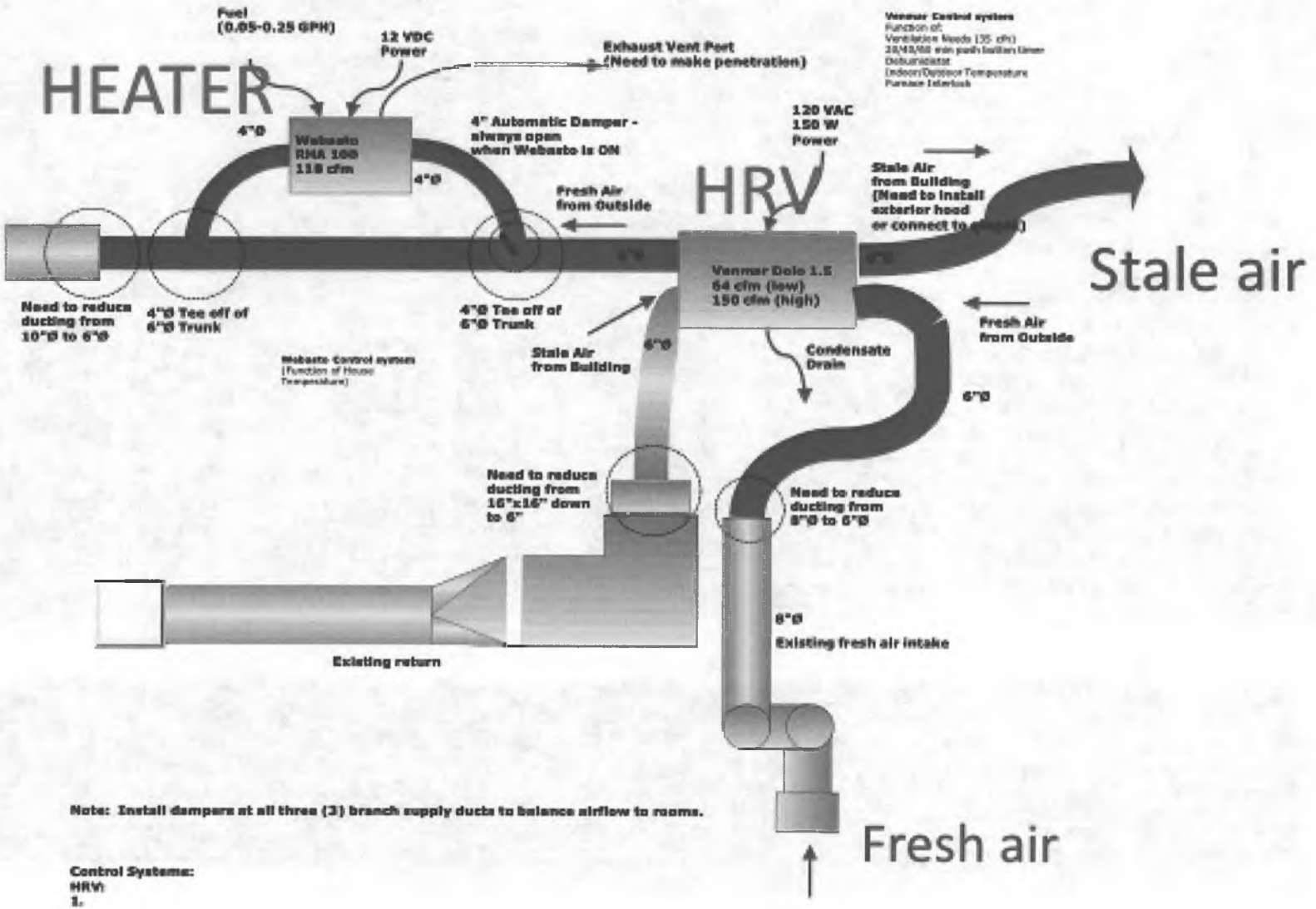




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BrHEAThe System



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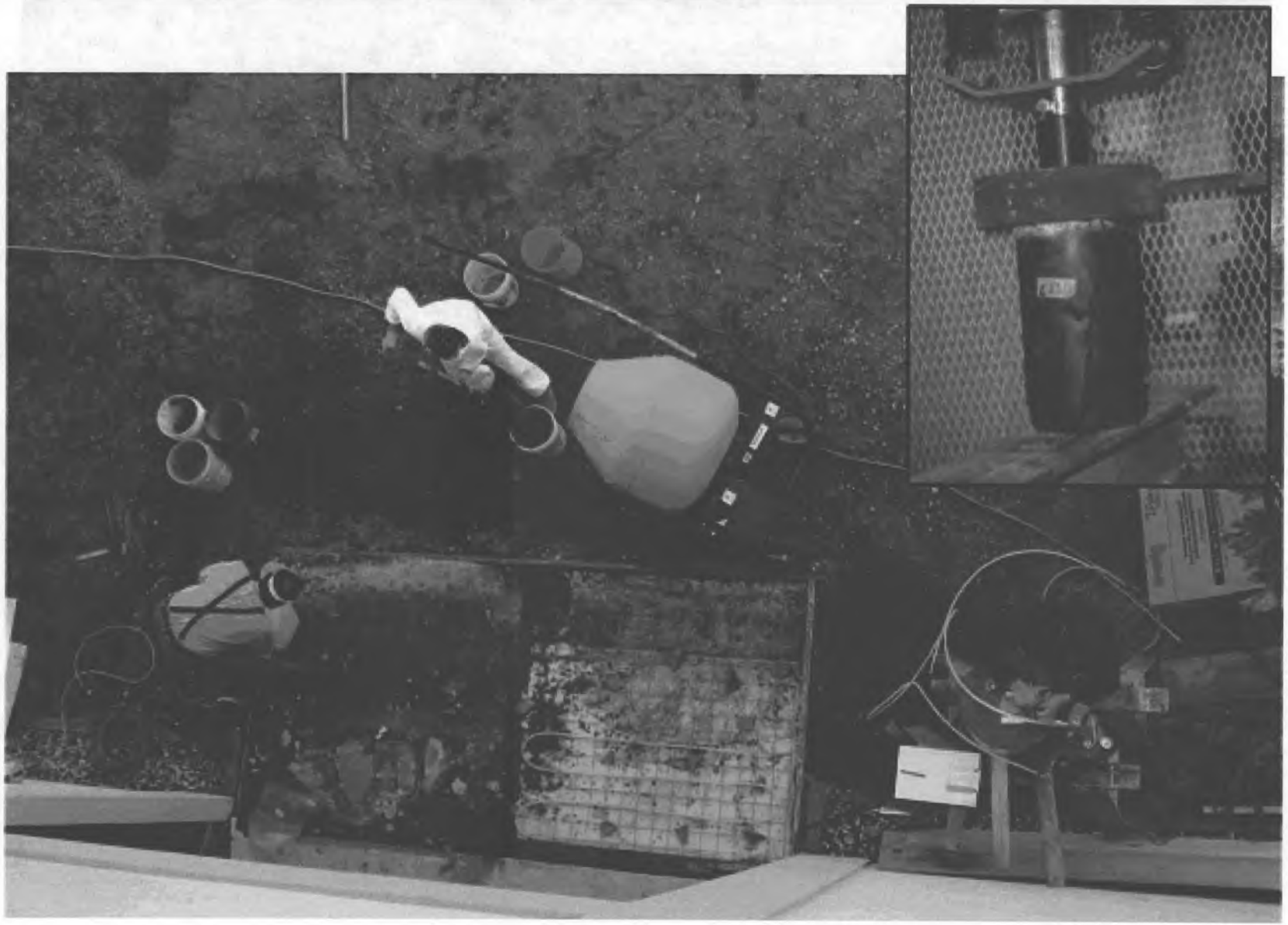
Passive Refrigeration



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Geopolymers



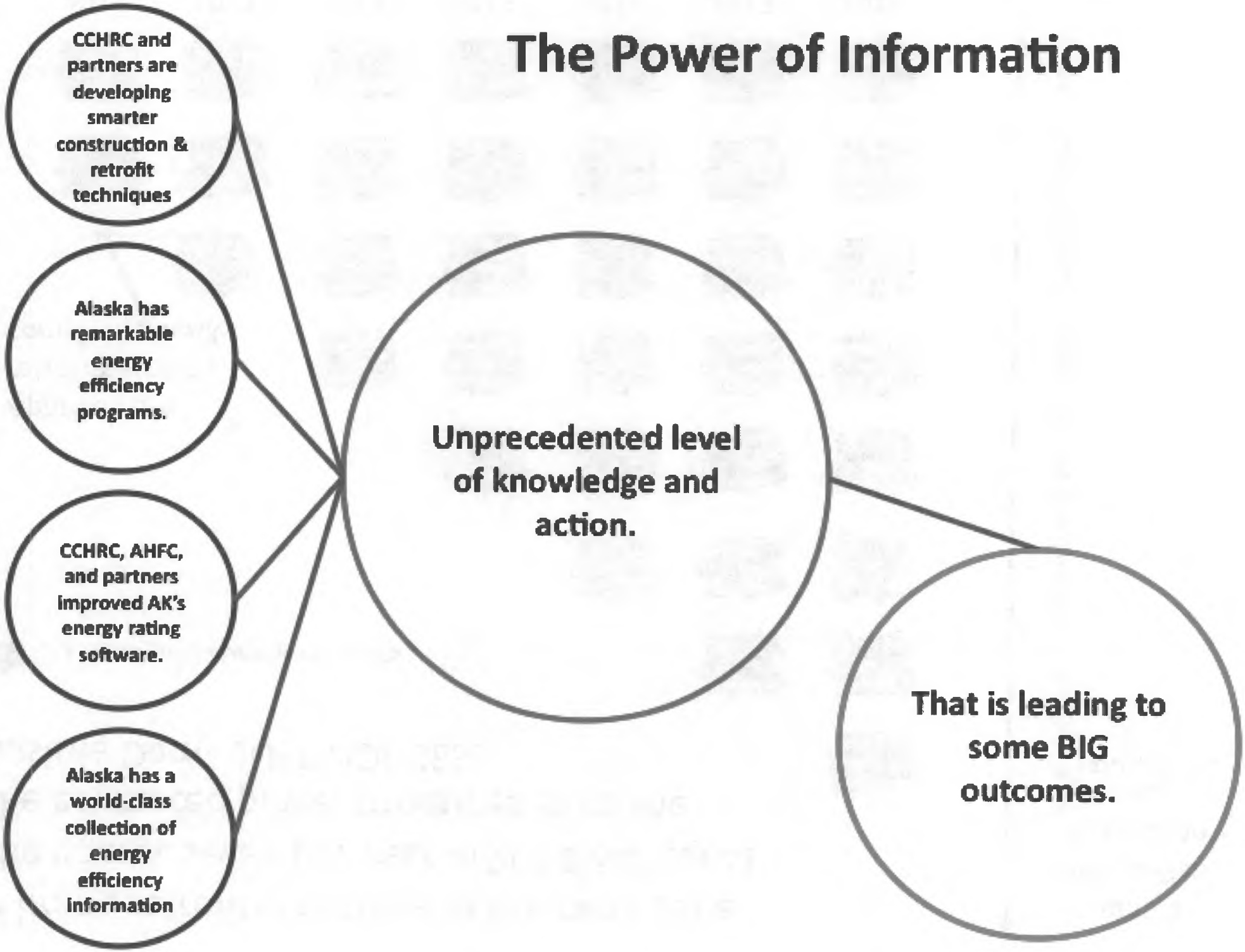
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Net-Zero Energy in Fairbanks

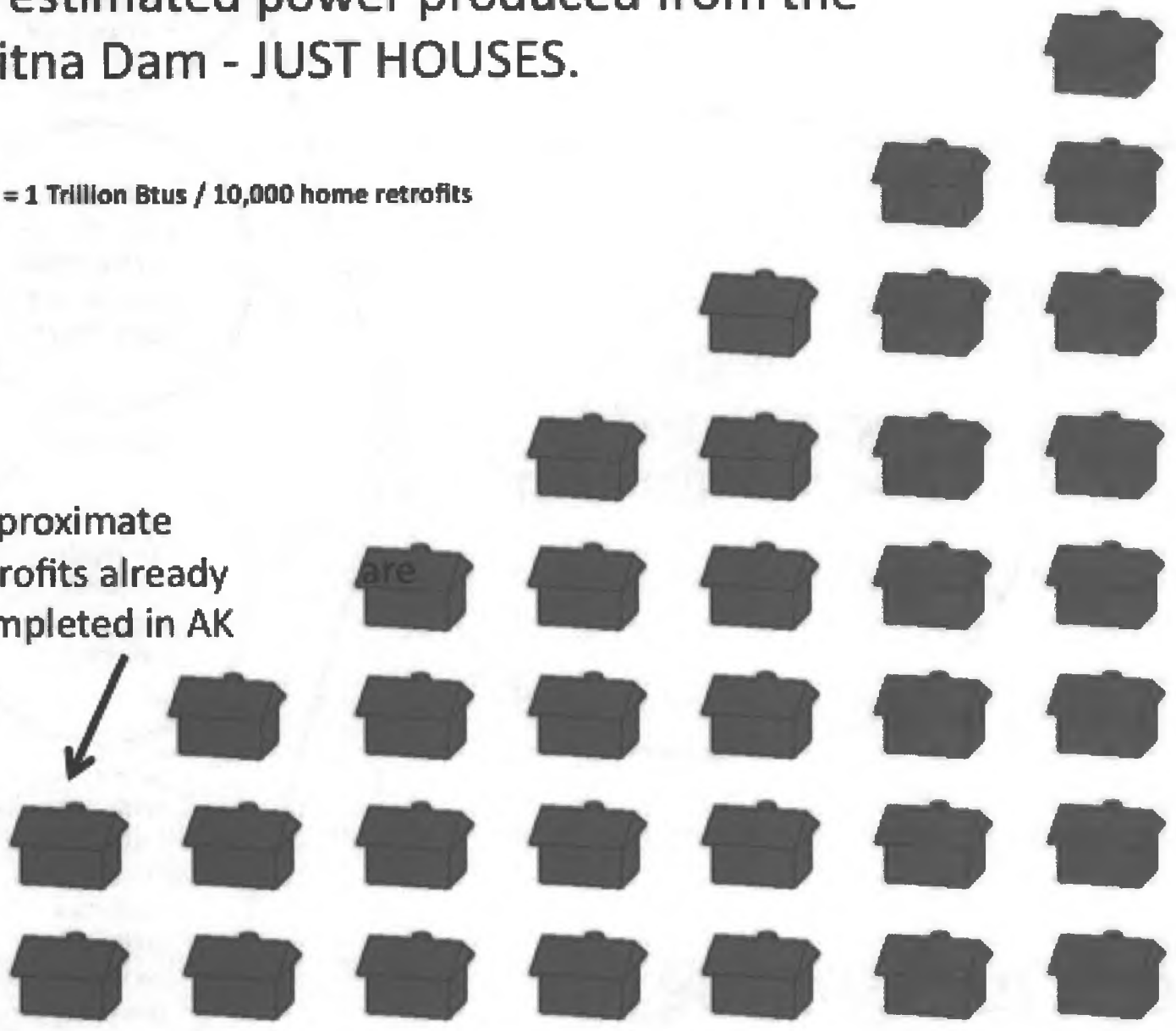


The Power of Information



If home retrofits continue at the peak pace the energy saved per year in 2018 will equal the estimated power produced from the Susitna Dam - JUST HOUSES.

= 1 Trillion Btus / 10,000 home retrofits



Annual Susitna Dam Production

~8.8 trillion BTUs projected

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Alaska Solutions, Global Sustainability

Shelter, food, water, and stewardship of resources are of global concern.

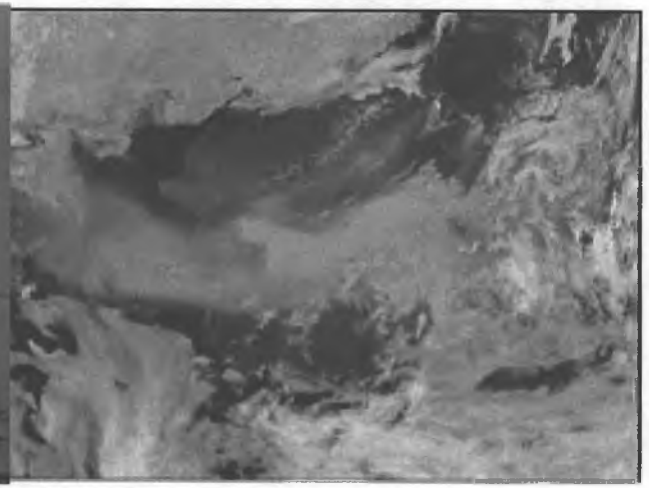
Alaskan rural communities face the challenges of tomorrow, today.

The solutions we apply here can be a model for the rest of the nation and the world.









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Creativity of the North

Alaskans are leaders in innovation

- Surviving and thriving in the world's most difficult conditions
- First pioneers who came across the Bering Straits 10,000 y.a.
- Newer pioneers who moved West and then came North
- Creative, skilled, artistic









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Thank You!

Follow our research on: www.cchrc.org
Blog: makinghouseswork.cchrc.org
FACEBOOK@Cold Climate Housing Research Center

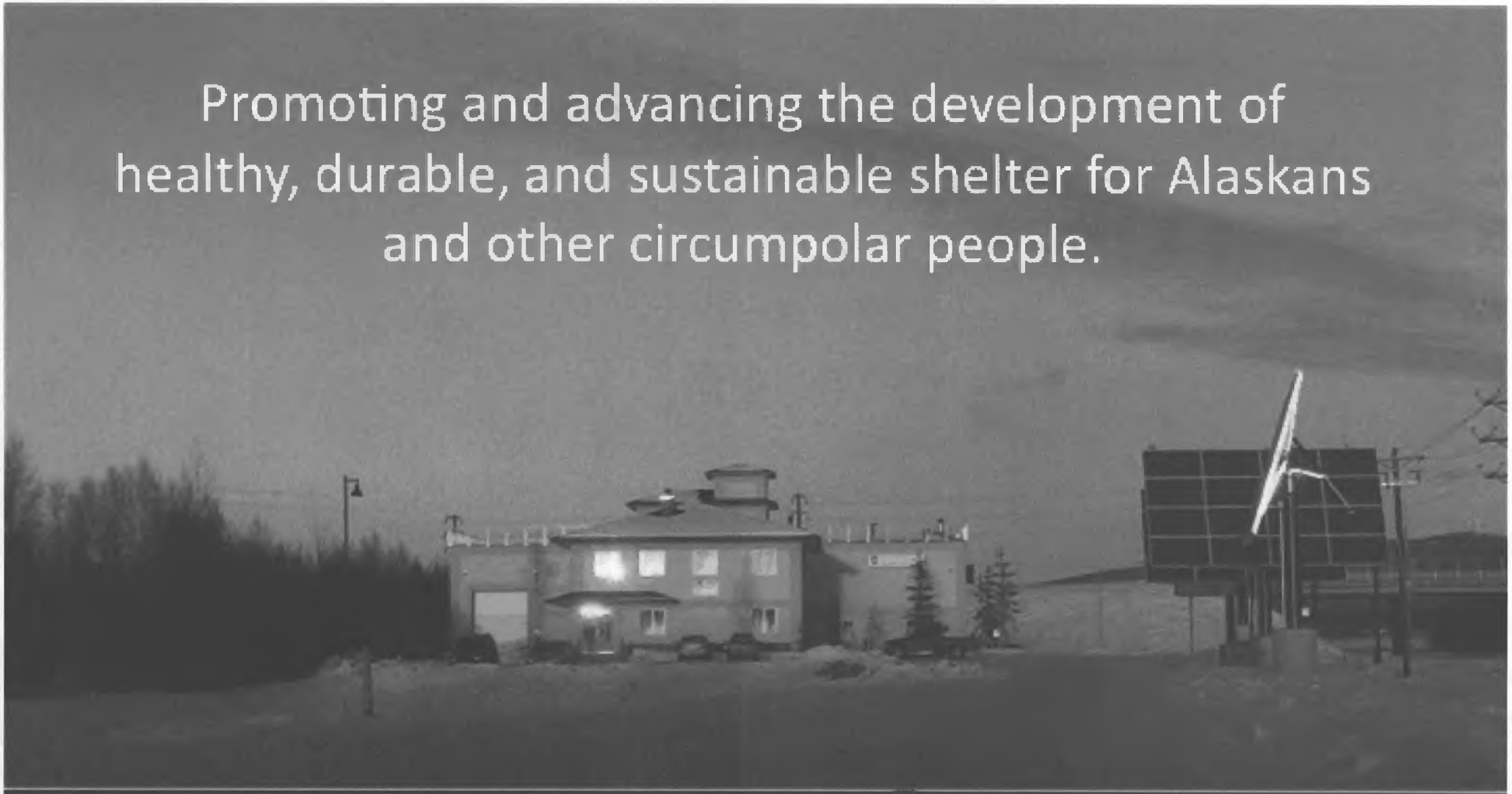
Jack Hébert

President/CEO of Cold Climate Housing Research Center
Cold Climate Housing Research Center
P.O. Box 82489 Fairbanks, AK 99709

2/14/12 Overview by Cold Climate Housing Research Center

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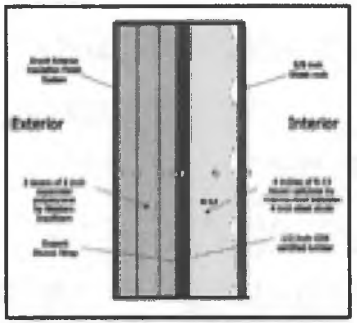
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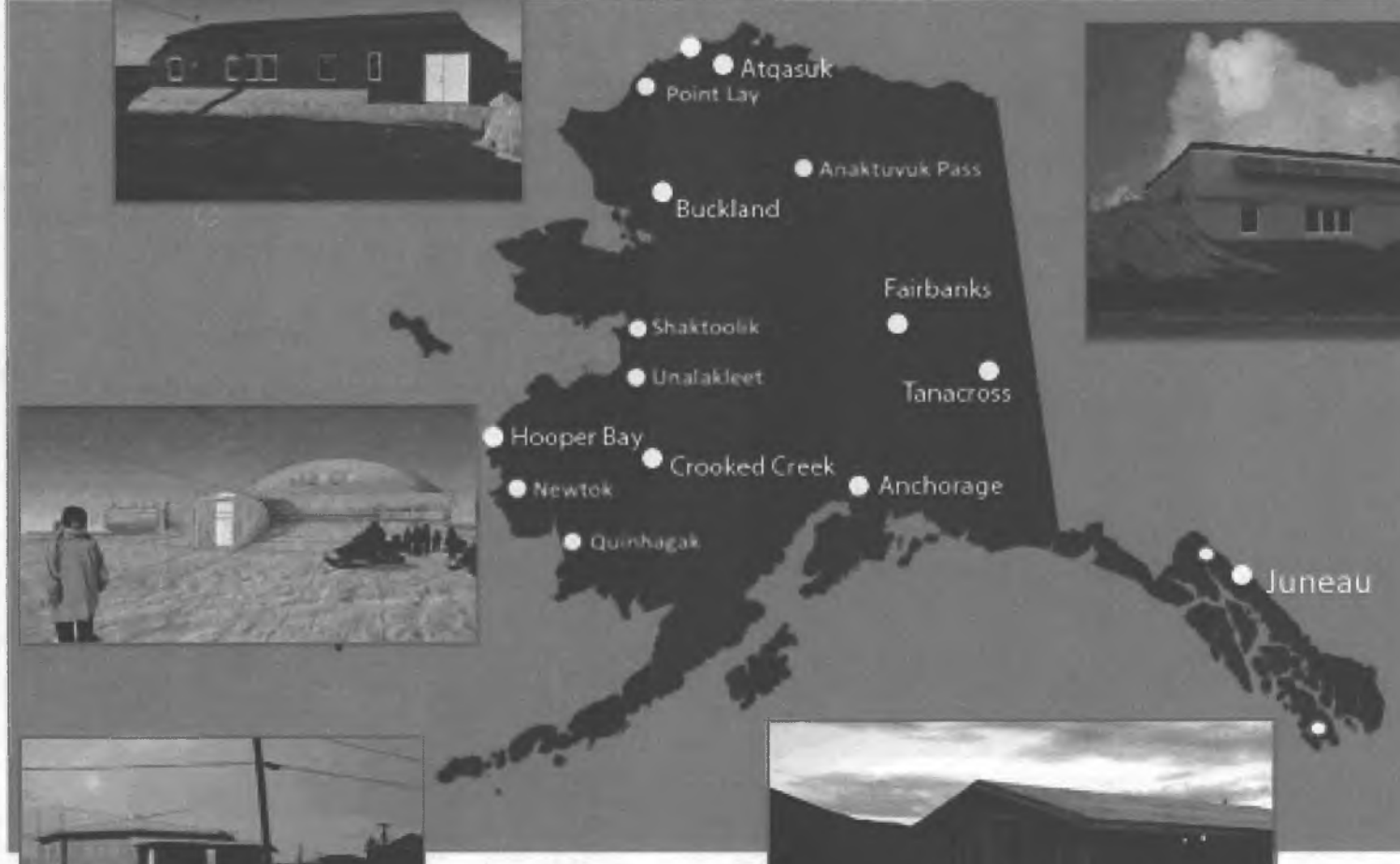
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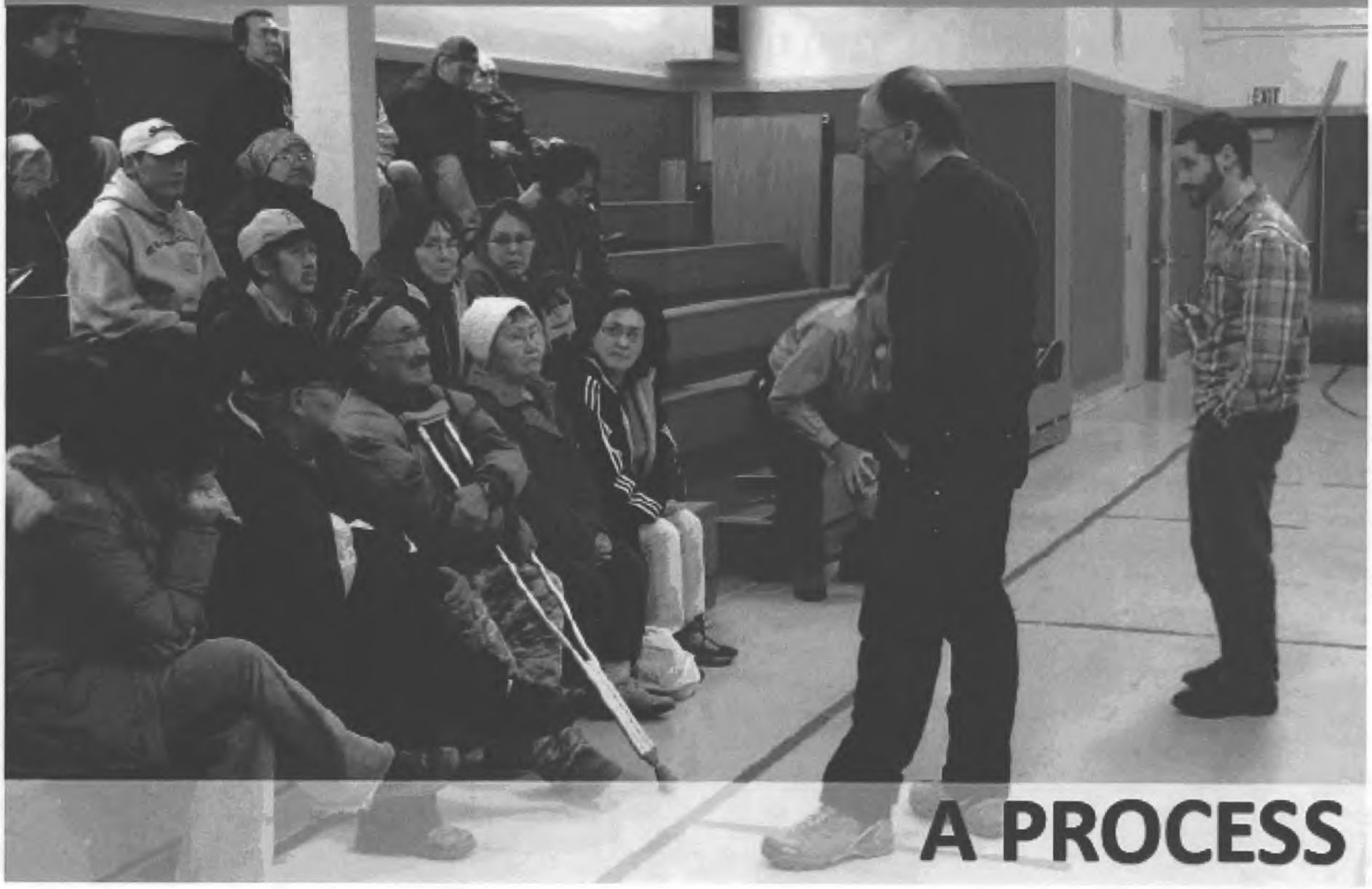








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- Heating oil $8/gallon
- 1,400 gallons/year
- New house is $750,000
- Last house built 10 years ago
- Transportation costs

Outcomes

- Cost over 50% less than new home quotes.
- Less than 150 gallons fuel in 2009
- Completed in four weeks.
- Local workforce
- Approaches net zero





COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Quinhagak

Energy efficient, healthy solutions for an aging housing stock







COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Quinhagak

Constructability



Design





Local labor



Prototype

- 171 gallons a year
- Storm-Proof
- Healthy indoor AQ



COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

The Sustainable Village at the University of Alaska Fairbanks

A development at UAF that demonstrates new building technologies and serves as a living and learning center for UAF students.

- Renewable energy
- Resource efficiency
- Food production

SPRING 2012

"A dynamic and evolving community at UAF, committed to the tenets of sustainability, demonstrating what can be achieved to secure an enduring future for people of the circumpolar north."





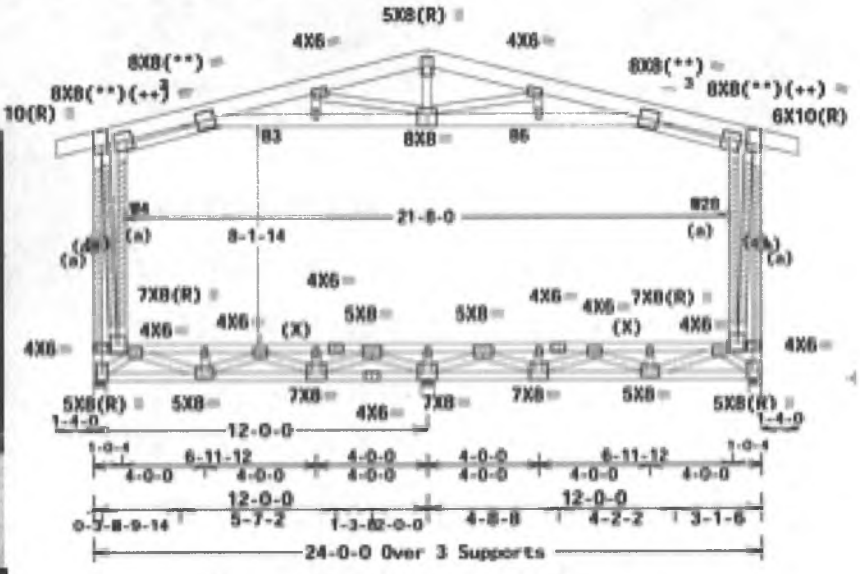
COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Innovation

Developing solutions for the future





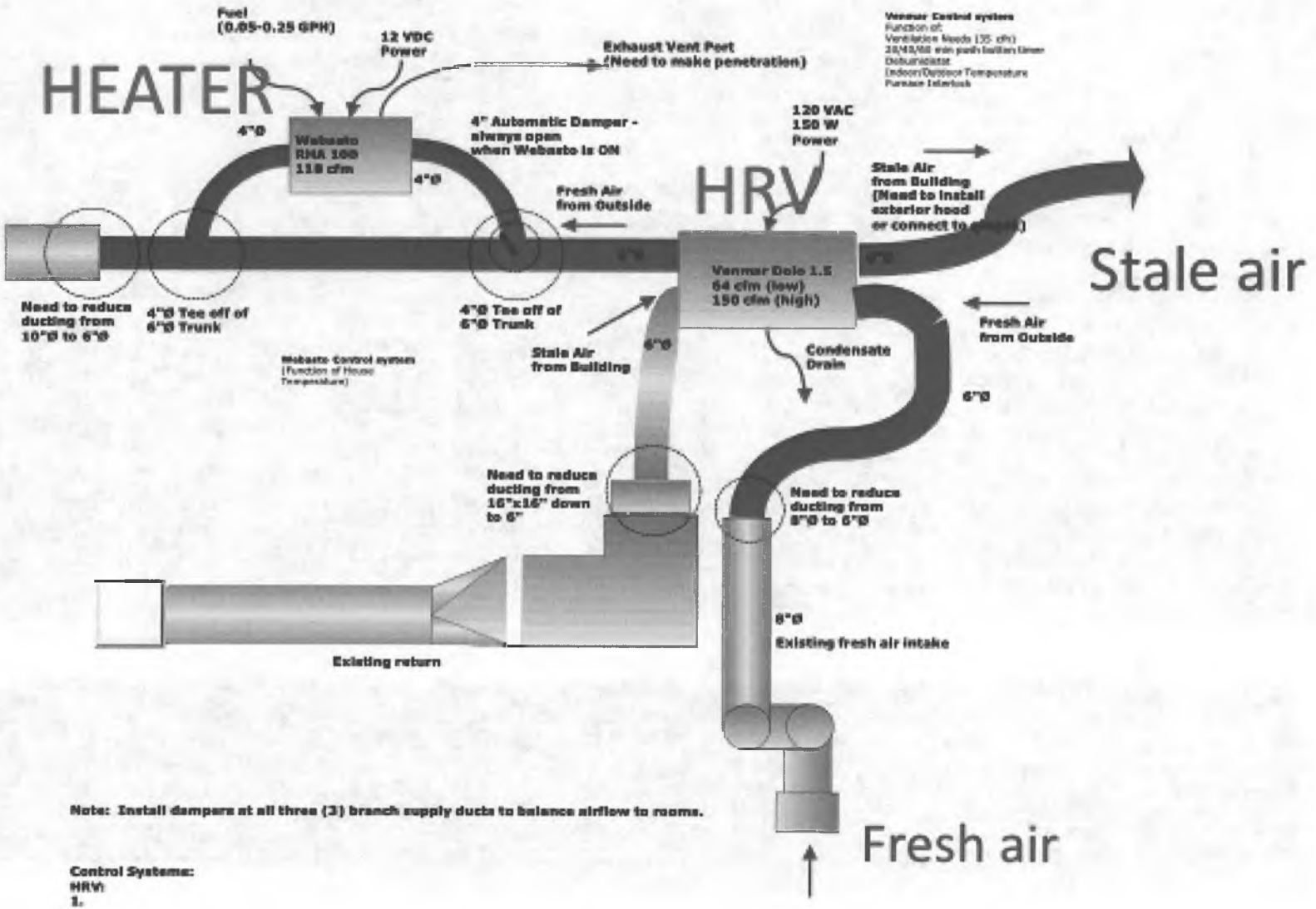




COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

BrHEAThe System



Cold Climate Housing Research Center

CCHRC

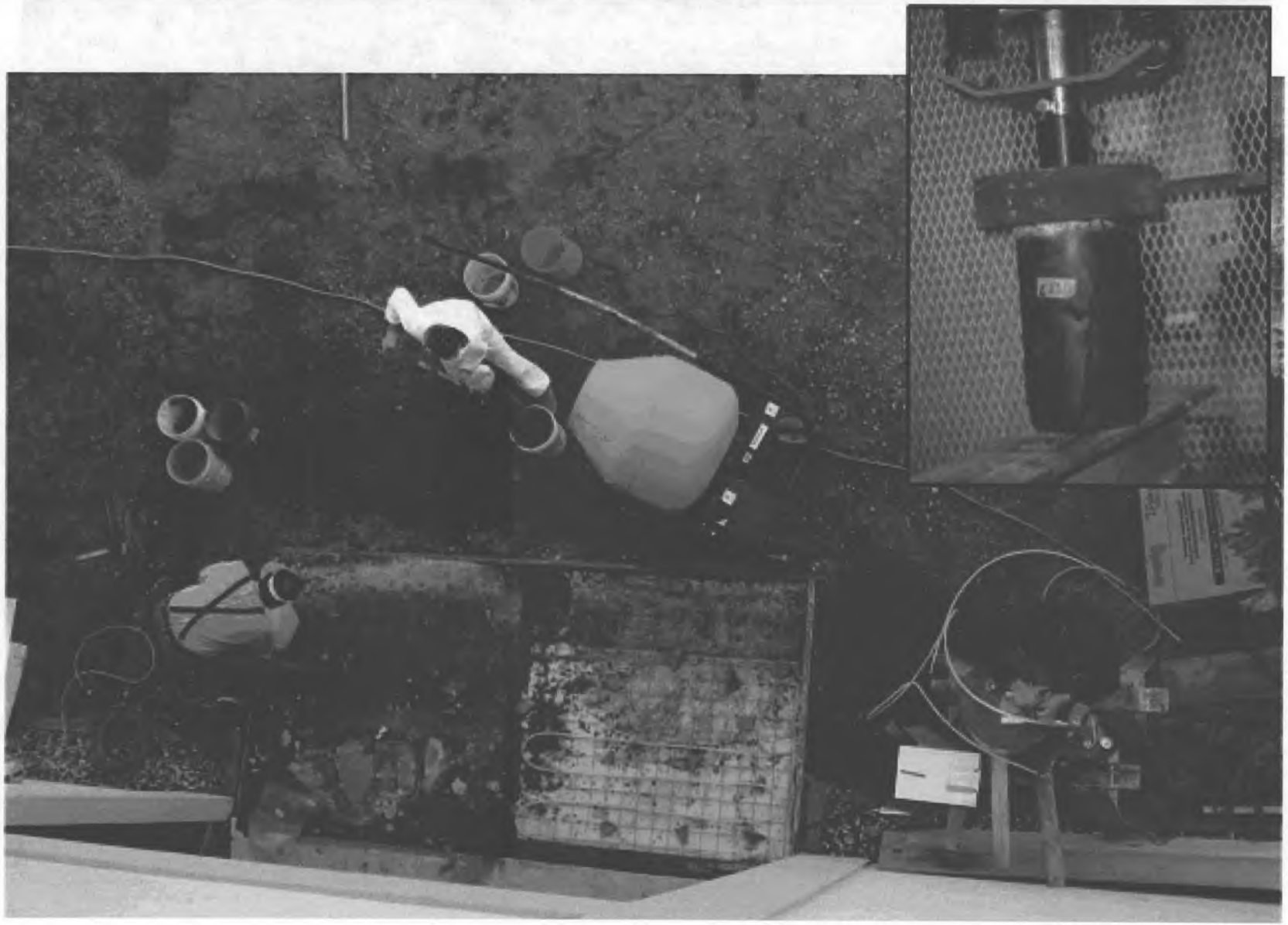
Passive Refrigeration



Cold Climate Housing Research Center

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Geopolymers



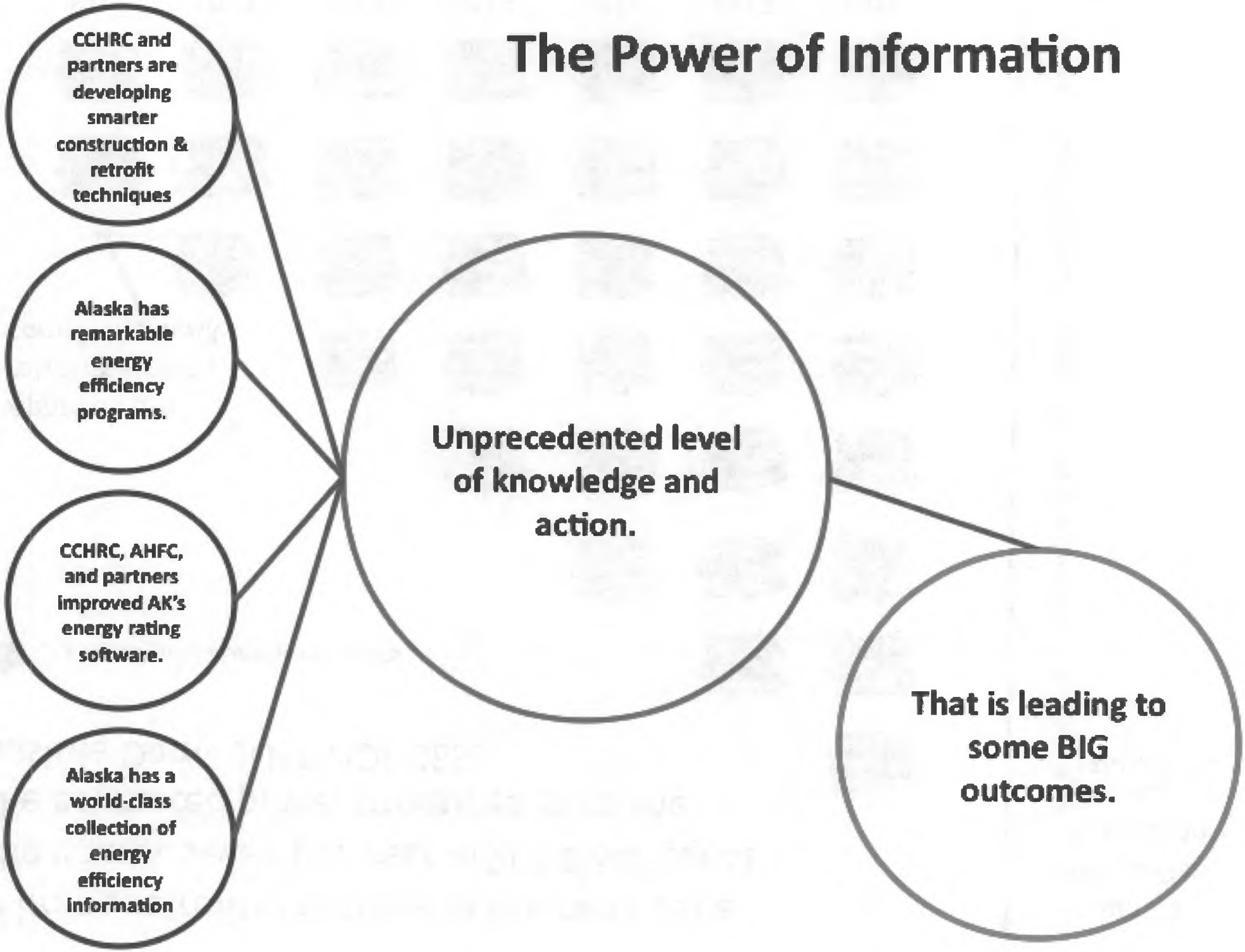
Cold Climate Housing Research Center

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Net-Zero Energy in Fairbanks

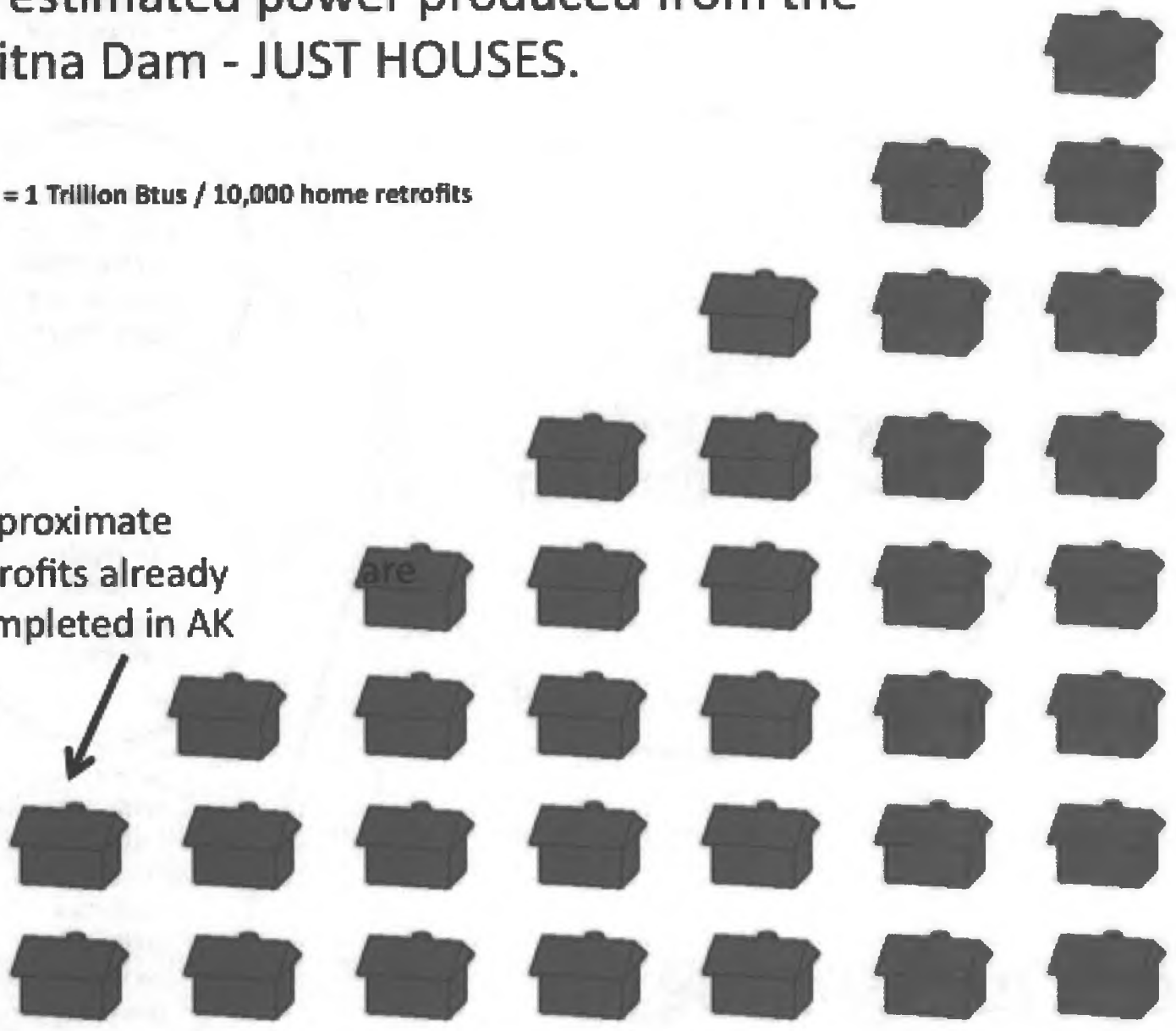


The Power of Information



If home retrofits continue at the peak pace the energy saved per year in 2018 will equal the estimated power produced from the Susitna Dam - JUST HOUSES.

= 1 Trillion Btus / 10,000 home retrofits



Annual Susitna Dam Production

~8.8 trillion BTUs projected

COLD CLIMATE HOUSING RESEARCH CENTER

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Alaska Solutions, Global Sustainability

Shelter, food, water, and stewardship of resources are of global concern.

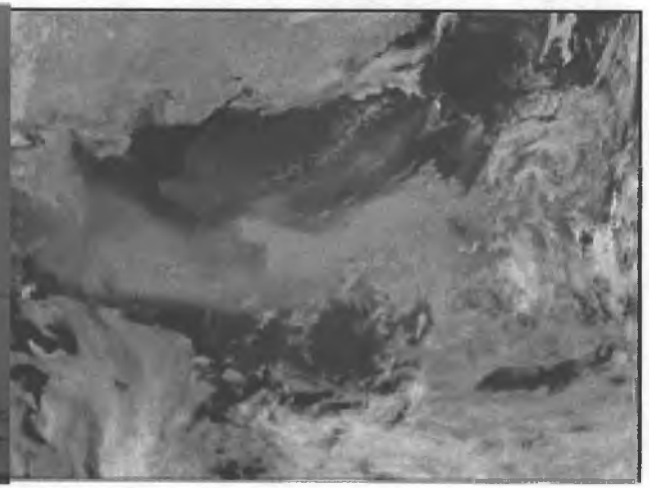
Alaskan rural communities face the challenges of tomorrow, today.

The solutions we apply here can be a model for the rest of the nation and the world.









COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Creativity of the North

Alaskans are leaders in innovation

- Surviving and thriving in the world's most difficult conditions
- First pioneers who came across the Bering Straits 10,000 y.a.
- Newer pioneers who moved West and then came North
- Creative, skilled, artistic









COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Thank You!

Follow our research on: www.cchrc.org
Blog: makinghouseswork.cchrc.org
FACEBOOK@Cold Climate Housing Research Center

Jack Hébert

President/CEO of Cold Climate Housing Research Center
Cold Climate Housing Research Center
P.O. Box 82489 Fairbanks, AK 99709

2/14/12 Presentation: Progress Report on Lake Chikuminuk Hydropower Project

<TARGET><BILL></BILL><SUBJECT>2-14-12 Presentation Progress Report on Lake Chikuminuk Hydropower Project</SUBJECT><COMM>HENE27</COMM></TARGET>

Chikuminuk Lake Hydropower

House Energy & Resources

Committee Hearing

February 2012

Nuvista Light & Electric Cooperative, Inc.

Christine Klein, Calista EVP/COO

Elaine Brown, Nuvista Executive Director

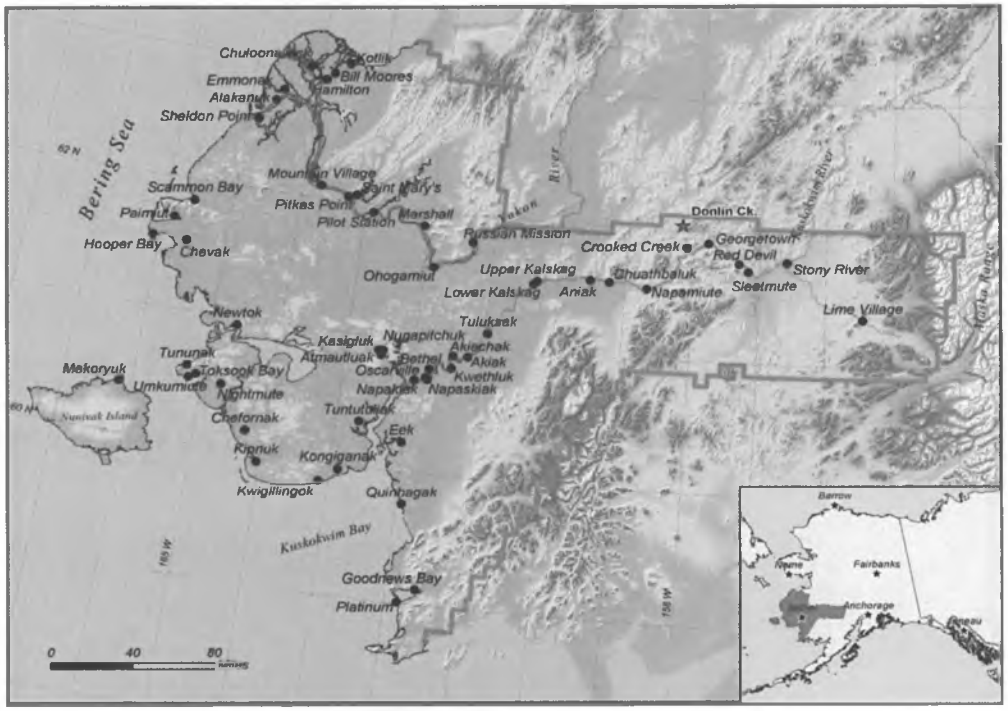
Nuvista Light & Electric Cooperative

Our Mission:

Improve the energy economics in Rural Alaska by creating energy generation and transmission infrastructure to serve, connect and enable the region to attain affordable, long term energy sustainability and self-sufficiency.

Who Are We:

A non-profit corporation guided and governed by twelve member Board of Directors from across the region: Association of Village Council Presidents (AVCP), Yukon Kuskokwim Health Corporation (YKHC), Regional Housing Authority(AVCP-RHA), Alaska Village Electric Coop (AVEC), Middle Kuskokwim Electric, Chaninnik Wind, Lower Yukon, Calista Corporation



Current Situation in the Yukon-Kuskokwim (Y-K) Delta:

- **38+ Previous Energy Studies** document region need & options, and indicate hydropower opportunities
- **Region-wide Agreement** previously difficult due to large number villages, remoteness, subsistence concerns, and high costs
- **Y-K Linking Infrastructure** lacking
- **6% Population Increase** of last 10 years much higher than estimated, and indicates growing energy needs
- **Needed PCE subsidies** —funding better used in permanent solutions (Wind turbine, Hydro, and Interties)



Nuvista Light & Electric Cooperative, Inc.

Y-K Delta Energy Costs



Nuvista Light & Electric Cooperative, Inc.

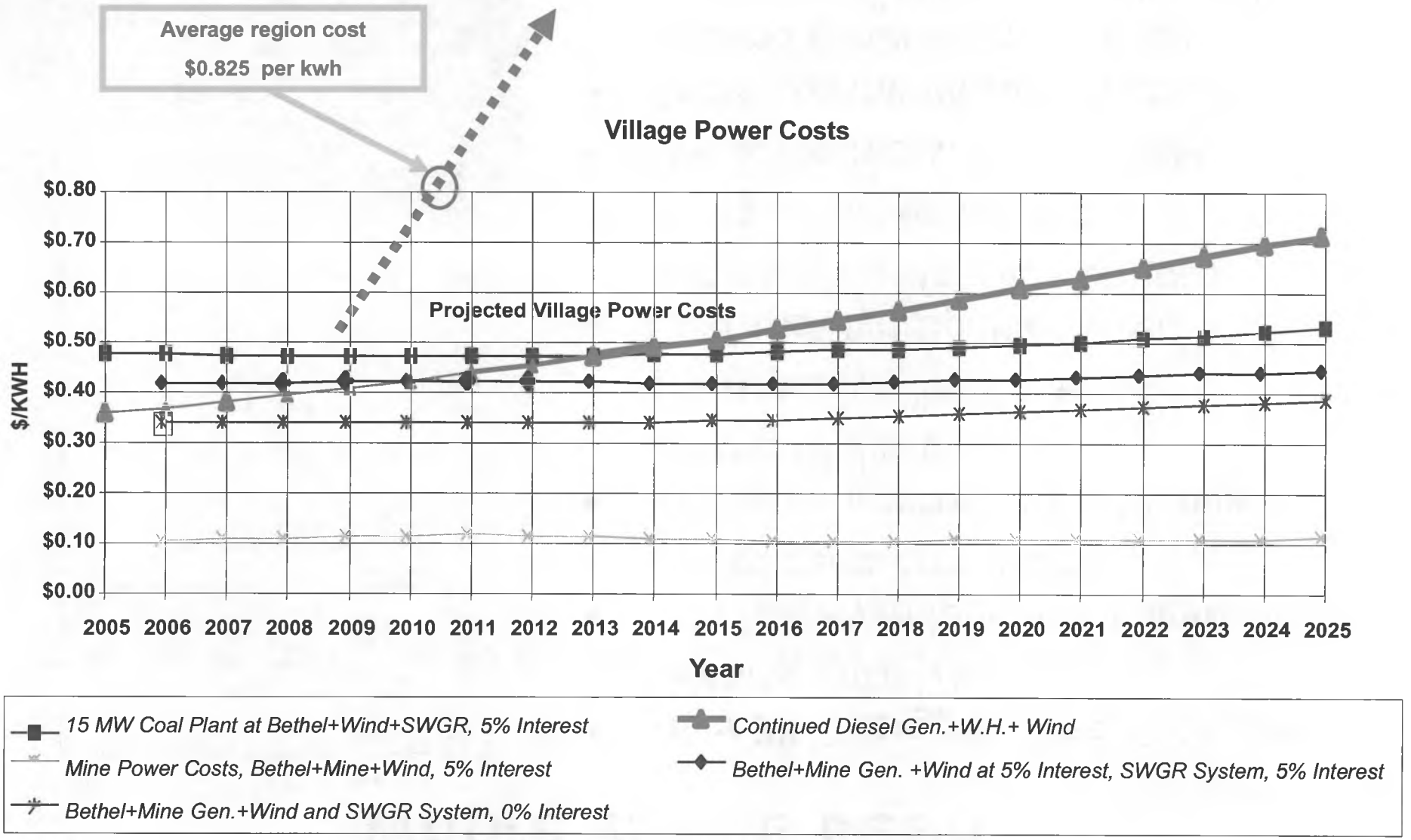
Diesel

- Primary home heating fuel cost ranges $6.00 to $10.00/gallon 2011
- Expect $7.00 to $12.00 gallon 2012
- 15-20% of family income 5 years ago went to heating. Today its 60-75%
- Families choosing food vs. heating

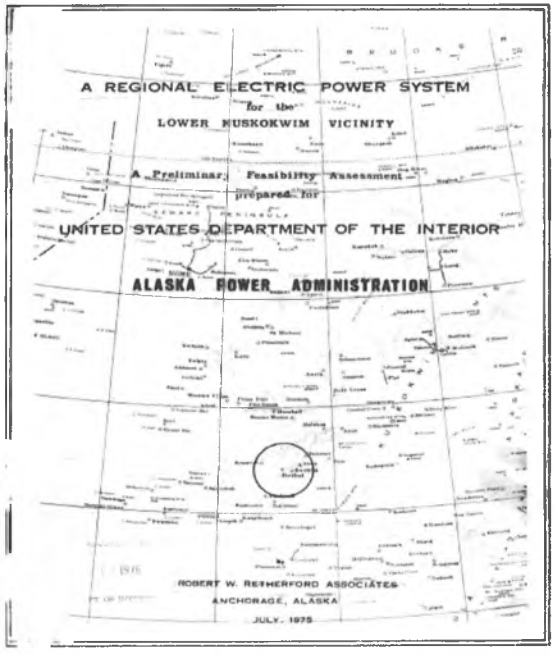
Electricity

- Generated by over 40+ small village owned diesel generators
- Home use < 50% Natl Average
- Cost = $0.58 to $1.05 kilowatt hour
- Escalating cost of energy
- PCE cannot keep up

Electrical Costs Already Far Exceed the 25 year projections made in 2005



Where We've Been




Hooper Bay

- **Over 38** Energy Studies, Data, and Reports since '75.
- > 41 largely independent aged diesel power generator plants
- Village generators use >20 million gallons of diesel year
- Transmission lines needed
- Coal and Hydropower listed repeatedly as feasible options
- Energy costs escalating
- Wind, Bio-mass, Hydro, Diesel
- Some Coastal Villages proceed w/wind generation but there's limited application in region, wind studies continue to be done.

Thank-You Legislators' "2011"

Region: Calista/AVCP Southwest Alaska

Project: Chikuminuk Hydroelectric Alternative Energy

Scope: Initiate Licensing Activities, Environmental Studies, Preliminary Engineering, & Investigations along with holding Public Meetings within Regions

Request: **$17,600,000**

Funded: **$10,000,000**

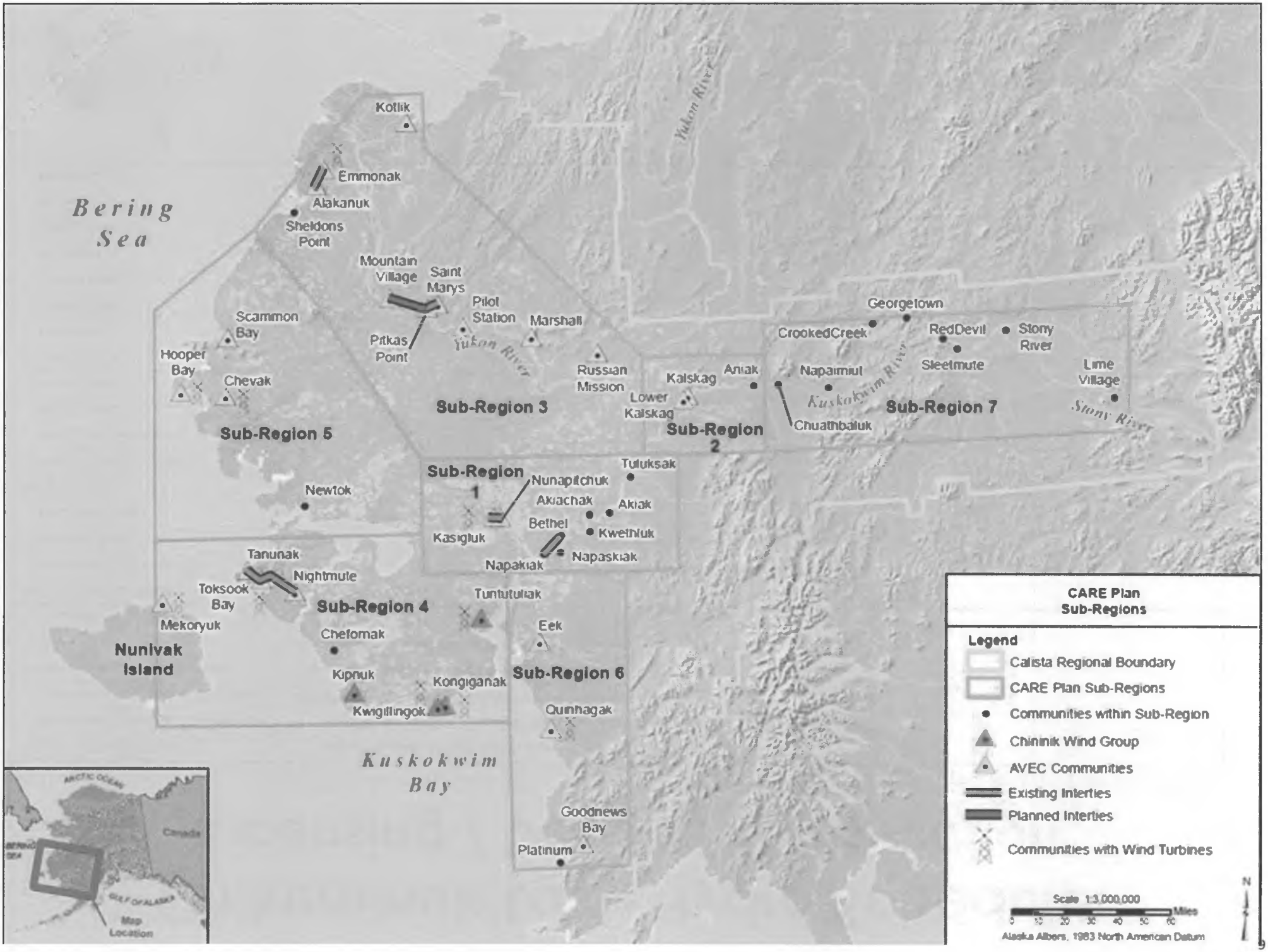


Nuvista Light & Electric Cooperative, Inc.

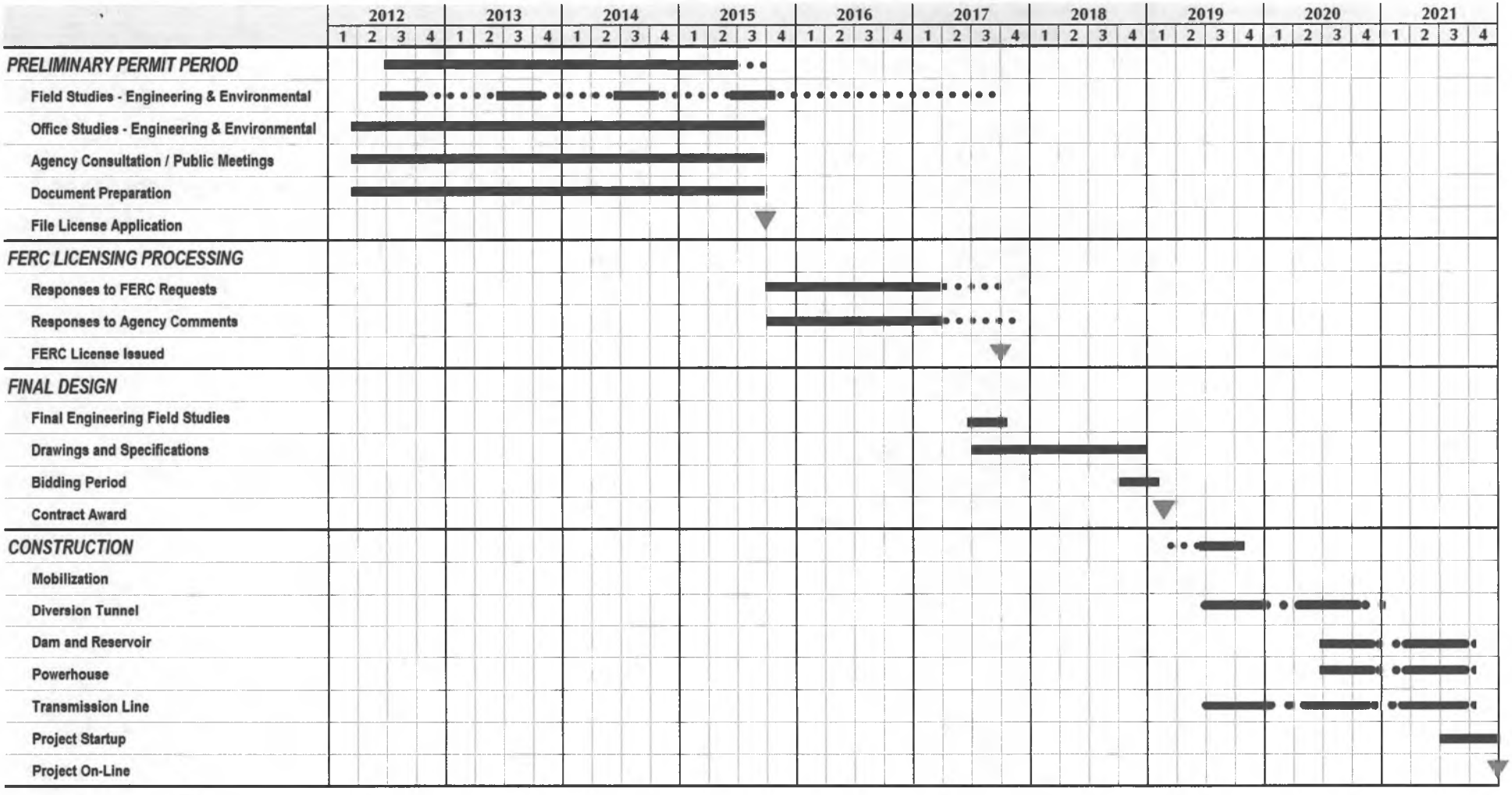
What We've Completed to date…

- **Region Public Meetings** - hydropower site alternatives presented and Chikuminuk was preferred alternative, positive, and selected – March 2011
- **Executive Director & Program Manager** nationwide recruitment and interviews, with the selection of an Alaskan from region – August 2011
- **Nuvista Team** developing scopes, public meetings, agency coordination, grant applications, technical assistance to region villages, overseeing
  - 100% Alaskan Hire, 75% Native hire, and Yupik speaking member
- **Chikuminuk Stream gages** reinstalled with USGS – Sept 2011
- **Comprehensive region wide alternative energy plan** underway integrating past and future work to guide future development
- **Region Intertie System** plan developed and applying for project grants
- Engineering Request for Proposals and Consultants Selected October 2011
- **Engineering Agreement** with Hatch Engineering signed – January 2012
  - Many Alaskan Subcontractors: companies from Fairbanks, Anchorage, Wasilla and Bethel




Bering Sea
Kotlik
Emmonak
Alakanuk
Sheldons Point
Mountain Village
Saint Marys
Pilot Station
Pitkas Point
Marshall
Yukon River
Scammon Bay
Hooper Bay
Chevak
Russian Mission
Kalskag
Lower Kalskag
Aniak
Sub-Region 5
Sub-Region 3
Sub-Region 2
Sub-Region 1
Sub-Region 4
Sub-Region 6
Sub-Region 7
Georgetown
CrookedCreek
RedDevil
Stony River
Sleetmute
Napaimiut
Kuskokwim River
Lime Village
Chuathbaluk
Tuluksak
Nunapitchuk
Akiachak
Akiak
Bethel
Kwethluk
Kasigluk
Napakiak
Napaskiak
Newtok
Tanunak
Nightmute
Toksook Bay
Mekoryuk
Nunivak Island
Tuntutuliak
Eek
Chefornak
Kipnuk
Kongiganak
Kwigillingok
Quinhagak
Kuskokwim Bay
Goodnews Bay
Platinum
Canada
Gulf of Alaska
Map Location
CARE Plan Sub-Regions
Legend
Calista Regional Boundary
CARE Plan Sub-Regions
Communities within Sub-Region
Chininik Wind Group
AVEC Communities
Existing Interties
Planned Interties
Communities with Wind Turbines
Scale 1:3,000,000
Miles
0 10 20 30 40 50 60
Alaska Albers, 1983 North American Datum
N

Chikuminuk Lake Hydro Schedule: Licensing / Design / Construction



Nuvista Light & Electric Cooperative, Inc.

Continuous Activity

Intermittent Activity

TBD (based on design, permits & weather)

Planned Activity Schedule for 2012

- **February 2012**
  - Preliminary FERC Permit Application for Chikuminuk Lake Hydro project
  - Request to FERC to use the Alternative Licensing Process (ALP)
  - DNR Informational Meeting – Project & Team Introduction
- **March 2012**
  - Agency Meetings Introducing Chikuminuk Project, discussing initial study gap analysis results, and early start to field study plans.
  - Wood Tikchik Advisory Council Meeting
  - March 27-29 AVCP Annual Regional Housing Authority Conference in Bethel to update the public on project status
- **April 2012**
  - April 11-13 Yukon-Kuskokwim Health Corp Meetings update on project
  - FERC Permit Preliminary Application Document (PAD) for Chikuminuk
- **May/October 2012**
  - Joint Agency/Public Scoping Meetings for Chikuminuk Hydroelectric
  - Preliminary Engineering and Dual Field Season Reconnaissance

Chikuminuk Project Phases:

Hydroelectric Energy Project Tasks	*Lead*	*Schedule*	*Funding*	*Cost (millions)*
1. Initiate Licensing Activities, field geo-environmental studies, preliminary engineering, investigations and holding public meetings within the regions	Nuvista, FERC	2011 2012	State Private	$10.0M
2. Complete Licensing Application, Environmental Studies, Engineering	Nuvista AEA	2011 2015	State	$7.6M
3. Transmission rights-of-ways surveys, and land easements	Nuvista DOI/BLM	2012- 2015	State DOI	$7.83M
4. Final Designs, Permitting, Design Modifications, and Bidding	Nuvista AEA	2016 2018+	AIDEA, BIA Bonds	$35.25M
5. Hydropower and transmission system project Construction	TBD	2018 2022	Mix, DOE Bonds	$391.7 M
(-10 to +25%) Total Project Estimated Cost:	TBD	2012 2022	Mixture	**$483M**

Thank-You Legislators



Alternative Energy for Southwest Alaska

Nuvista Light & Electric Cooperative, Inc.

2/23/12 Written Testimony on the Southeast Integrated Resource Plan by Larry Edwards, Greenpeace (Sitka Field Office)

<TARGET><BILL></BILL><SUBJECT>2-23-12 Written Testimony on the Southeast Integrated Resource Plan by Larry Edwards, Greenpeace (Sitka Field Office)</SUBJECT><COMM>HENE27</COMM></TARGET>

Updated Testimony on the Southeast IRP — to House Energy Committee hearing, Feb. 23, 2012

Larry Edwards, Greenpeace (Sitka Field Office), 747-7557, ledwards@greenpeace.org

Thank you Mr. Chairman. I am Larry Edwards, a long-time Sitka resident speaking for Greenpeace. This is an update to written comments I sent following your Feb. 8 meeting.

The draft Southeast Integrated Resource Plan (IRP) proposes converting 80% of the region's space heating to biomass in 10 years. Cost? Half-a-billion-dollars. (IRP Vol. II at 17-15). While calling for this massive biomass program, the plan dismissed heat pumps and related technologies from any notable role, based on what are multiple instances of misinformation.

For example, the claim that air source heat pumps generally require expensive air ducts is outdated information and no longer true. There now are inexpensive split and mini-split models, easy to install and already at work here in Southeast. The IRP totally ignored the increasing use of heat pumps in Southeast's hydro communities. Here in Sitka the Forest Service office has had air-source heat pumps for around 25 years, and Blatchley Middle School is converting to them right now. There are a number of other installations, including homes. Juneau has good examples, too, including geothermal or sea-water source heat pumps as at the airport and the NOAA lab. The IRP is not credible on this topic.

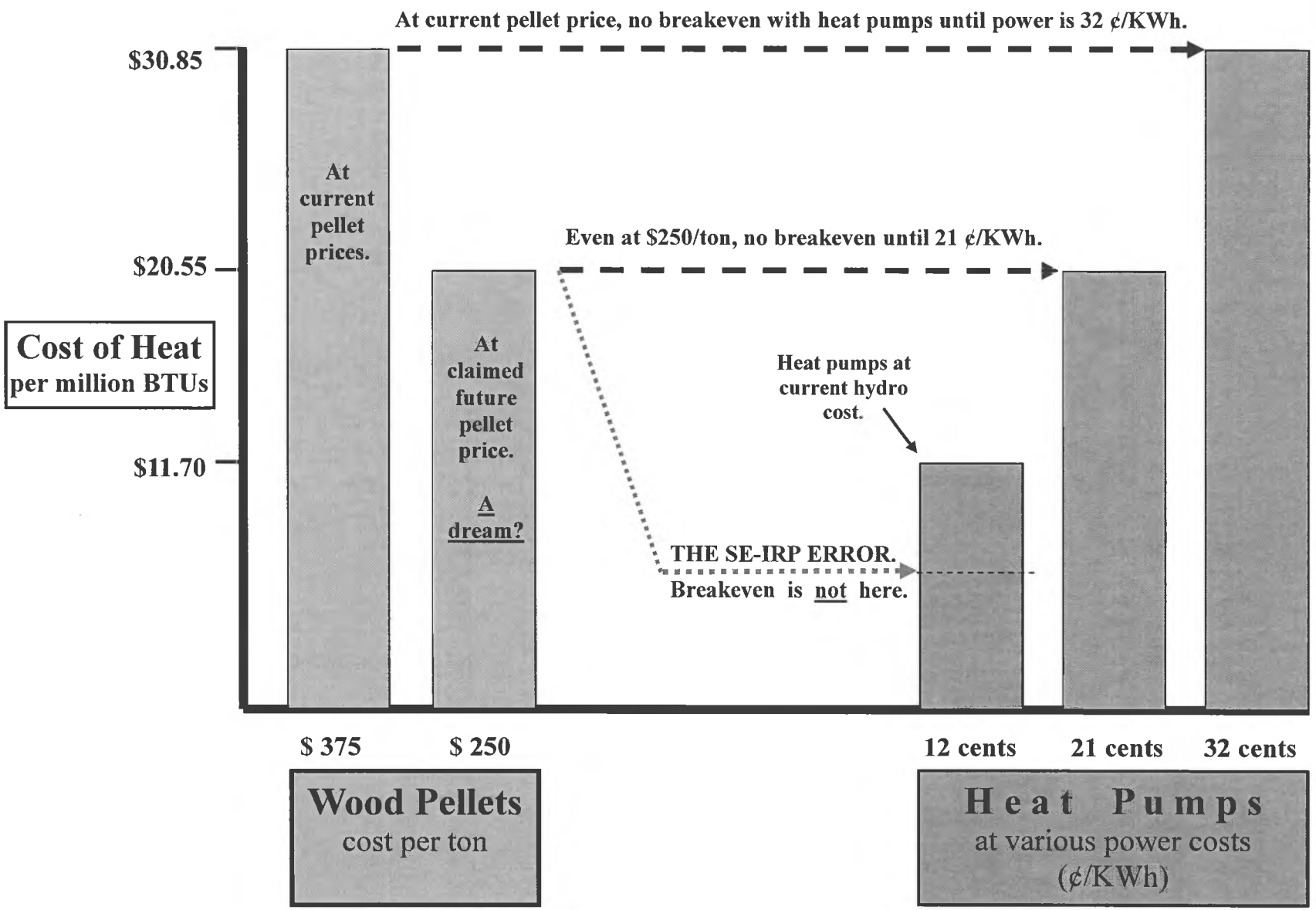
A very significant error is the IRP's claim of a 6.5 cents per Kilowatt-hour (KWh) break-even point in energy costs for wood pellets vs. heat pumps, if wood pellets are $250 per ton. (IRP Vol. II, Table 16-9). 6.5 cents per KW-hour is around half the current cost of hydro power in the region's cities. That breakeven number is grossly in error. Black & Veatch acknowledged to me last Sunday, after weeks of delay, that the breakeven at that pellet price is actually 19.5 cents/KWh. Further, at the current price for pellets – $375/ton, according to the IRP – pellets don't breakeven with heat pumps until the cost of power increases to 29 cents/KWh. In the hydro-powered communities power is currently 9 to 12 cents/KWh.

At either price for pellets, pellet stove use will be far more costly than heat pumps for the foreseeable future, and likely beyond. **The IRP missed this point entirely**, and in error it assumed and acted on the opposite conclusion. The IRP gushes over the low cost of biomass versus fuel oil heat, and misses the fact of heat pumps greatly outperforming biomass for low cost. **The Alaska Energy Authority overlooks that fact, too.** Tuesday, AEA's Biomass Program Manager, Devany Plentovich, testified to the House Economic Development Committee that wood pellet heat is much cheaper than oil heat, but she failed to disclose that in the hydro communities heat pumps are now and will be far cheaper to run than pellet stoves.

Appended to the one-page written comments I submitted to your committee on Feb. 9 is a chart (attached here too) exposing the significance of the IRP's error about the breakeven point, and the calculations. My numbers are very close to but slightly higher than Black & Veatch's corrected numbers, just mentioned. So my chart is now closely validated.

These gross errors in the IRP — which result in the least-cost heat pump option being summarily dismissed from consideration — should be declared fatal. They necessitate preparing a thoroughly *revised draft* of the Southeast IRP. **This plan is not ready to go to a final version — the public needs to be able to comment on a reasonable, complete and fair draft.**

A final point is that the hydropower communities can be converted from both their existing electric resistance and fuel oil heating to heat pumps, with very little burden or even a gain for existing hydro systems. **We need a 10-year program for conversion to heat pumps and related technologies, not such a program for biomass.** *For example:* In Sitka in 2008, already 38% (and now more) of residential heat was by electric resistance. Converting those homes to heat pumps would cut power consumption enough to also switch all fuel oil users to heat pumps — with a large net reduction of the city's power consumption. Also, efficient seawater-source heat pumps incorporated into district heating systems, as demonstrated for decades in Scandinavia, would save even more power capacity. There, recent technology has made it economical to provide district heat even to low-density residential areas.



Correction to the Draft SE-IRP's Breakeven Points — Pellets vs. Heat Pumps.

(SE-IRP Table 16-9 has a very significant error that misled the nature of the plan.)

Prepared by Larry Edwards, 747-7557
Greenpeace — Sitka, Ak.. 9-Feb-2012

Correcting the SE-IRP Error Concerning the Economics of Heat Pumps vs. Biomass

In Table 16-9, the SE-IRP concluded that for wood pellets at $250/ton, heat from biomass is cheaper than from heat pumps if power costs over 6.5 cents/KWh (about half the current rate). That calculation is wrong by a huge amount, and has fundamentally misled the Integrated Resource Plan.

Here is the correct calculation, using the same assumptions of 80% pellet combustion efficiency and a COP of 3.0 for heat pumps:

For $250/ton pellets:	Cost per ton	Million BTU per ton	Boiler Efficiency	Cost per Million BTU	Convert to Cost per thermal-KWh	Heat Pump Efficiency: KWh(thermal) per KWh(electric)	Power Cost Breakeven for Biomass: $/KWh(elect)	Rounded Power Cost Breakeven (cents)
	$250	**15.2**	**80%**	**$20.56**	**$0.070**	**300%**	**$0.210**	**21**

The breakeven is not 6.5 cents per KWh, but 21 cents per KWh -- far more than the power cost in larger hydro-powered communties. Moreover, $250 per ton for pellets is a projected future price that may well prove to be optimistic. The current price is $375 per ton.

For $375/ton pellets:	Cost per ton	Million BTU per ton	Boiler Efficiency	Cost per Million BTU	Convert to Cost per thermal-KWh	Heat Pump Efficiency: KWh(thermal) per KWh(electric)	Power Cost Breakeven for Biomass: $/KWh(elect)	Rounded Power Cost Breakeven (cents)
	$375	**15.2**	**80%**	**$30.84**	**$0.105**	**300%**	**$0.316**	**32**

At either pellet price (and $375/ton seems more realistic), and with power far less costly than the breakeven points, operate than pellet stoves. heat pumps will be far more economical to operate than biomass heat in at least Juneau, Ketchikan, Wrangell, Petersburg and Sitka.

The SE-IRP draft therefore made a huge blunder in dismissing heat pumps for economic reasons and in not considering them in depth. This error severely affected the nature of the SE-IPR and the options it considered in detail.
BOTTOM LINE: A new SE-IRP draft is needed.

Prepared by Larry Edwards, 747-7557
Greenpeace — Sitka, Ak. 9-Feb-2012
ledwards@greenpeace.org

When evaluating these conclusions, it should also be kept in mind that the heat pump study did not evaluate heat pumps against all possible heating alternatives. Wood pellets and perhaps propane options from the North Slope would appear to be preferred options for the smaller communities in Southeast Alaska. Table 16-9 presents a comparison of the pellet costs and the electricity costs from Table 6-6 for heat pumps with a COP of 3.0. These alternatives are dependent, however, on the development of a local wood pellet industry and, in the case of propane, the development of an Alaskan market and transport system capable of delivering propane from the North Slope to Southeast Alaska.

Table 16-9 Wood Pellet Heating Option Cost Comparison on a $/MBtu Equivalent Basis

FUEL	UNIT COST	$/MBTU	BREAKEVEN UNIT COST WITH WOOD PELLETS AT $250/TON
Wood Pellets (average lower 48 price, proxy for Southeast Alaska price with local pellet production)	$250/ton	$19.53	NA
Wood Pellets (current price per ton based on cost of 40 pound bags in Juneau)	$375/ton	$29.30	$250/ton
Electric (Juneau 2010 average)[1]	4 cents/kWh	$11.72	6.5 cents/kWh
Electric (Metlakatla, 2010 average, lowest Southeast Alaska community)[1]	3.07 cents/kWh	$8.99	6.5 cents/kWh
Electric (Tenakee Springs, 2010 average, highest Southeast Alaska community after PCE)[1]	10.50 cents/kWh	$30.79	6.5 cents/kWh

Note: Assumes 80 percent appliance efficiency for wood pellets with a COP of 3.0 for heat pumps.

[1]Adjusted for a COP of 3.0.

This table purports to show the breakeven point between wood pellet heat and heat pumps.

Concerning the Southeast IRP — for the House Energy Committee hearing, Feb. 9, 2012

Larry Edwards, Greenpeace (Sitka Field Office), 747-7557, ledwards@greenpeace.org

Time ran out before I could be called to give these comments verbally, so I am submitting in writing.

Thank you Mr. Chairman. I am Larry Edwards, a long-time Sitka resident speaking for Greenpeace.

The draft plan proposes converting 80% of the region's space heating to biomass in 10 years, at a cost of over half-a-billion-dollars. (IRP at 17-15).

While calling for this massive biomass program, heat pumps and related technologies were not investigated in detail, having been summarily dismissed by the plan as options because of factual errors made in writing it.

For example, the claim that "air source heat pumps generally require expensive ducts" is outdated information and no longer true.

A significant error was an economic one, with the draft plan claiming that the breakeven point in wood pellet costs vs. the cost of power to run heat pumps is at 6.5 cents per KW-hour — or around half the current cost of hydro power in the larger communities. That claim is grossly in error. At the current price for pellets ($375/ton, according to the plan), pellets don't breakeven with heat pumps until the cost of power increases to about 32 cents per KW-hour. Even at an optimistic future price for pellets that the plan claims — $250/ton — the breakeven does not occur until the cost of electric power increases to 21 cents per KW-hour. (In the hydropower communities power is currently 9 to 12 cents/KWh.)

At either price for pellets, pellet stoves will cost far more to operate than heat pumps for the foreseeable future, and likely beyond. The SE-IRP missed this point entirely, and in error assumed and acted on the opposite conclusion.

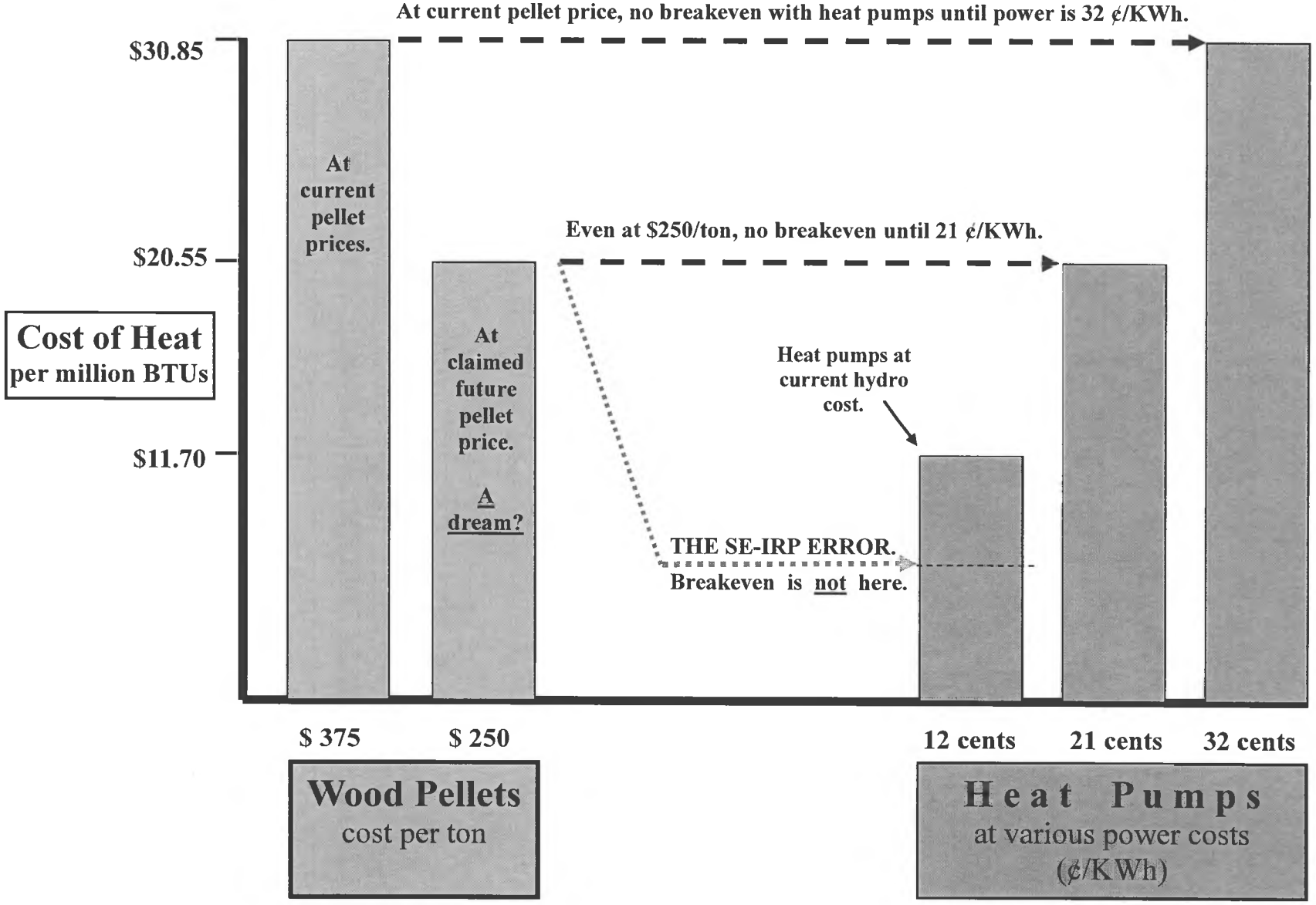
Today I provided your Committee staff with a file [also attached to this written submission] containing a chart which illustrates this, and a spreadsheet showng how these corrective calculations were made. The file also contains two tables from the SE-IRP; one for the power cost breakeven point for biomass vs. electric resistance heat, and the other for biomass vs. heat pumps. (See: Southeast IRP Tables 16-7 and 16-9).

Please note that in both tables, the breakeven is said to be 6.5 cents per KW-hour. This simply can't be! Clearly one of those tables is wrong, and as I have shown it is the biomass vs. heat pumps one.

I flagged this error at the IRP's January 5 committee meeting. Others have raised this error since then, but AEA has publicly said there is no error. I have corresponded with the consultant, Black & Veatch, which also denies an error — but which tacitly refuses to address the evidence of the error that is evident when comparing the two tables. And after weeks, Black & Veatch has failed to provide me with its breakeven point calculations. If there is no error, this unresponsiveness is odd indeed.

It seems clear that this gross, highly significant error — which results in the least-cost heat pump option being summarily dismissed from consideration — necessitates preparation of a revised draft Southeast IRP. **This plan is not ready to go to a final version — the public needs to be able to comment on a reasonable draft.**

A final point is that with heat pumps, the hydropower communities can be converted from both the existing electric resistance and fuel oil heating to heat pumps without additional burden on existing hydro capacity. **We need a 10-year program for this, not biomass.** In Sitka, for example, in 2008 38% of residential heat was by electric resistance (more now). Conversion of that to heat pumps with a COP of 3 would cut power consumption enough to also move all fuel oil users to heat pumps — and still reduce the city's power consumption. Also, incorporating more efficient seawater-source heat pumps with downtown district heating systems (as in Scandinavia) would save even more power capacity.



Correction to the Draft SE-IRP's Breakeven Points — Pellets vs. Heat Pumps.

(SE-IRP Table 16-9 has a very significant error that misled the nature of the plan.)

Prepared by Larry Edwards, 747-7557
Greenpeace — Sitka, Ak.. 9-Feb-2012

Correcting the SE-IRP Error Concerning the Economics of Heat Pumps vs. Biomass

In Table 16-9, the SE-IRP concluded that for wood pellets at $250/ton, heat from biomass is cheaper than from heat pumps if power costs over 6.5 cents/KWh (about half the current rate). That calculation is wrong by a huge amount, and has fundamentally misled the Integrated Resource Plan.

Here is the correct calculation, using the same assumptions of 80% pellet combustion efficiency and a COP of 3.0 for heat pumps:

For $250/ton pellets:	Cost per ton	Million BTU per ton	Boiler Efficiency	Cost per Million BTU	Convert to Cost per thermal-KWh	Heat Pump Efficiency: KWh(thermal) per KWh(electric)	Power Cost Breakeven for Biomass: $/KWh(elect)	Rounded Power Cost Breakeven (cents)
	$250	**15.2**	**80%**	**$20.56**	**$0.070**	**300%**	**$0.210**	**21**

The breakeven is not 6.5 cents per KWh, but 21 cents per KWh -- far more than the power cost in larger hydro-powered communties. Moreover, $250 per ton for pellets is a projected future price that may well prove to be optimistic. The current price is $375 per ton.

For $375/ton pellets:	Cost per ton	Million BTU per ton	Boiler Efficiency	Cost per Million BTU	Convert to Cost per thermal-KWh	Heat Pump Efficiency: KWh(thermal) per KWh(electric)	Power Cost Breakeven for Biomass: $/KWh(elect)	Rounded Power Cost Breakeven (cents)
	$375	**15.2**	**80%**	**$30.84**	**$0.105**	**300%**	**$0.316**	**32**

At either pellet price (and $375/ton seems more realistic), and with power far less costly than the breakeven points, operate than pellet stoves. heat pumps will be far more economical to operate than biomass heat in at least Juneau, Ketchikan, Wrangell, Petersburg and Sitka.

The SE-IRP draft therefore made a huge blunder in dismissing heat pumps for economic reasons and in not considering them in depth. This error severely affected the nature of the SE-IPR and the options it considered in detail.
BOTTOM LINE: A new SE-IRP draft is needed.

Prepared by Larry Edwards, 747-7557
Greenpeace — Sitka, Ak. 9-Feb-2012
ledwards@greenpeace.org

Table compares electric resistance heat to wood pellets.

Table 16-7 Wood Pellet Heating Option Cost Comparison on a $/MBtu Equivalent Basis

FUEL	UNIT COST	$/MBTU	BREAKEVEN UNIT COST WITH WOOD PELLETS AT $250/TON
Wood Pellets (average lower 48 price, proxy for SE Alaska price with local pellet production)	$250/ton	$19.53	NA
Wood Pellets (current price per ton based on cost of 40 pound bags in Juneau)	$375/ton	$29.30	$250/ton
Heating Oil	$3.50/gallon	$31.55	$2.09/gallon
Propane	$3.70/gallon	$50.644	$1.43/gallon
Electric (Juneau 2010 average)	12 cents/kWh	$35.89	6.5 cents/kWh
Electric (Metlakatla, 2010 average, lowest Southeast Alaska community)	9.2 cents/kWh	$27.51	6.5 cents/kWh
Electric (Tenakee Springs, 2010 average, highest Southeast Alaska community after PCE)	31.51 cents/kWh	$94.24	6.5 cents/kWh

Note: Assumes 80 percent appliance efficiency for wood pellets, fuel oil, and propane calculations, 98 percent efficiency for electricity.

Table 16-7 also compares the cost of electricity at three price levels with wood pellets. The table indicates that at a cost of 12 cents/kWh, which was the average residential price in Juneau in 2010, the cost of electricity would be $35.89/MBtu (assuming 98 percent efficiency for a furnace or boiler). The break even price of electricity versus wood pellets at $250/ton is approximately $6.5 cents/kWh. Based on the high (30.5 cents/kWh) and low (9.2 cents/kWh) residential electricity costs of Southeast communities in 2010, the cost of electricity ranges from a high of $91.21/MBtu to a low of $27.51/MBtu. These break even costs are for fuel only and do not include the cost of new or retrofit stoves and furnaces needed to burn wood pellets.

A recent study by Haa Aaní, LLC evaluated the total program costs and benefits of converting seven schools in the Ketchikan School District from electric power to wood pellets. The study estimated that it would cost $2.5 million to convert the seven schools, but this would create a 20 percent savings on fuel costs each year (assuming a pellet cost of $300/ton) and the program would have a payback of less than 12 years if no State grant funds were put into the program. The volume of wood pellet fuel required for the program would account for one-fourth of the volume needed to support a local wood pellet production mill and could be a catalyst for creating a local production industry. The study concluded that there were ample opportunities for the conversion of additional commercial buildings to fully utilize the capacity of a wood pellet production mill. The study noted that conversion of the seven schools alone would reduce electric power requirements by 5 MW, thereby allowing other end-users the ability to utilize existing power supplies.[23]

[23] See *Ketchikan School District Pellet Boiler Systems: The Business Case*, a Power Point presentation by Nathan Soboleff, Renewable Energy Program Manager, Haa Aani, LLC and Peter Brand: PBrand BioEnergy Consulting.

When evaluating these conclusions, it should also be kept in mind that the heat pump study did not evaluate heat pumps against all possible heating alternatives. Wood pellets and perhaps propane options from the North Slope would appear to be preferred options for the smaller communities in Southeast Alaska. Table 16-9 presents a comparison of the pellet costs and the electricity costs from Table 6-6 for heat pumps with a COP of 3.0. These alternatives are dependent, however, on the development of a local wood pellet industry and, in the case of propane, the development of an Alaskan market and transport system capable of delivering propane from the North Slope to Southeast Alaska.

Table 16-9 Wood Pellet Heating Option Cost Comparison on a $/MBtu Equivalent Basis

FUEL	UNIT COST	$/MBTU	BREAKEVEN UNIT COST WITH WOOD PELLETS AT $250/TON
Wood Pellets (average lower 48 price, proxy for Southeast Alaska price with local pellet production)	$250/ton	$19.53	NA
Wood Pellets (current price per ton based on cost of 40 pound bags in Juneau)	$375/ton	$29.30	$250/ton
Electric (Juneau 2010 average)(1)	4 cents/kWh	$11.72	6.5 cents/kWh
Electric (Metlakatla, 2010 average, lowest Southeast Alaska community)(1)	3.07 cents/kWh	$8.99	6.5 cents/kWh
Electric (Tenakee Springs, 2010 average, highest Southeast Alaska community after PCE)(1)	10.50 cents/kWh	$30.79	6.5 cents/kWh

Note: Assumes 80 percent appliance efficiency for wood pellets with a COP of 3.0 for heat pumps.

(1)Adjusted for a COP of 3.0.

This table purports to show the breakeven point between wood pellet heat and heat pumps.

3/22/12 Presentation by Polarconsult Alaska, Inc.: Low Power HVDC System for Rural Alaska Applications

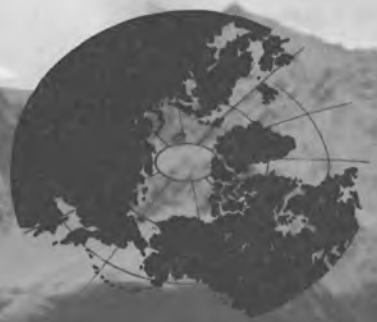
<TARGET><BILL></BILL><SUBJECT>3-22-12 Presentation by Polarconsult Alaska, Inc. Low Power HVDC System for Rural Alaska Applications</SUBJECT><COMM>HENE27</COMM></TARGET>

Low Power HVDC System for Rural Alaska Applications

Project Overview

ACEP
Alaska Center for Energy and Power

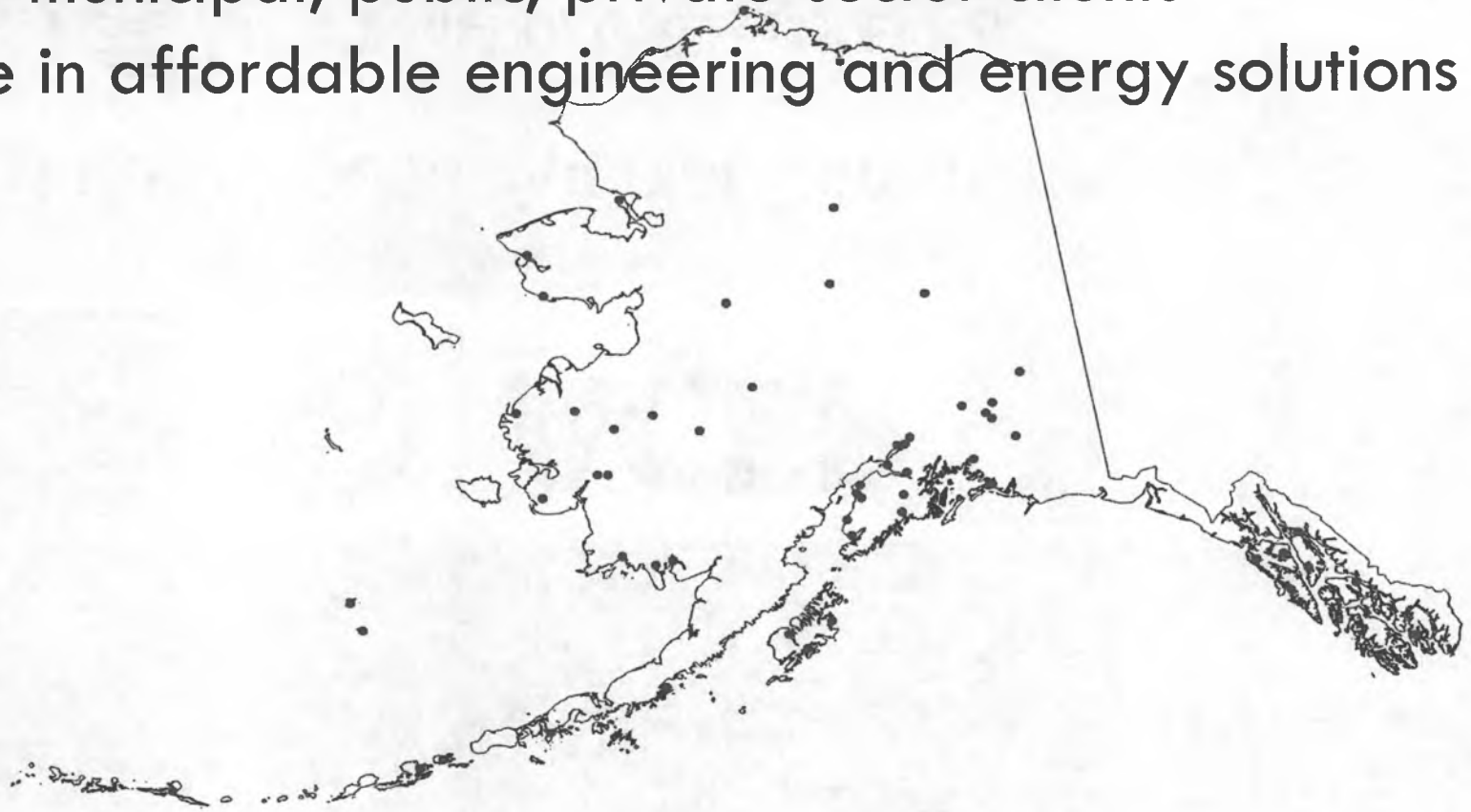
Testimony Before House Special Committee on Energy



Joel D. Groves, P.E.
polarconsult alaska, inc.
March 22, 2012

Polarconsult Background

- Anchorage-based engineering consulting firm
- Serving Alaskans since 1978
- Over 200 municipal, public, private-sector clients
- Specialize in affordable engineering and energy solutions



HVDC History

- 1880s – Edison's Pearl Street Station NYC (low voltage DC)
- 1950s – 1st modern commercial use of HVDC
- Today
  - ~30 HVDC stations in North America
  - 100+ HVDC stations worldwide



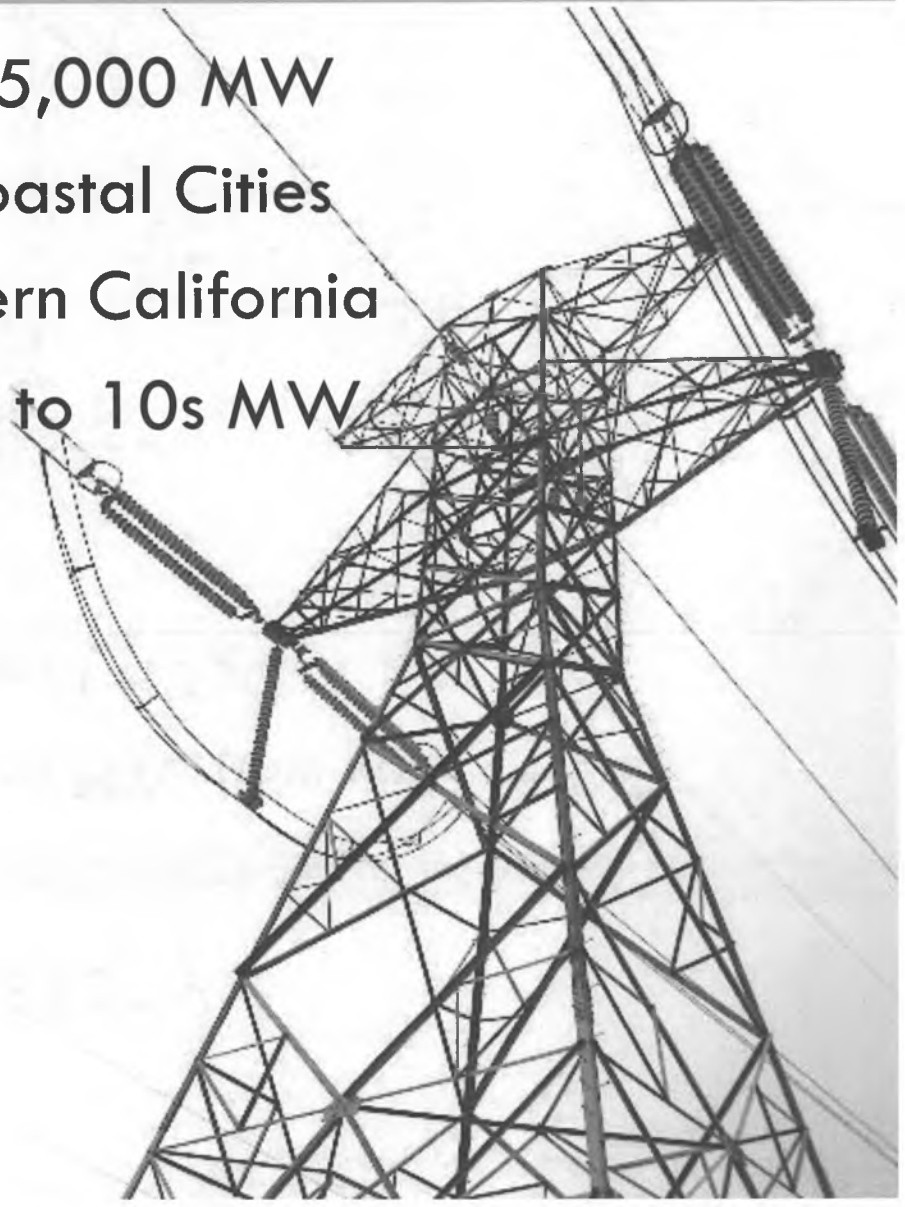


Existing HVDC Applications

- Existing HVDC systems are 50 to 5,000 MW
  - Three Gorges Dam to China's Coastal Cities
  - Columbia River System to Southern California
- Rural Alaska Loads are 100s kW to 10s MW
- **Existing Technology**

  Does Not Meet

  Rural Alaska's Needs



HVDC for Rural Alaska

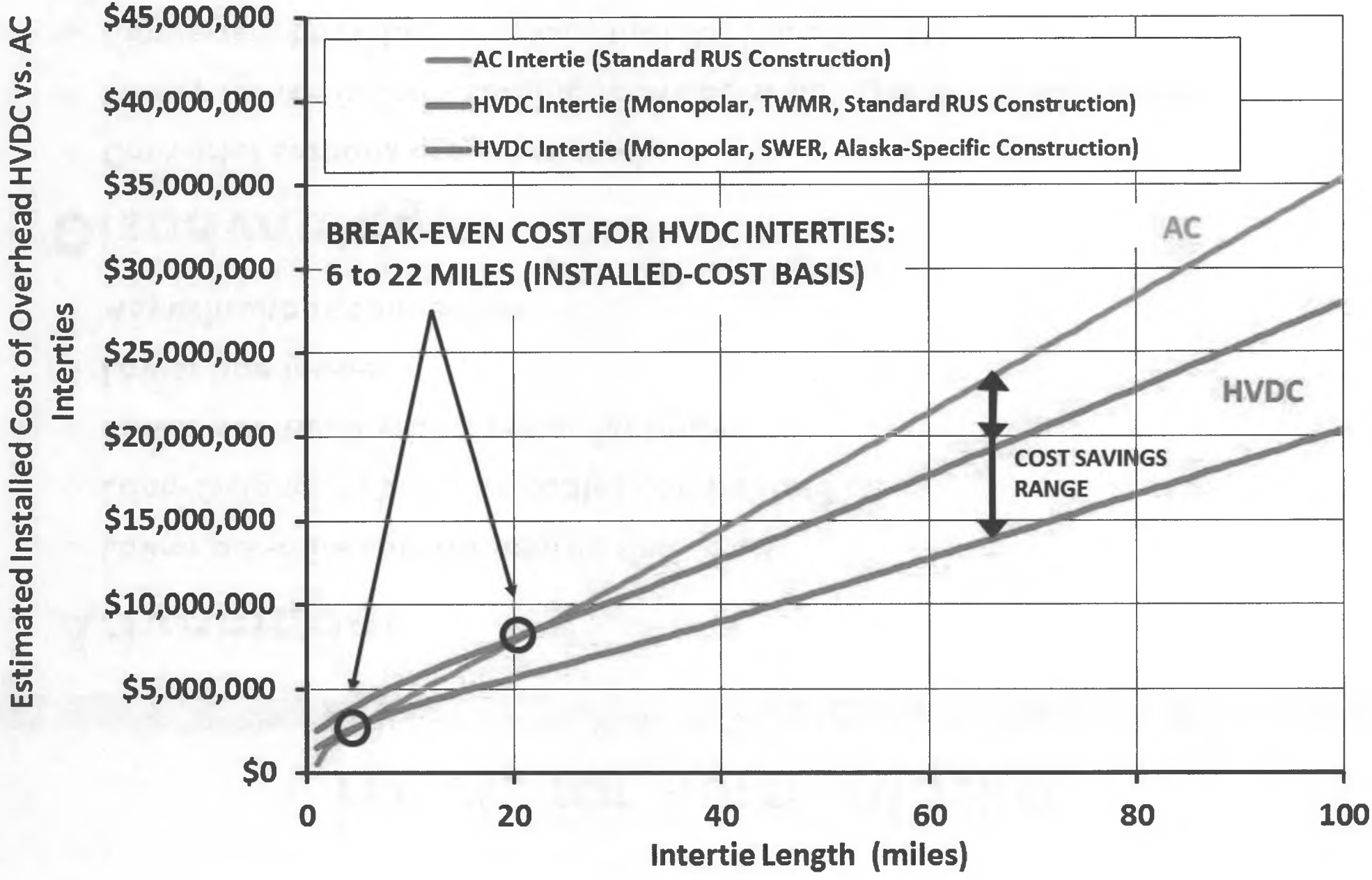
Advantages

- Lower per-mile cost for intertie line
- Long-distance submarine cables can be used
- Fewer overhead wires, better for birds
- Lower line losses
- Asynchronous connection

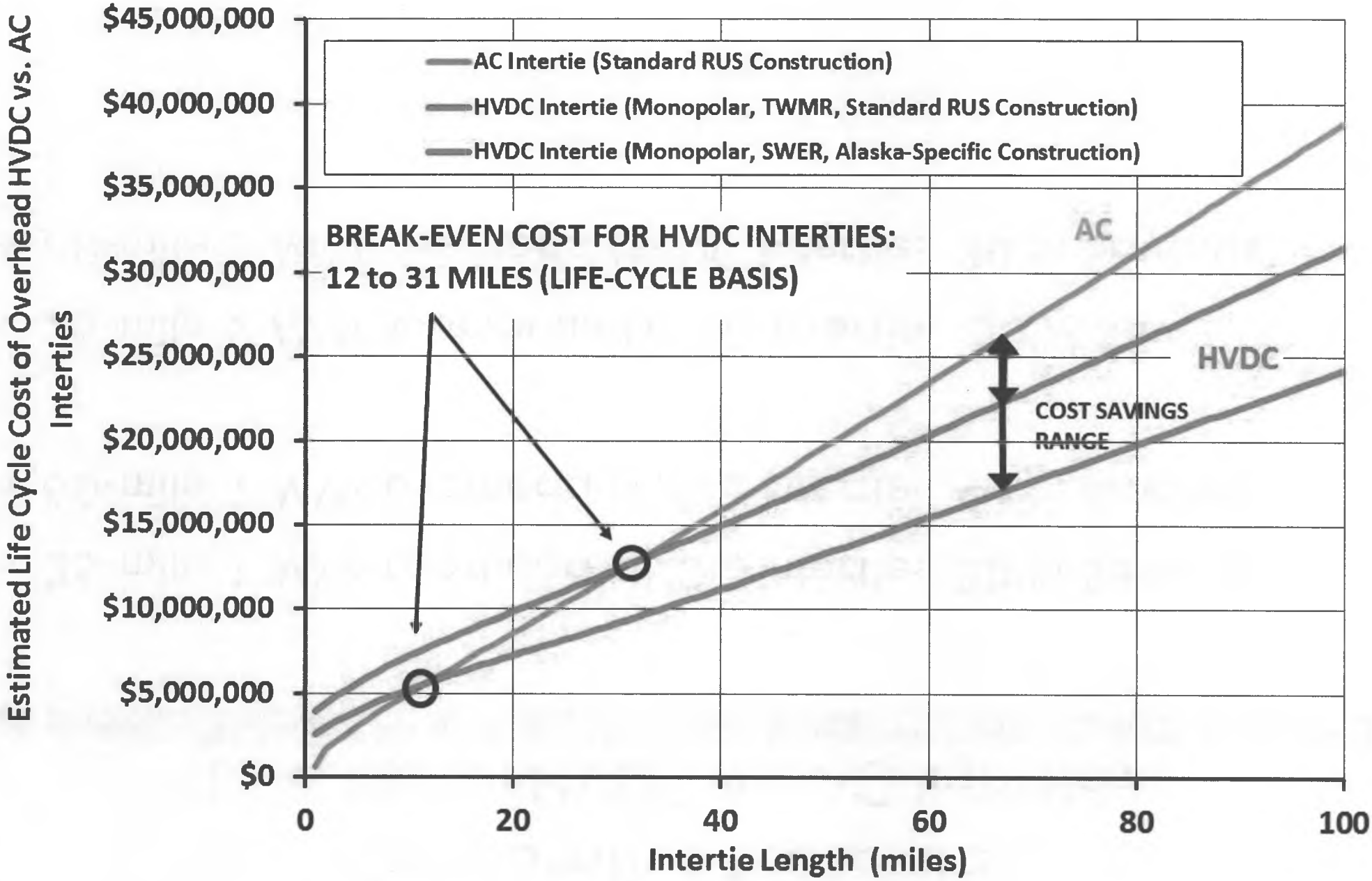
Disadvantages

- Converter stations are more costly
- Strictly transmission - serving loads between villages is expensive
- Converters have higher losses that AC transformers
- New technology – limited suppliers, lacks performance record

Rural Alaska HVDC Economics (Cap. Cost)



Rural Alaska HVDC Economics (Life Cycle)



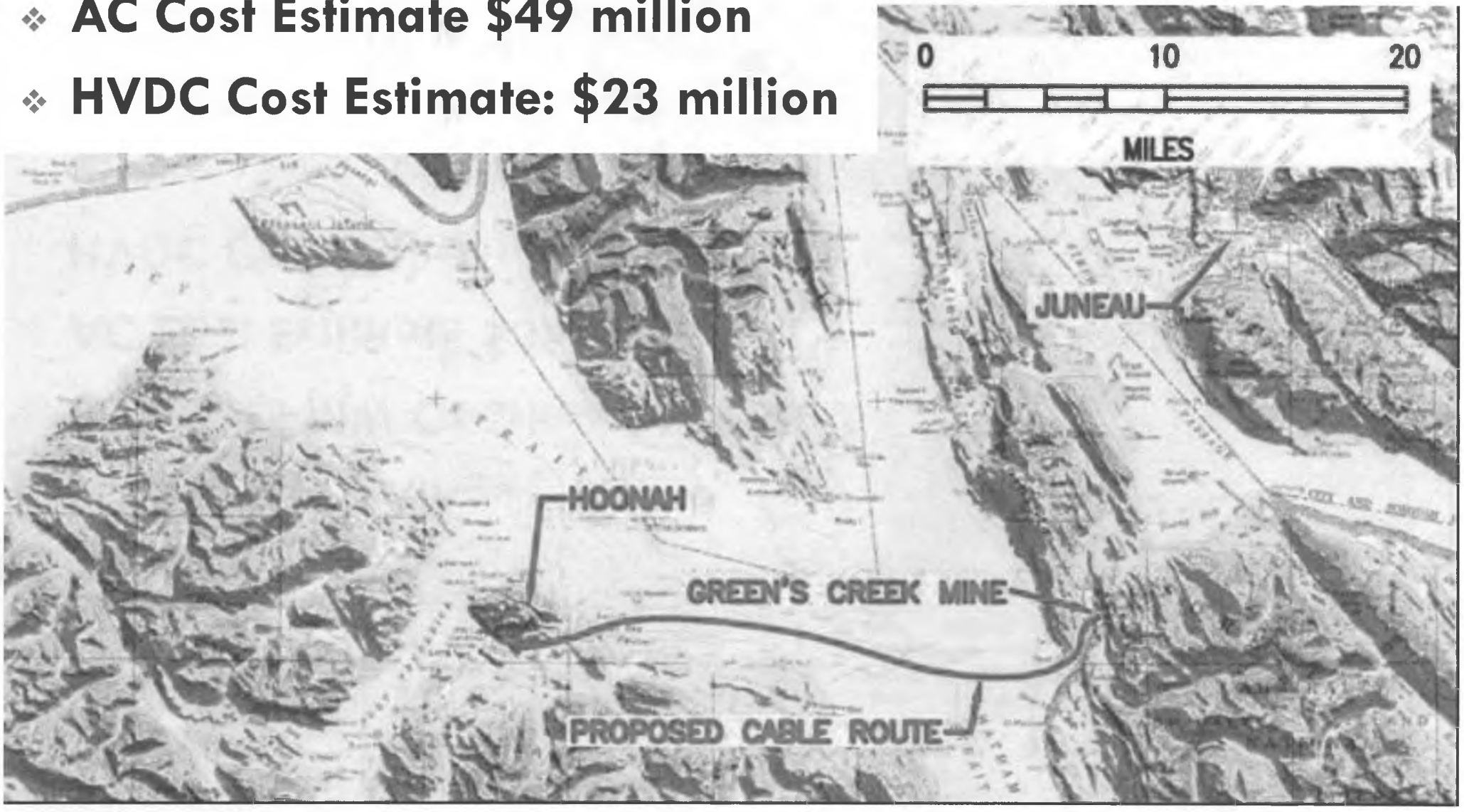
Comparative Economics
Low-Power HVDC vs. AC Interties

- 25-mile 1 MW overhead HVDC intertie: **30% Savings**
- 60-mile 1 MW overhead HVDC intertie: **40% Savings**

- 25-mile 2 MW submarine HVDC intertie: **50% Savings**
- 60-mile 5 MW overhead HVDC intertie: **30% Savings**

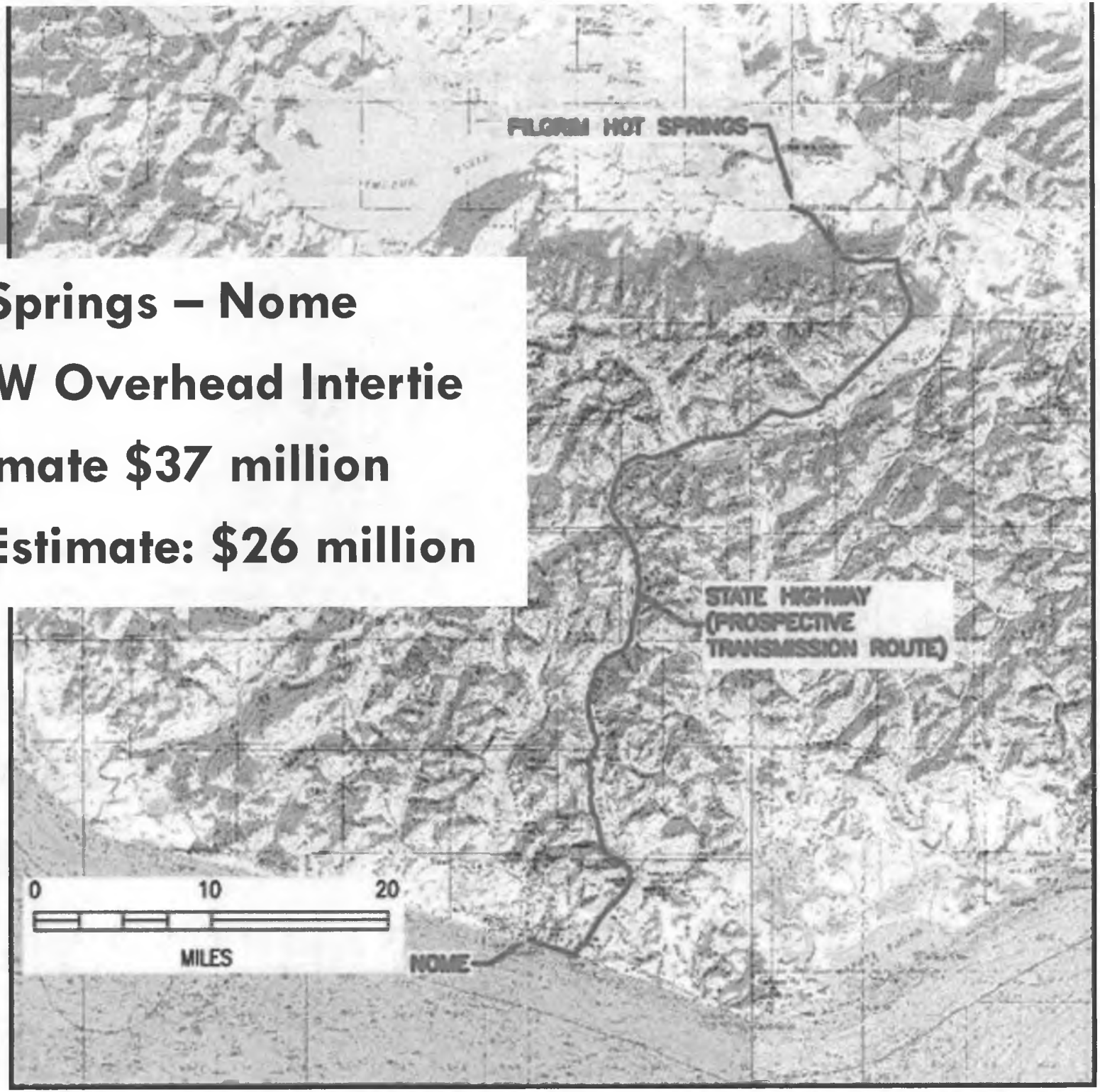
Rural Alaska HVDC Case Studies

- **AC Cost Estimate $49 million**
- **HVDC Cost Estimate: $23 million**



Rural Alaska HVDC Case Studies

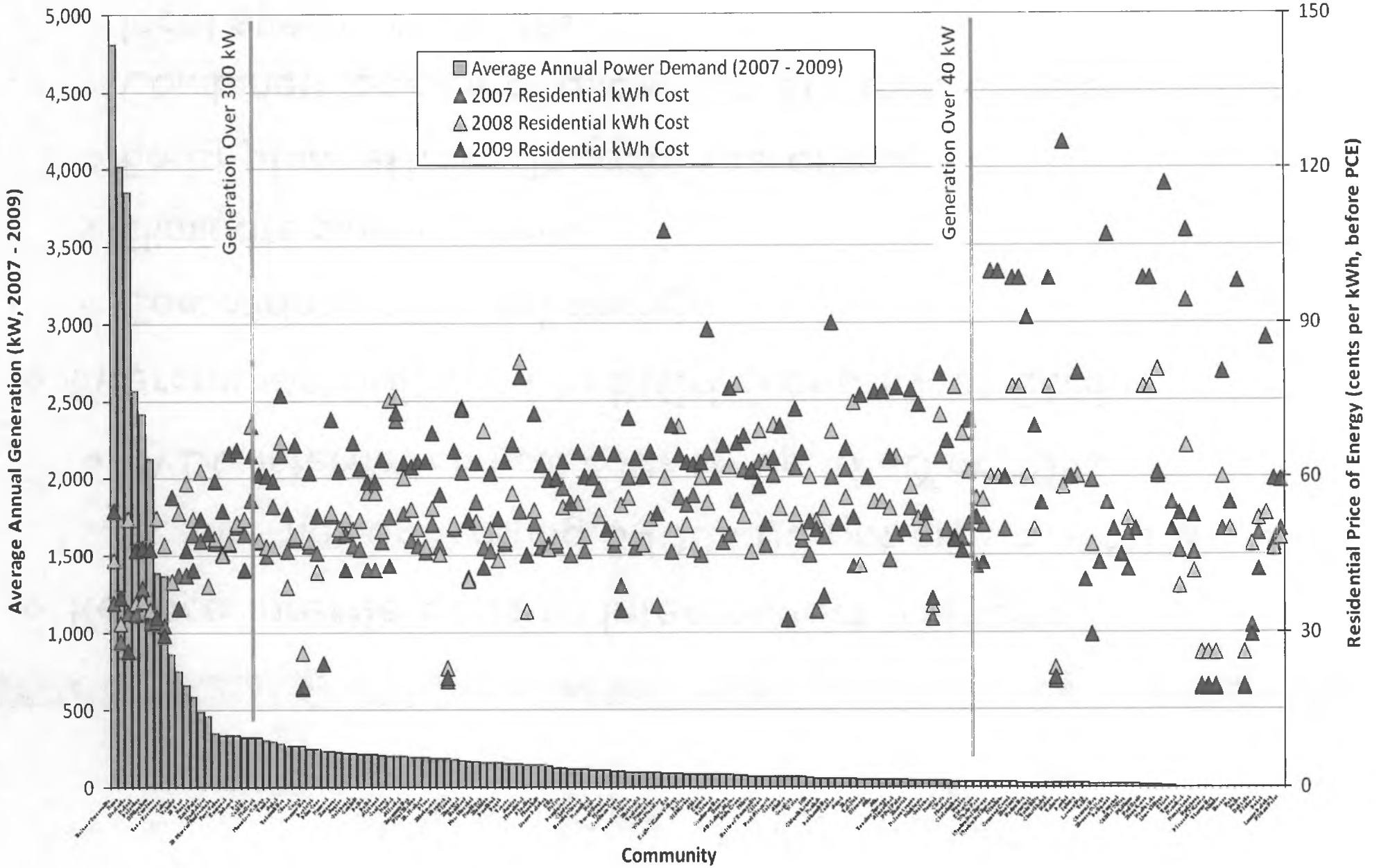
- **Pilgrim Hot Springs – Nome**
- **60-mile 5 MW Overhead Intertie**
- **AC Cost Estimate $37 million**
- **HVDC Cost Estimate: $26 million**



How does HVDC help?

- Reduce intertie costs to Interconnect Villages
  - AC interties are costing $400,000 per mile +/- 50%
  - HVDC interties can cut costs by up to 40 or 50%
- Interconnect Villages to Build Economy of Scale
  - Consolidate bulk fuel storage
  - Eliminate power plants
  - Boost plant efficiencies and operations
  - Combined loads that allow cost-effective development of local energy resources

Where do Economies of Scale Begin?

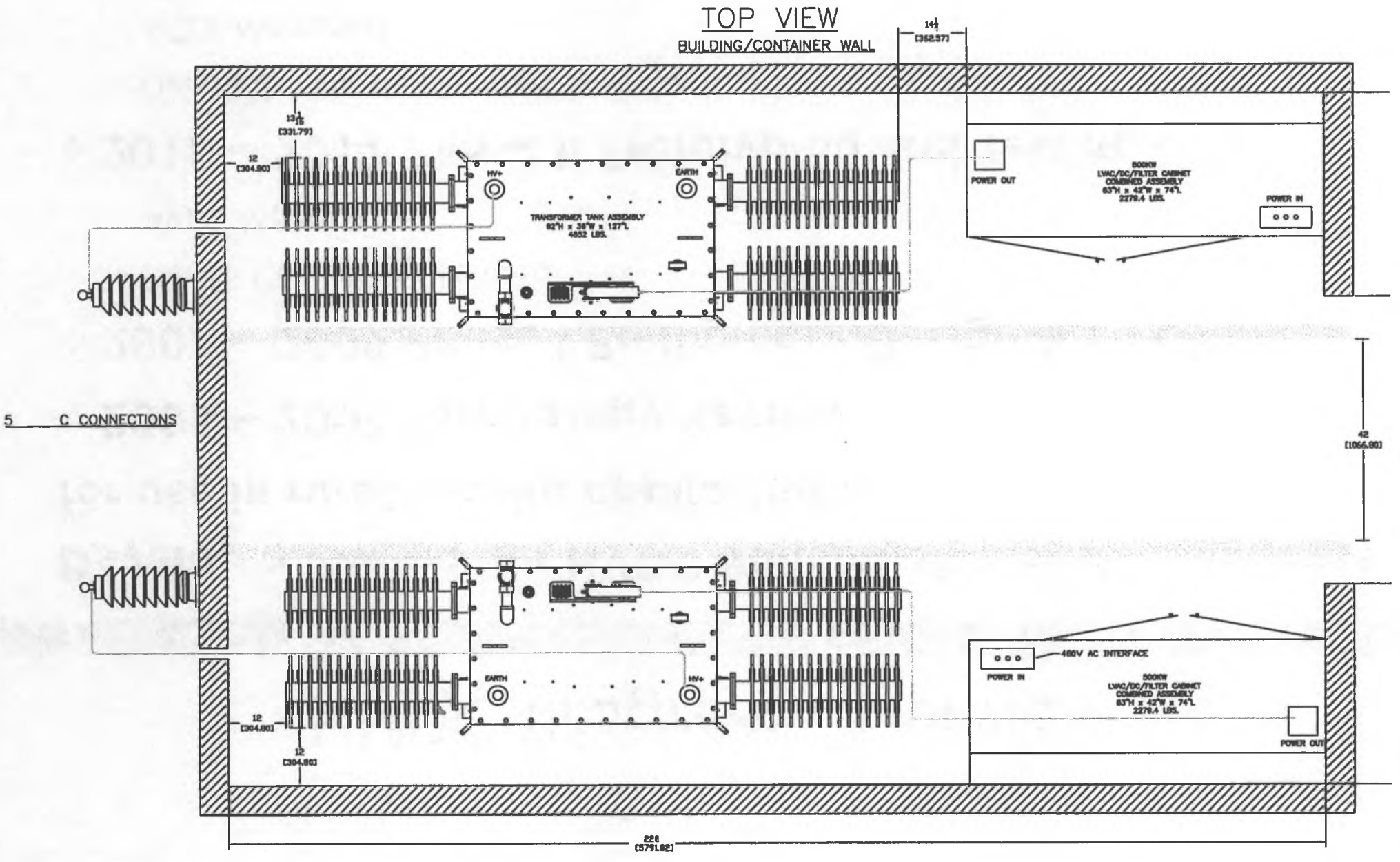


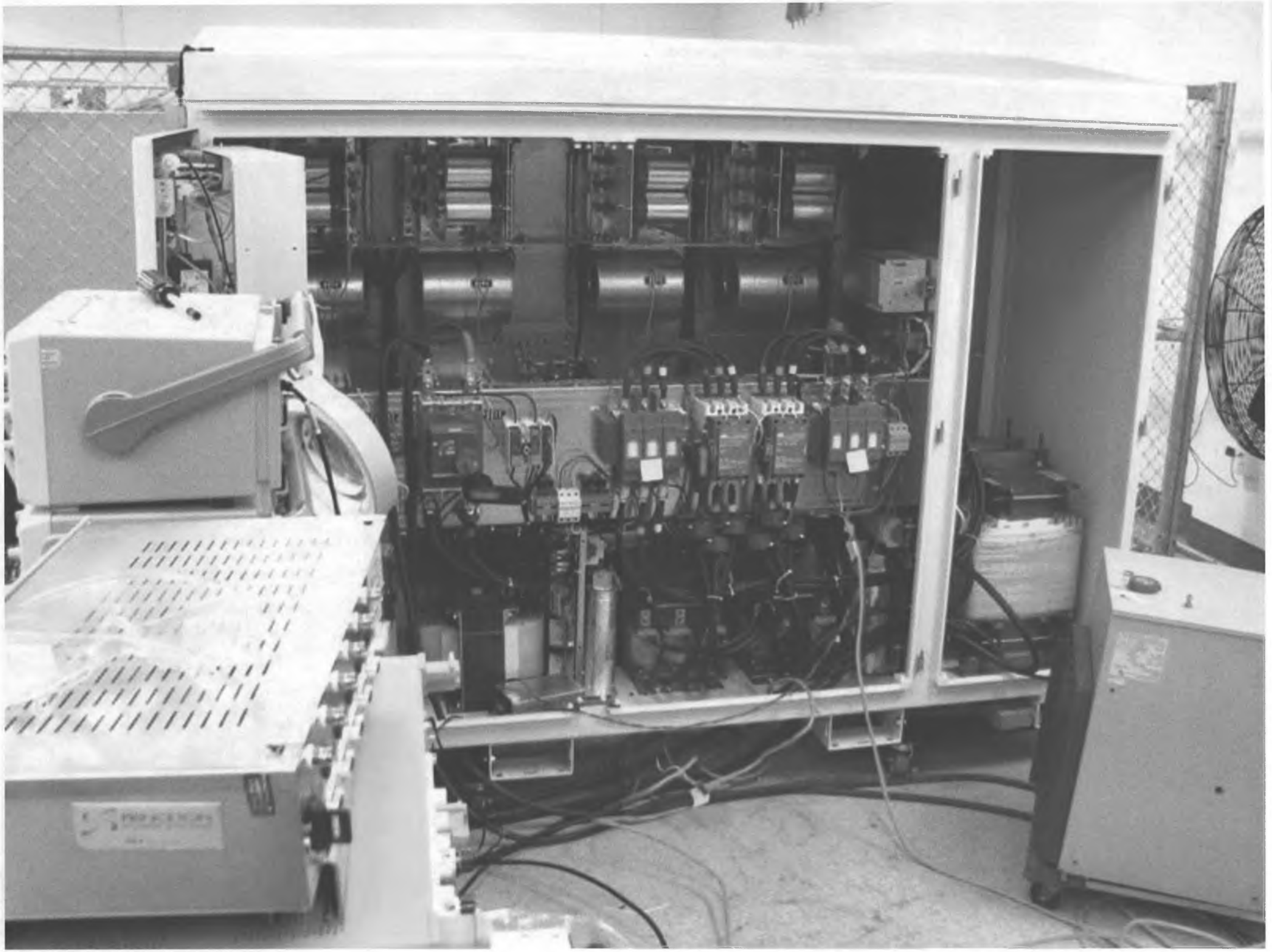
HVDC Program Overview

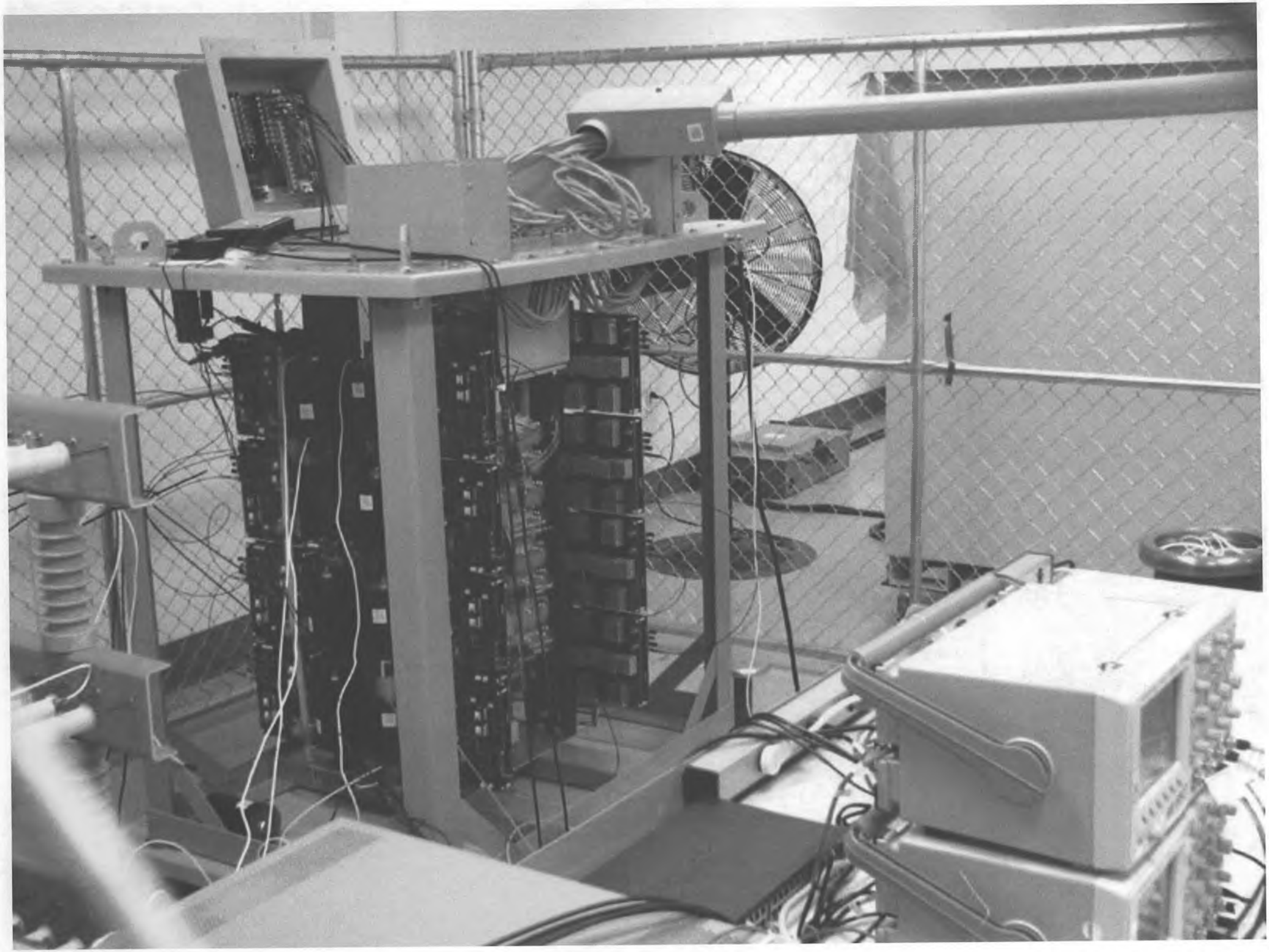
Develop a low-power HVDC transmission system suitable for use in rural Alaska applications.

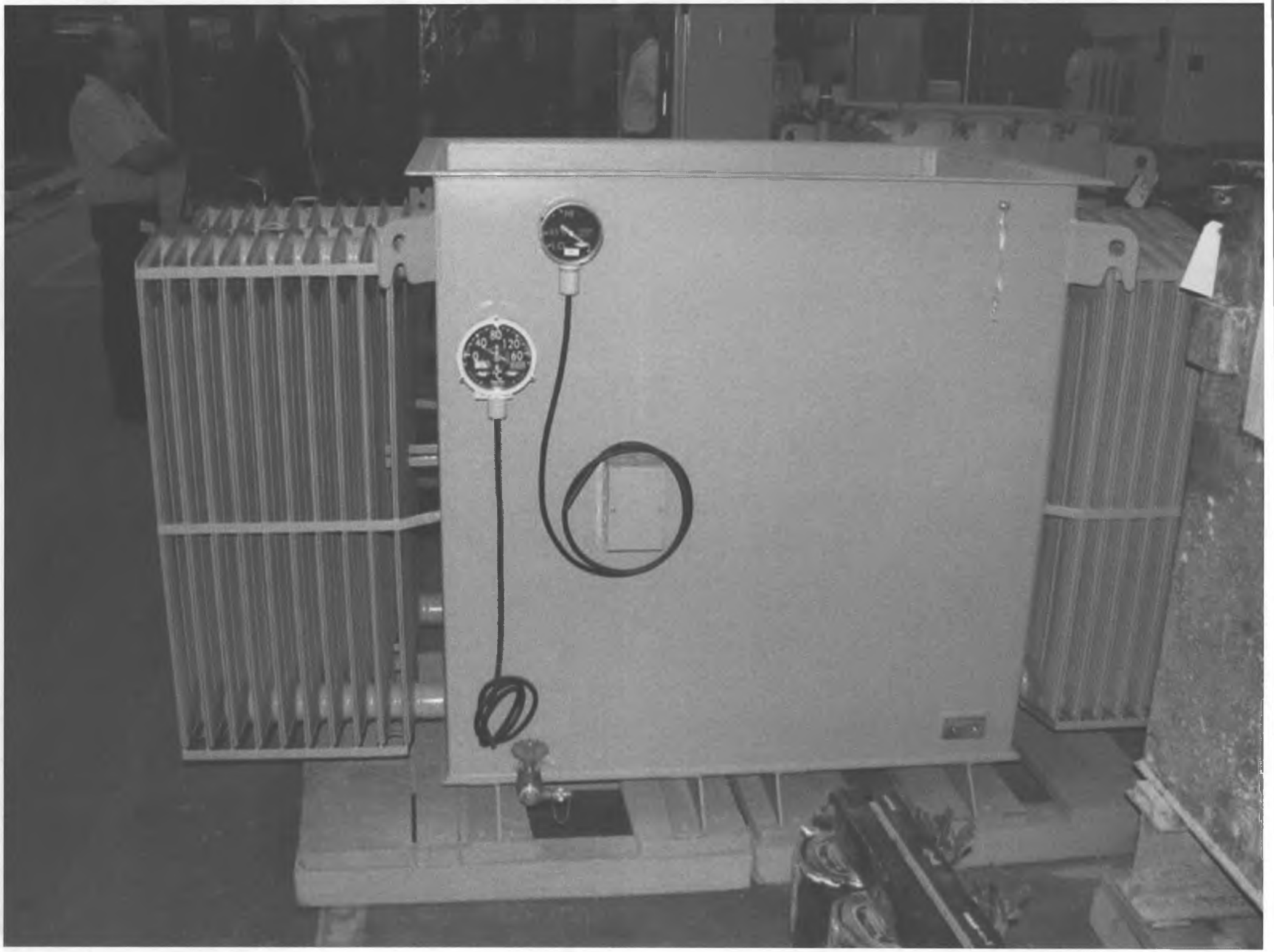
- **2005 – 2007 Technology Review**
- **2007 – 2009 Phase I Preliminary Design & Feasibility**
  - Denali Commission Funded
  - AVEC Managed
- **2010 – 2011 Phase II Prototyping and Testing**
  - Denali Commission Funded
  - ACEP Managed
- **2012 – 2014 Phase III Testing and Demonstration**
- **2015 – 2016 Ready for Commercial Deployment**

1 MW Converter Enclosure





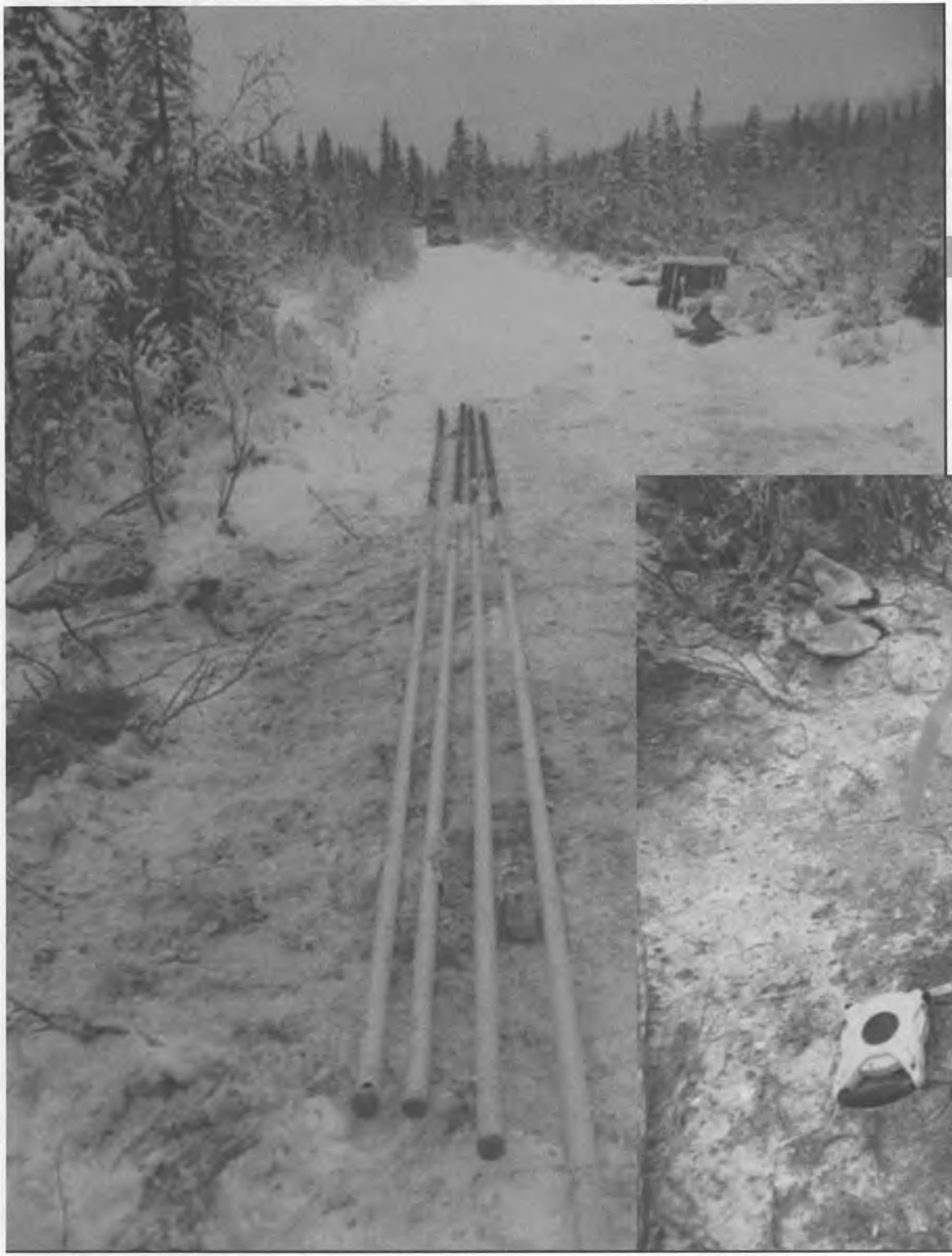





High Voltage Test
(HVT)



INSTALLING MICRO-THERMOPILES AT THE FAIRBANKS TEST SITE






MICRO THERMOPILE
POLE FOUNDATION


MICRO THERMOPILE
POLE FOUNDATION


ASSEMBLING
FIBERGLASS POLE
SPLICE


60-FOOT TALL GUYED
FIBERGLASS POLE


60-FOOT TALL GUYED
FIBERGLASS POLE

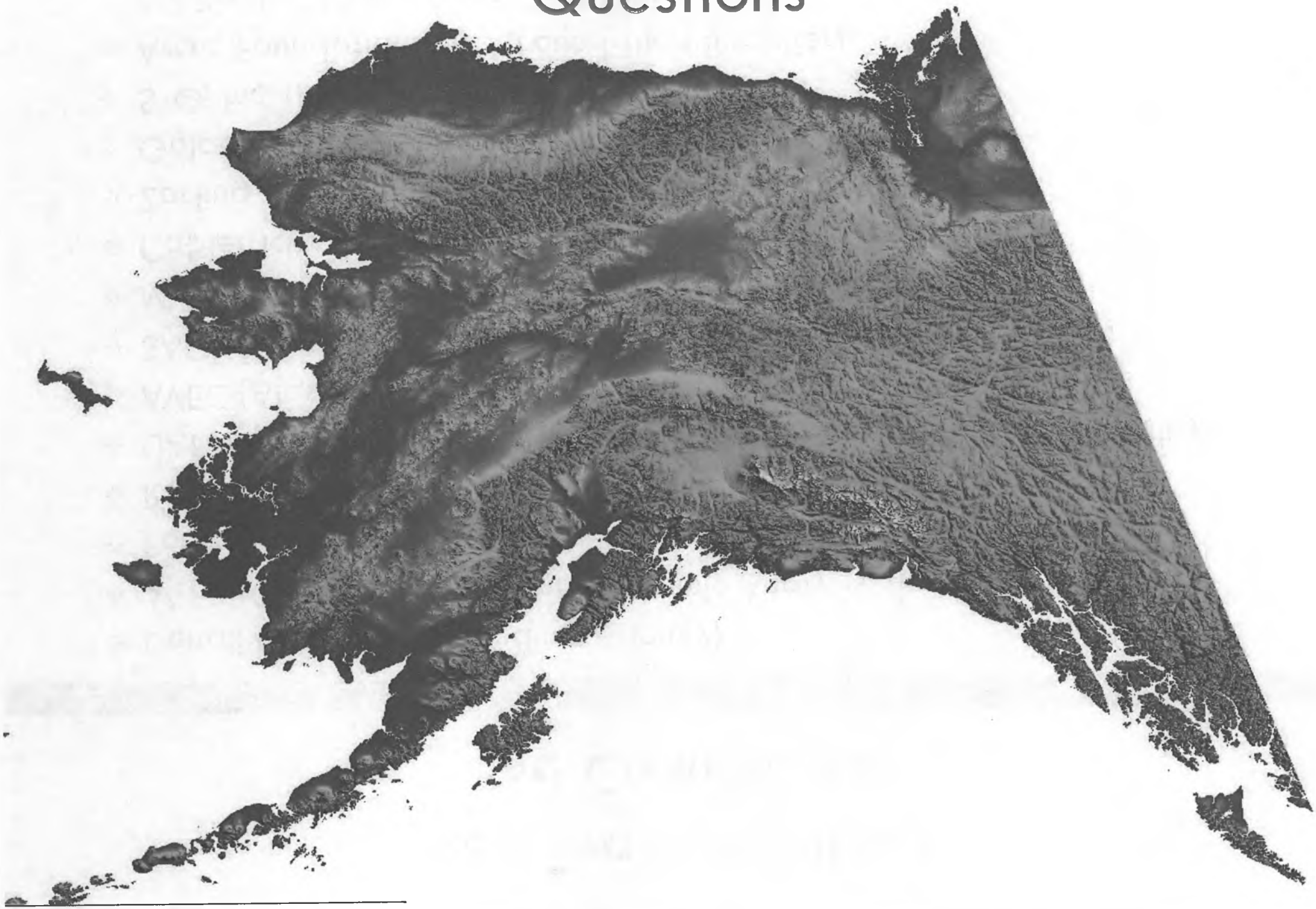
Phase II Stakeholders Advisory Group

- Denali Commission
- Alaska Center for Energy & Power
- Polarconsult Alaska, Inc.
- Alaska Village Electric Cooperative
- Alaska Energy Authority
- North Slope Borough
- Naknek Electric Association
- Nome Joint Utilities
- Nome Chamber of Commerce
- Bering Straits Native Corporation
- Alaska Department of Labor
- IPEC
- AP&T
- CVEA
- MEA
- USDA-RUS
- GVEA
- Nuvista Light & Power

Key Team Members and Contributors

- Denali Commission (Funding Agency)
- ACEP (Grant Management, Economic Analysis, Strategy)
- Polarconsult (Project Management, Strategic Vision, Design)
- Princeton Power Systems (Converter Development)
- UAF/Dr. Wies (Technical Review / Alaska Integration / Practicality)
- AVEC (Alaska Integration / Practicality)
- SAG (Practicality / Industry Acceptance)
- Manitoba HVDC Research Centre (HVDC Expert)
- Cabletricity, Inc. (Submarine Cable Expert)
- Zarling Aero Engineering (Thermal Soils Analysis)
- Golder Associates (Geotechnical Expert)
- STG, Inc. (Rural Intertie Contractor)
- Arctic Foundations, Inc. (Foundation Supplier)
- Almita, Inc. (Foundation Supplier)

Questions



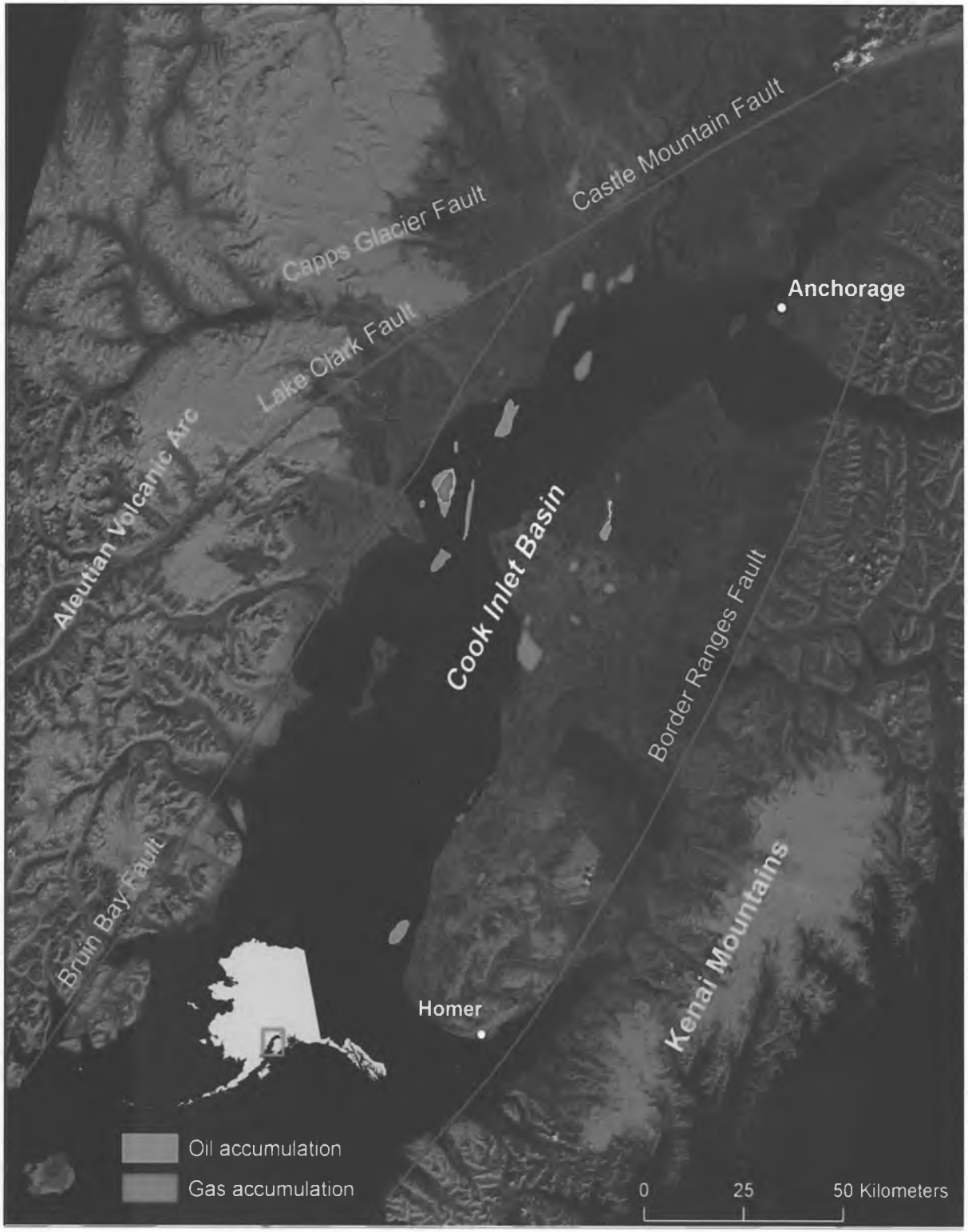
4/11/12 Hearings on the Short and Long Term Reliability and Sustainability of the Cook Inlet Natural Gas Field

<TARGET><BILL></BILL><SUBJECT>4-11-12 Hearings on the Short and Long Term Reliability and Sustainability of the Cook Inlet Natural Gas Field</SUBJECT><COMM>HENE27</COMM></TARGET>

State of Alaska
Department of Natural Resources
Division of Oil and Gas
Division of Geological & Geophysical Surveys

Cook Inlet Activity and Natural Gas Resource Update

Alaska Legislature
House Energy Committee
Tuesday, April 10, 2012

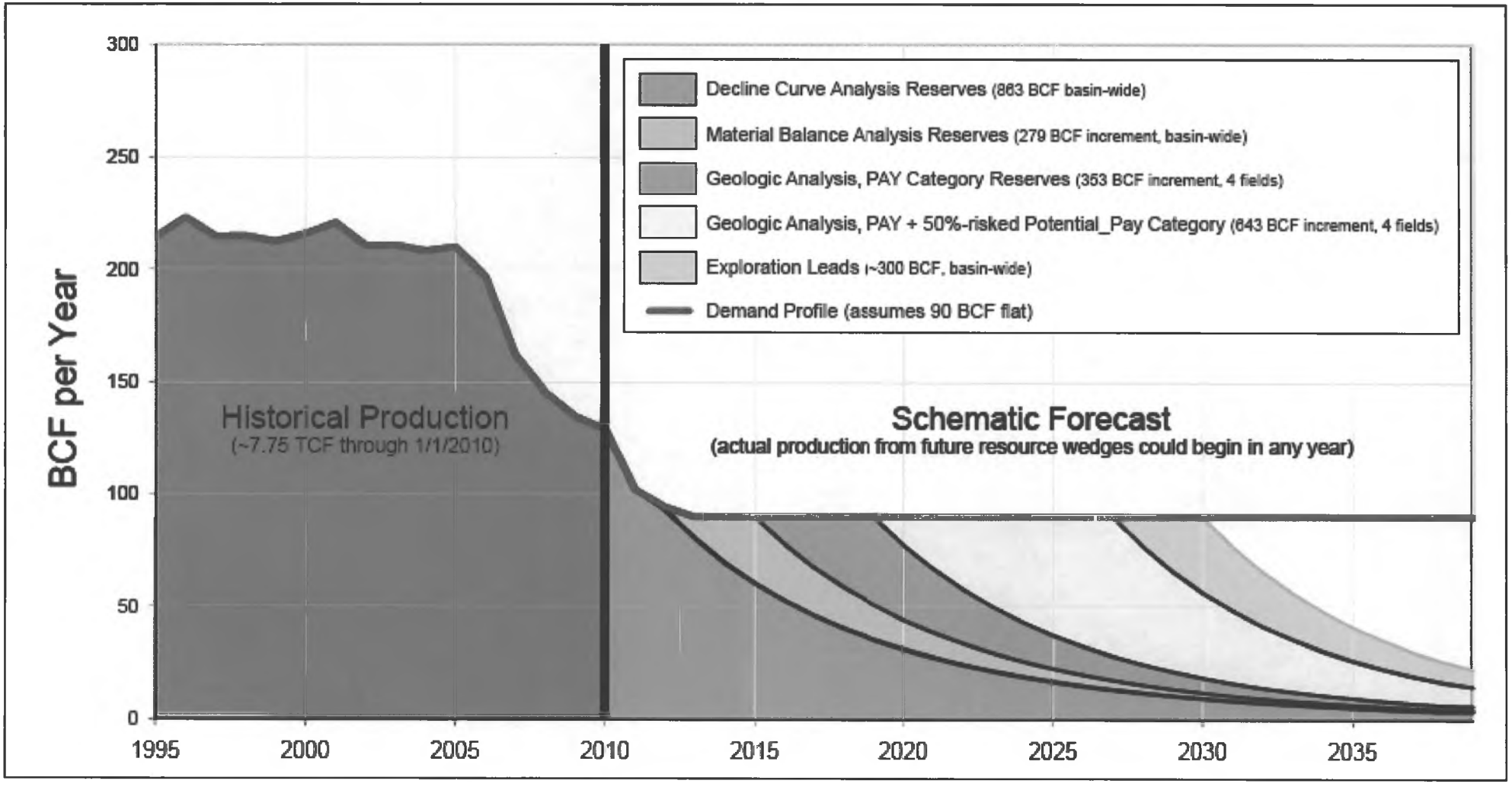


2009 and 2011 DNR Cook Inlet Natural Gas Studies

- 2009 Study
  - Integrated engineering and geological analysis to determine how much gas remains **in known fields** (reserves and potentially recoverable resources).
  - Also provided examples of undeveloped gas leads indicated by previous drilling (potential resource).
  - Did not attempt to include undiscovered gas resources (this is USGS assessment's goal).
- 2011 Study
  - What investment and associated producer revenue would be required to generate specific rates of return from developing DNR-identified gas reserves (2009 study) to meet existing demand requirements of 90 BCF per year through 2025?
  - Generated dozens of development scenarios ("projects") for recovering resources identified in 2009 study, and used Monte Carlo simulation to model their commerciality and production outcomes.

Cook Inlet Natural Gas Reserves and Resources Hypothetical Production Forecast

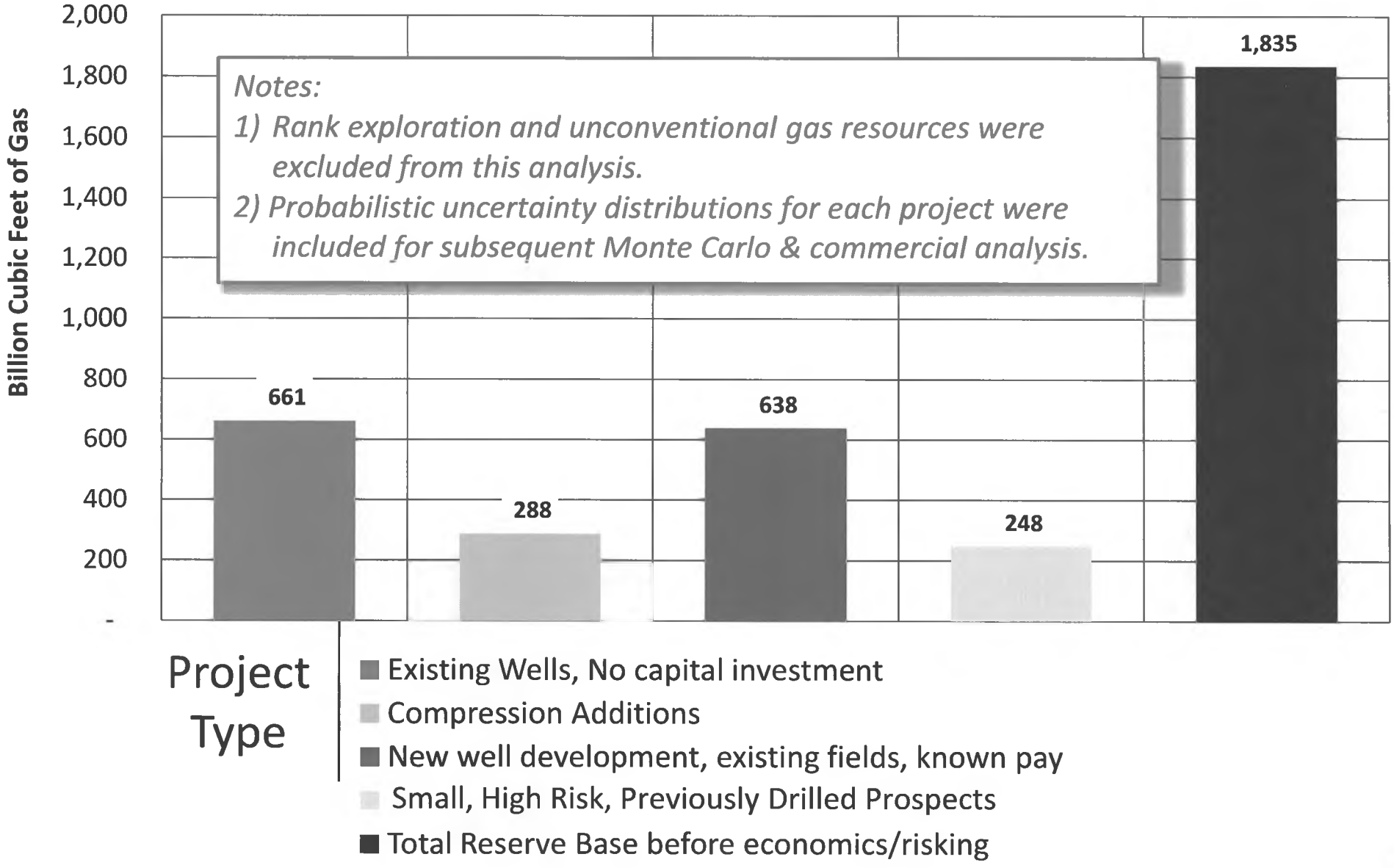
(Assumes aggressive redevelopment activity in existing fields + some exploration success)



Alaska Division of Oil & Gas, 2010

2011 DNR Cl Gas Production Cost Study

Base Case Production Estimates by Project Type, 2010-2039
(sums of all conceptual scenario projects before Monte Carlo modeling and commercial analysis)

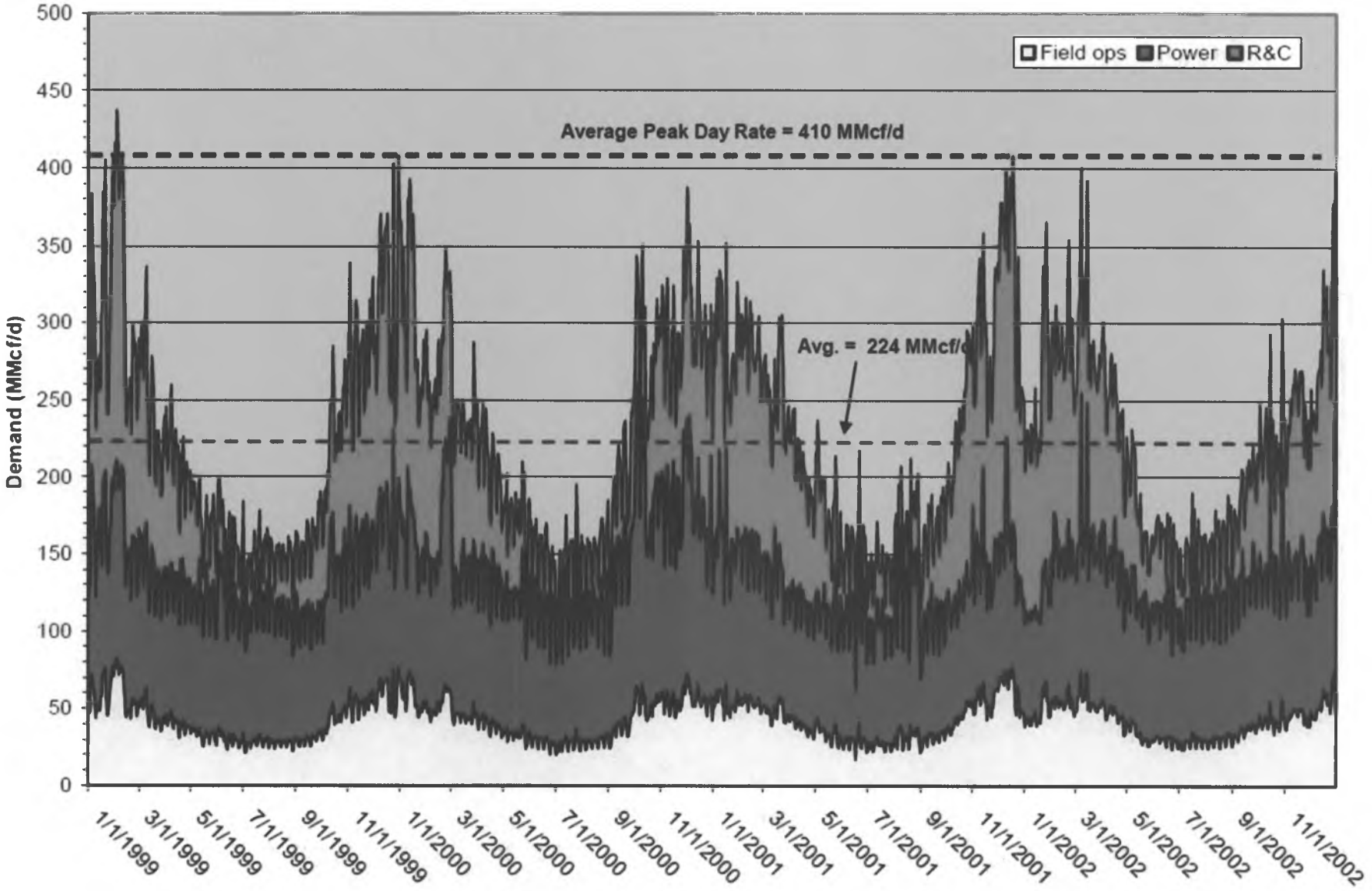


Summary and Conclusions
2011 DNR Study

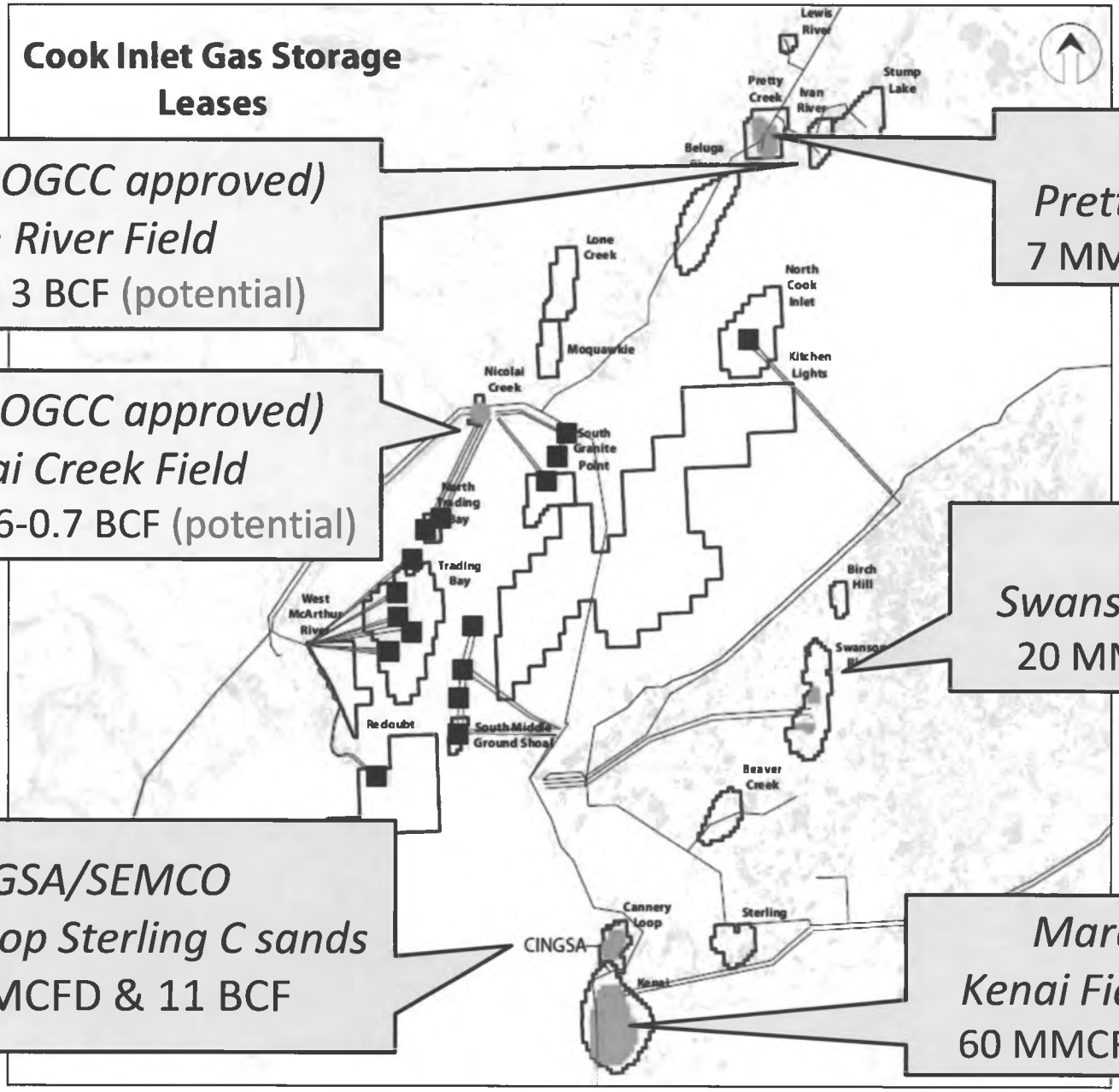
The Cook Inlet basin is capable given sufficient continued investments of supplying the regional natural gas needs until 2018-2020 timeframe. Exploration success would extend the timeframe further out into the future.

Natural gas storage will play an increasing important role in optimizing and managing deliverability and economics of the natural gas supply for south-central Alaska.

Illustrative South-Central Alaska Daily Demand



Gas Storage Design Rate & Capacity



Hilcorp (AOGCC approved)
Ivan River Field
Rate TBD, 3 BCF (potential)

Hilcorp
Pretty Creek Field
7 MMCFD & 0.7 BCF

Aurora (AOGCC approved)
Nicolai Creek Field
Rate TBD, 0.6-0.7 BCF (potential)

Hilcorp
Swanson River Field
20 MMCFD & 2 BCF

CINGSA/SEMCO
Cannery Loop Sterling C sands
150 MMCFD & 11 BCF

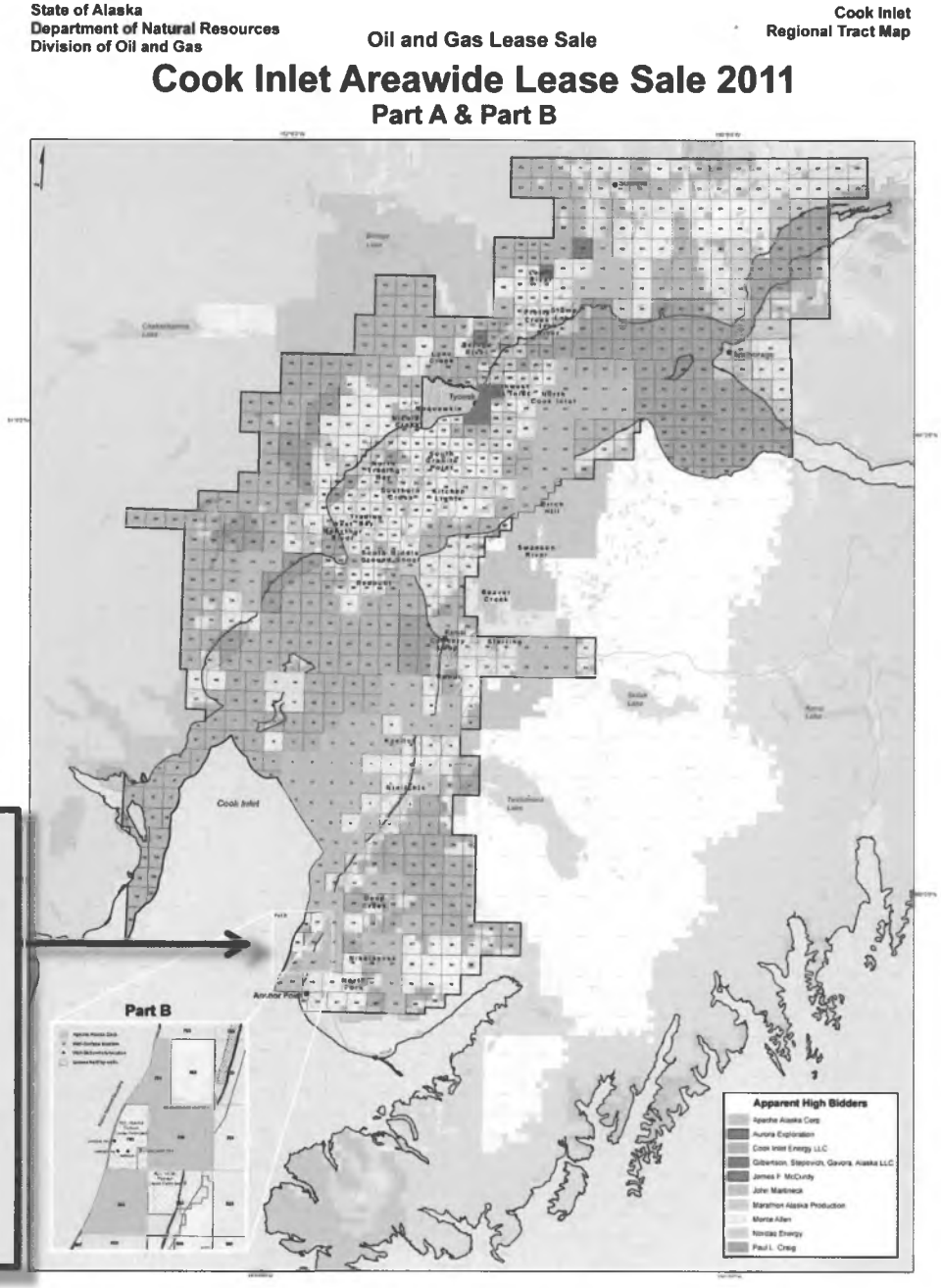
Marathon
Kenai Field Pool 6
60 MMCFD & 6 BCF

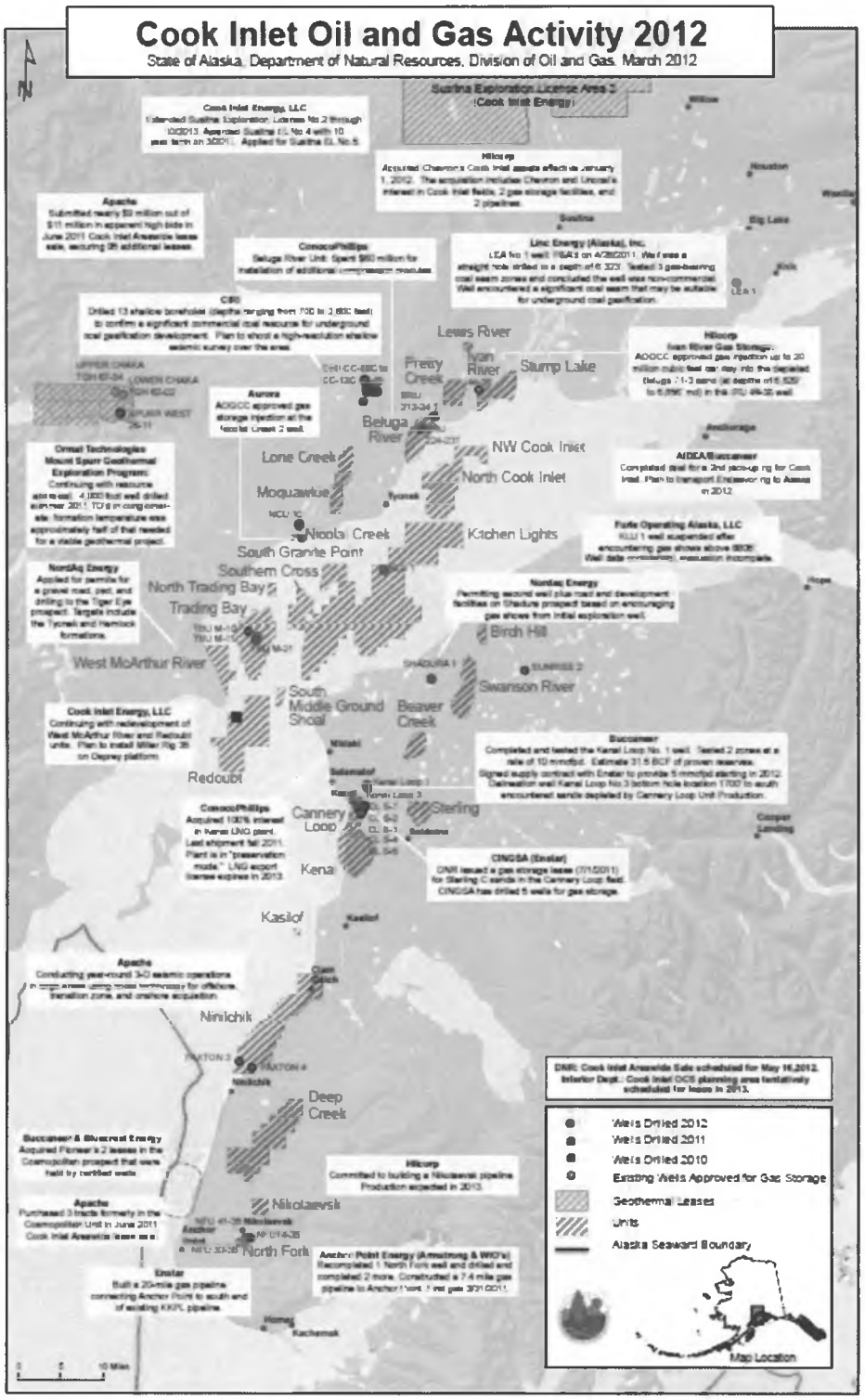
Cook Inlet 2011 Lease Sale Results

- Total tracts sold: 109
- Total acres sold: 575,202
- Total number of valid bids: 112
- Total high bonus bids: $11,125,063.80
- Exempt sale (Part B) for Cosmopolitan
- Apache showed largest interest ($9 MM)



Cosmopolitan: Known Oil
- bundled leases
- raised min bid
- raised rentals
- 5 yr primary term
- Work commitment
  - ➢ POE in < 6 months
  - ➢ Well to oil zone





Apache

- Purchased 95 additional State leases in June, 2011 lease sale. Now holds ~800,000 acres (State, Mental Health)
- Shooting 3-D nodal seismic year-round, 2 wells planned in 2012.

Hilcorp

- Operating former Chevron/Unocal assets
- Constructing a pipeline to bring Nikolaevsk Unit on in 2013.

Furie

- Spartan 151 jack-up rig drilling to resume at Kitchen Lights Unit
- Recently reduced estimate of KLU #1 gas discovery by ~ 80%

Buccaneer

- Kenai Loop #1: 31.5 BCF proven reserves
- Second well Kenai Loop #3 was dry hole (depleted by Cannery Loop)
- Planning to bring AIDEA-subsidized Endeavor jack-up to basin in 2012

Nordaq Energy

- Shadura Prospect: permitting 2 more wells, development road, pads.
- Permitting Tiger Eye prospect onshore near West Foreland

Anchor Point Energy

- Recently drilled and completed 2 wells, recompleted 1
- North Fork gas now on production through new 7.4 mile pipeline to Anchor Point (2011)

Cook Inlet Energy

- Restarted 4 oil wells in West MacArthur River Unit, 2 oil wells in Redoubt Unit (2011)
- Custom rig for Osprey Platform
- Permitting 3 exploration wells at Sting Ray prospect

CIRI

- Underground Coal Gasification (UCG) project -- shallow core drilling

Linc Energy

- LEA 1 plugged & abandoned (2011)
- Planned well in Trading Bay area
- Long-term interest in UCG in Cook Inlet

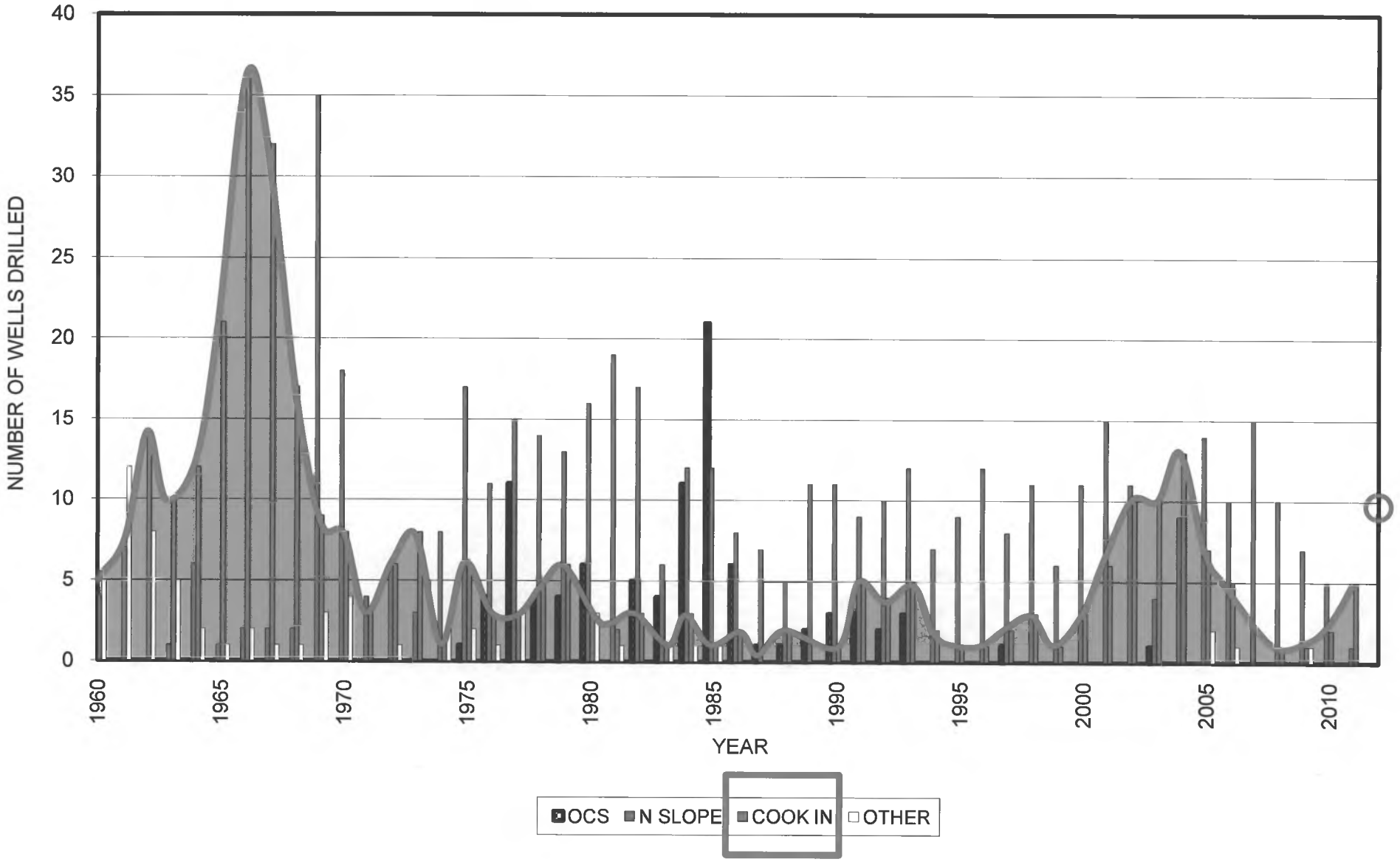
Gas storage

- New: CINGSA startup, Nicolai Creek, Ivan River approved
- Existing: Swanson River, Pretty Creek, Kenai



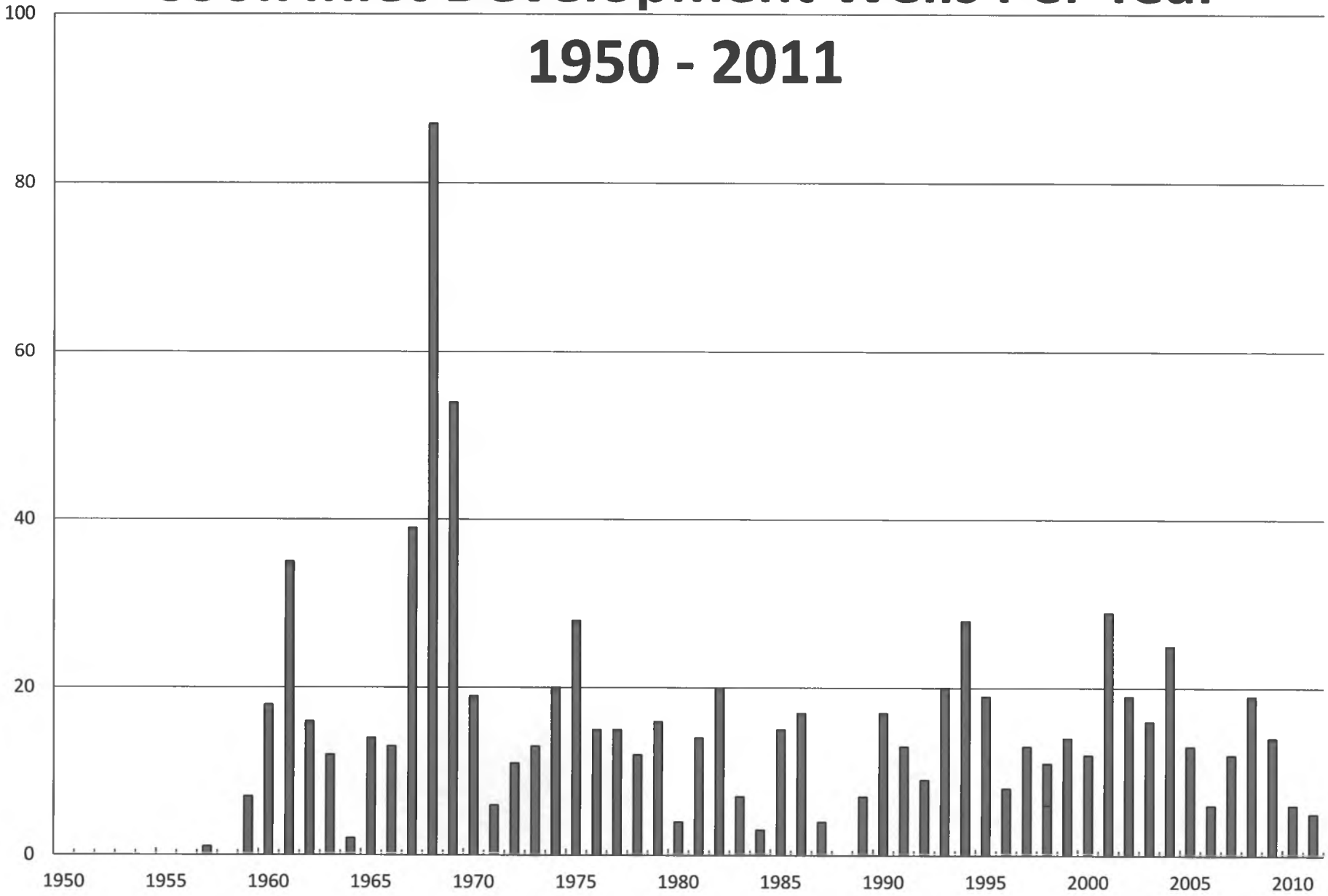
Spartan 151 jack-up rig at anchor in Kachemak Bay

Alaska Exploration Wells Per Year 1960-2011



Cook Inlet Development Wells Per Year

1950 - 2011



Oil and Gas Resources vs. Reserves

Undiscovered, Technically Recoverable Resource:

- Oil and gas estimated to exist in accumulations that have not yet been found by drilling, but if found, could be potentially produced using current technology and industry practices.
- Only an unknown fraction of this category will be commercially viable to find, develop, and produce. Sometimes called **Prospective Resources.**

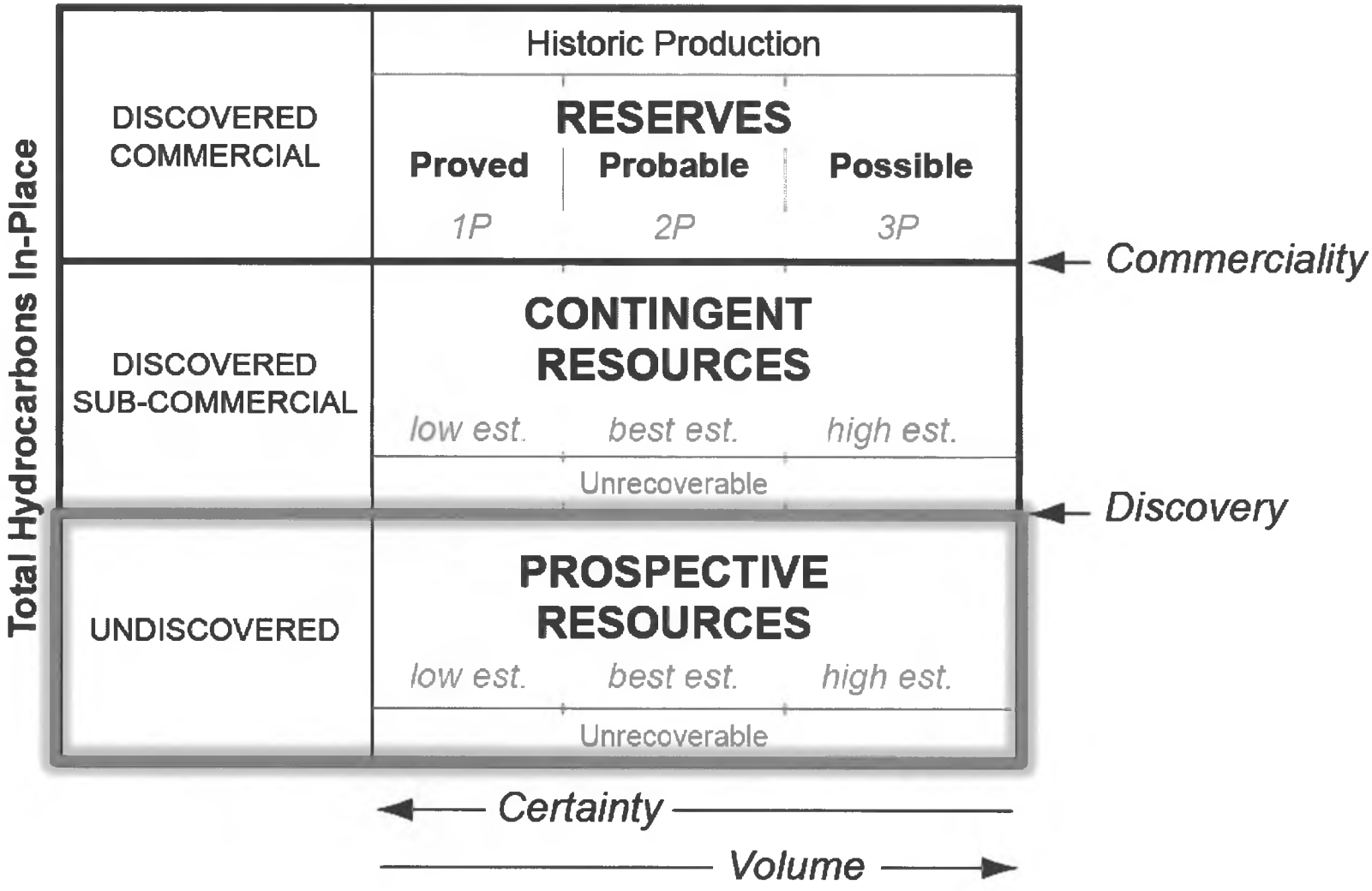
Proved Reserves:

- "oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations…" *(Securities Exchange Commission, 2008).*
- Sometimes called **1P Reserves**, with a 90% certainty of meeting or exceeding the quoted value (SPE, 2007).

Proved Developed Reserves:

"Proved reserves that… can be expected to be recovered through existing wells with existing equipment and operating methods…" *(Securities Exchange Commission, 2008)*

Reserves and Resources Terminology



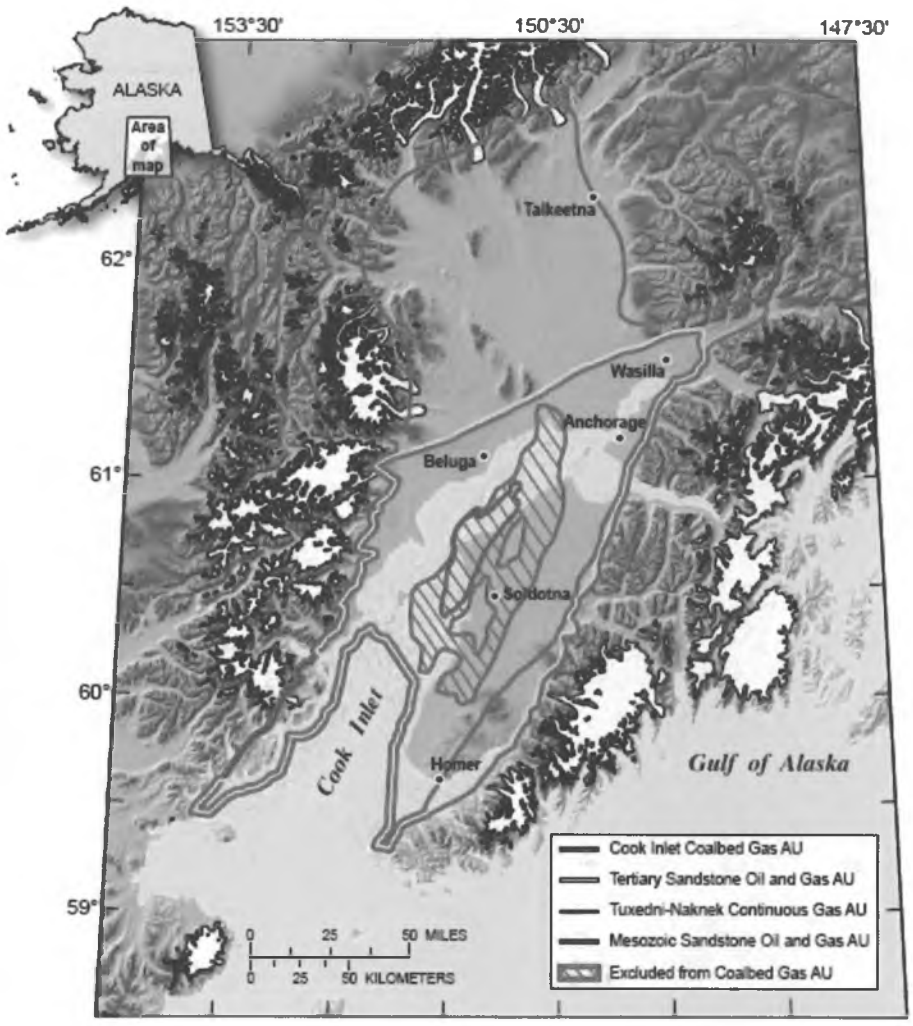
Adapted from SPE and others, 2007

Cook Inlet Gas Exploration Statistics

- 85% of gas discovered early in exploration cycle while drilling for oil
- Only structural traps had been explored for or developed – stratigraphic trap potential essentially untapped
- Nearly one in ten fields >2 tcf
- 4 largest fields have 86% of reserves
- Field-size distribution lacks discoveries in 300-1300 bcf range → yet to be discovered?

Cook Inlet Resource Potential

USGS Resource Assessment, 2011



Undiscovered, Technically Recoverable Oil and Gas

- mean conventional oil 599 MMBO

372 MMBO in Tertiary Ss play

227 MMBO in Mesozoic Ss play

- mean conventional gas 13.7 TCF

12.2 TCF in Tertiary Ss play

1.5 TCF in Mesozoic Ss play

- mean unconventional gas 5.3 TCF

0.6 TCF Mesozoic tight ss play

4.7 TCF Tertiary Coalbed play

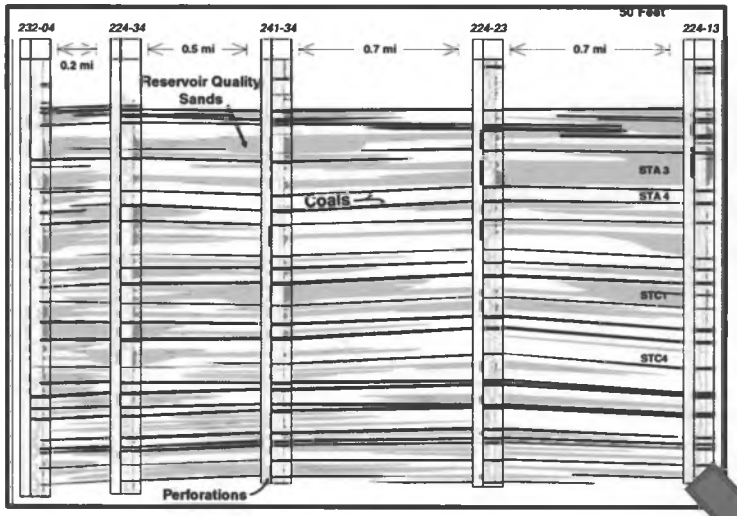
USGS 2011 Assessment of Cook Inlet Undiscovered Technically Recoverable Resources

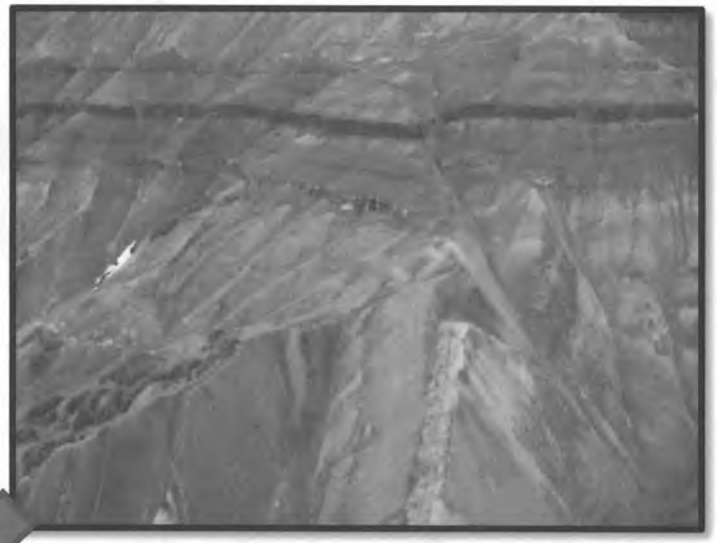
Cook Inlet assessment results.

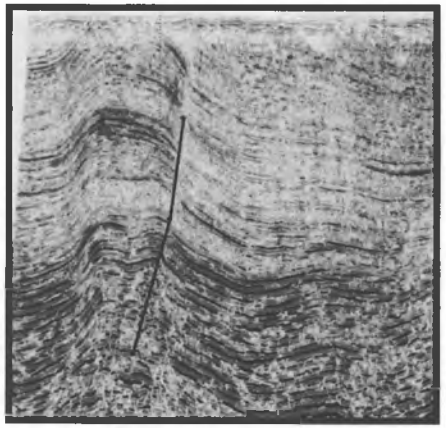
[MMBO, million barrels of oil. BCFG, billion cubic feet of gas. MMBNGL, million barrels of natural gas liquids. Results shown are fully risked estimates. For gas accumulations, all liquids are included as NGL (natural gas liquids). Undiscovered gas resources are the sum of nonassociated and associated gas. F95 represents a 95 percent chance of at least the amount tabulated; other fractiles are defined similarly. Largest expected oil field in MMBO, largest expected gas field in BCFG. TPS, total petroleum system; AU, assessment unit. Gray shading indicates not applicable]

	Total Petroleum Systems (TPS) and Assessment Units (AU)	Field type	Largest expected mean field size	*Total undiscovered resources*											
				Oil (MMBO)				*Gas (BCFG)*				*NGL (MMBNGL)*			
				F95	F50	F5	Mean	F95	F50	F5	Mean	F95	F50	F5	Mean
Conventional Oil and Gas Resources	**Cook Inlet Composite Total Petroleum System**														
	Tertiary Sandstone Oil and Gas AU	***Oil***	111	68	322	844	372	32	156	443	186	0	2	5	2
		Gas	2,002					2,836	11,004	24,422	11,992	1	14	60	20
	Mesozoic Sandstone Oil and Gas AU	***Oil***	65	40	197	515	227	19	96	269	114	0	1	3	1
		Gas	426					251	1,241	3,280	1,434	2	12	34	14
	Total Conventional Resources			108	519	1,359	599	3,138	12,497	28,414	13,726	3	29	102	37
Continuous Oil and Gas Resources	**Tuxedni-Naknek Continuous Gas Total Petroleum System**														
	Tuxedni-Naknek Continuous Gas AU	***Gas***						257	568	1,254	637	3	8	19	9
	Cook Inlet Coalbed Gas Total Petroleum System														
	Cook Inlet Coalbed Gas AU	***Gas***						1,581	3,989	10,069	4,674	0	0	0	0
	Total Continuous Resources							1,838	4,557	11,323	5,311	3	8	19	9
	Total Undiscovered Oil and Gas Resources			108	519	1,359	599	4,976	17,054	39,737	19,037	6	37	121	46

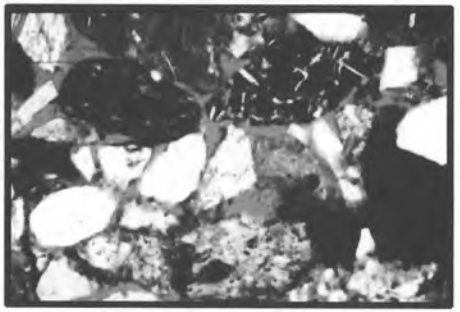
Assessment Inputs

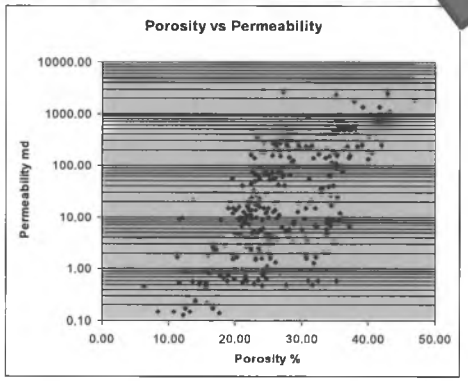


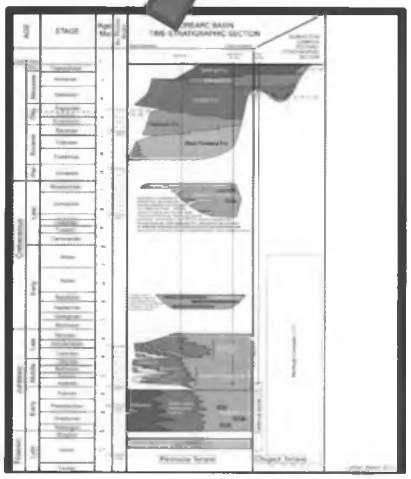


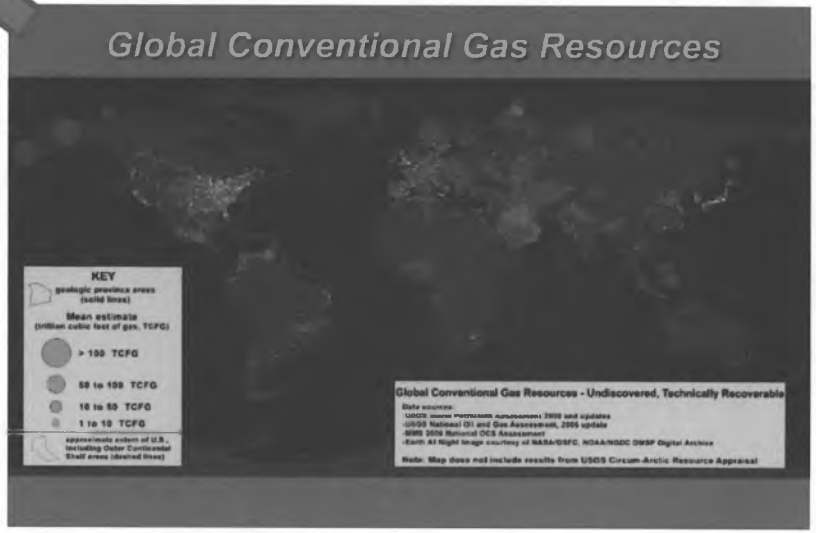


Petroleum System Model

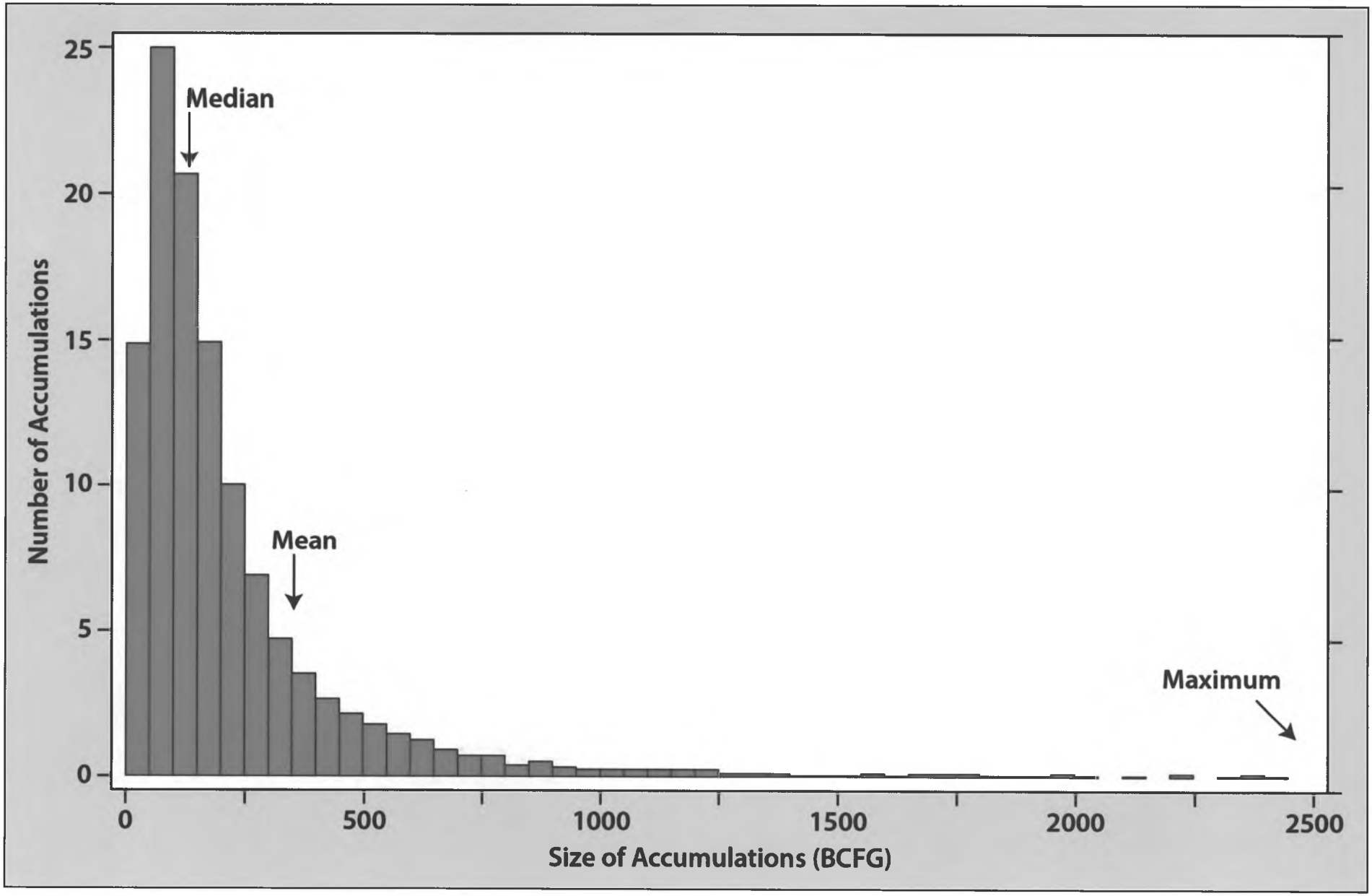




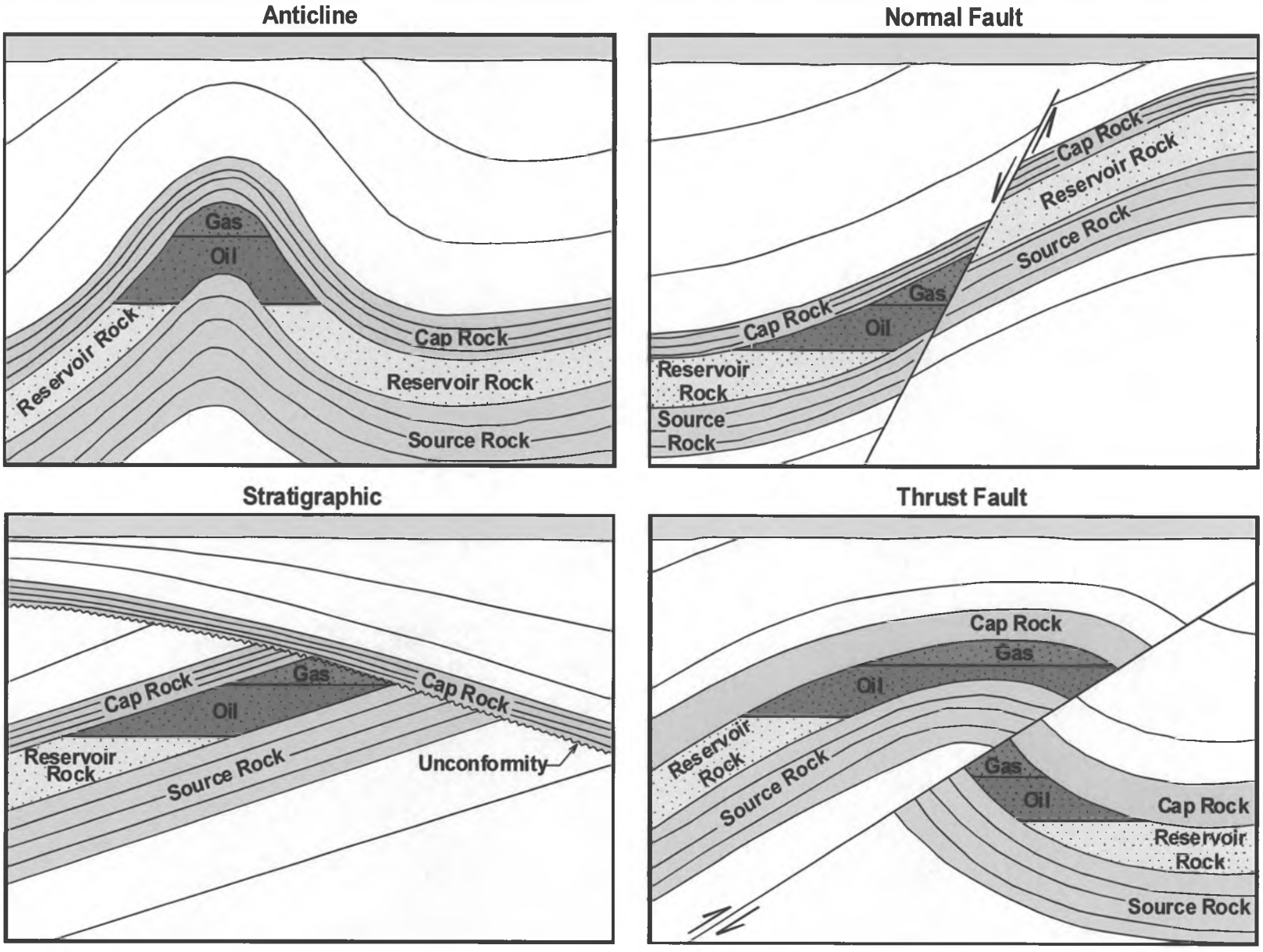




Log Normal Distribution of Gas Accumulation Size

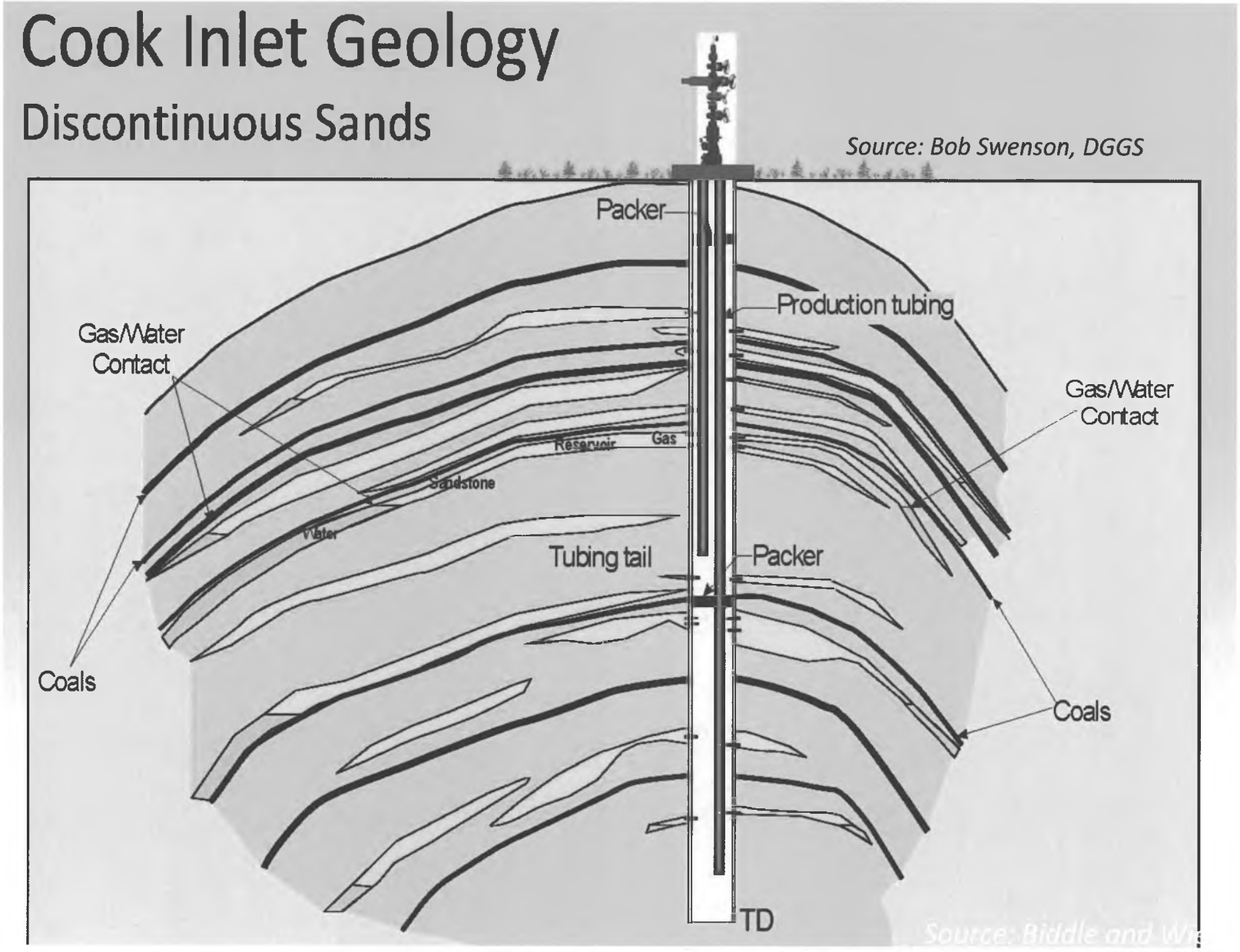


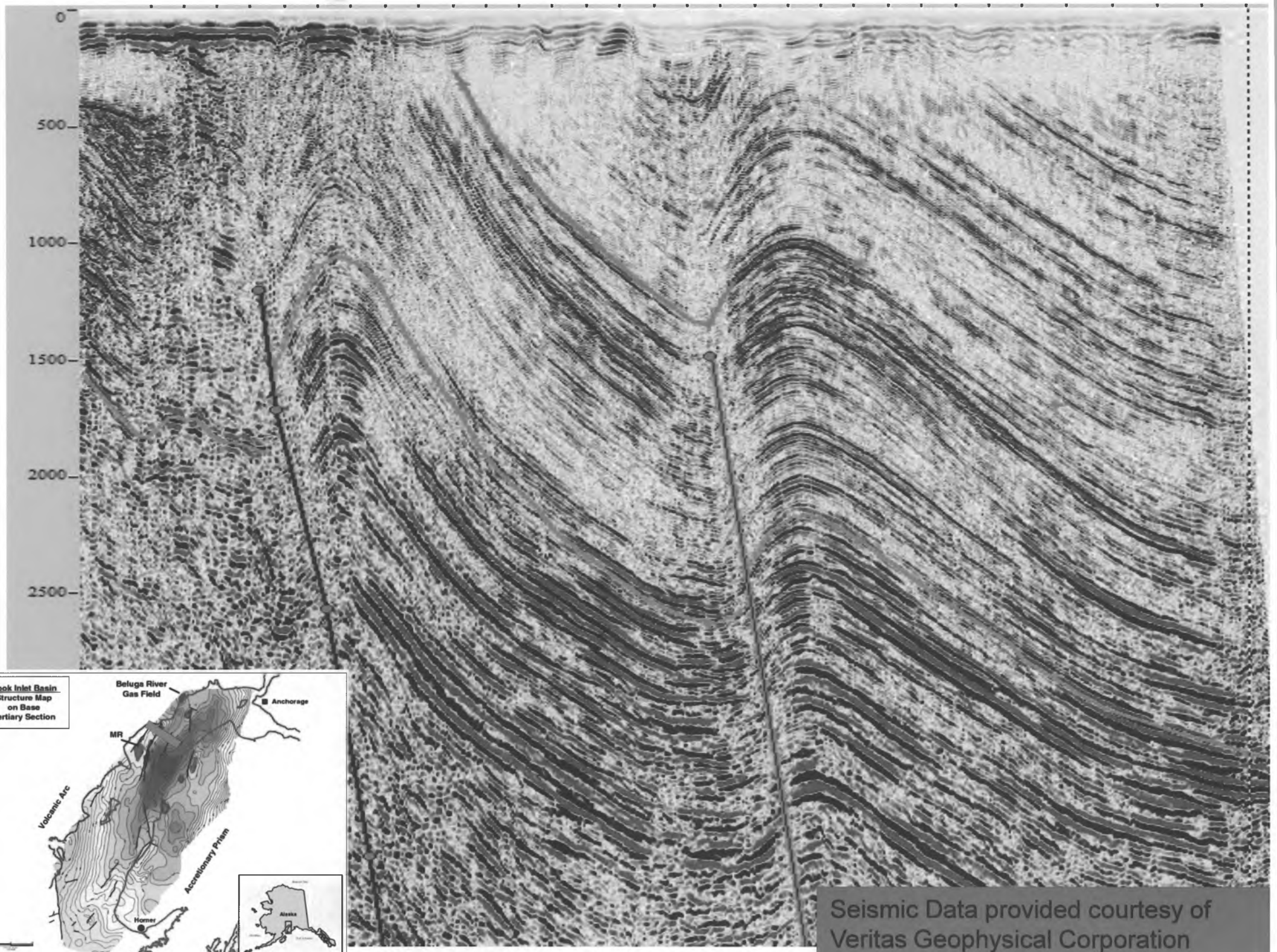
New Gas from New Exploration Play Types



Oil and Gas Trapping Mechanisms

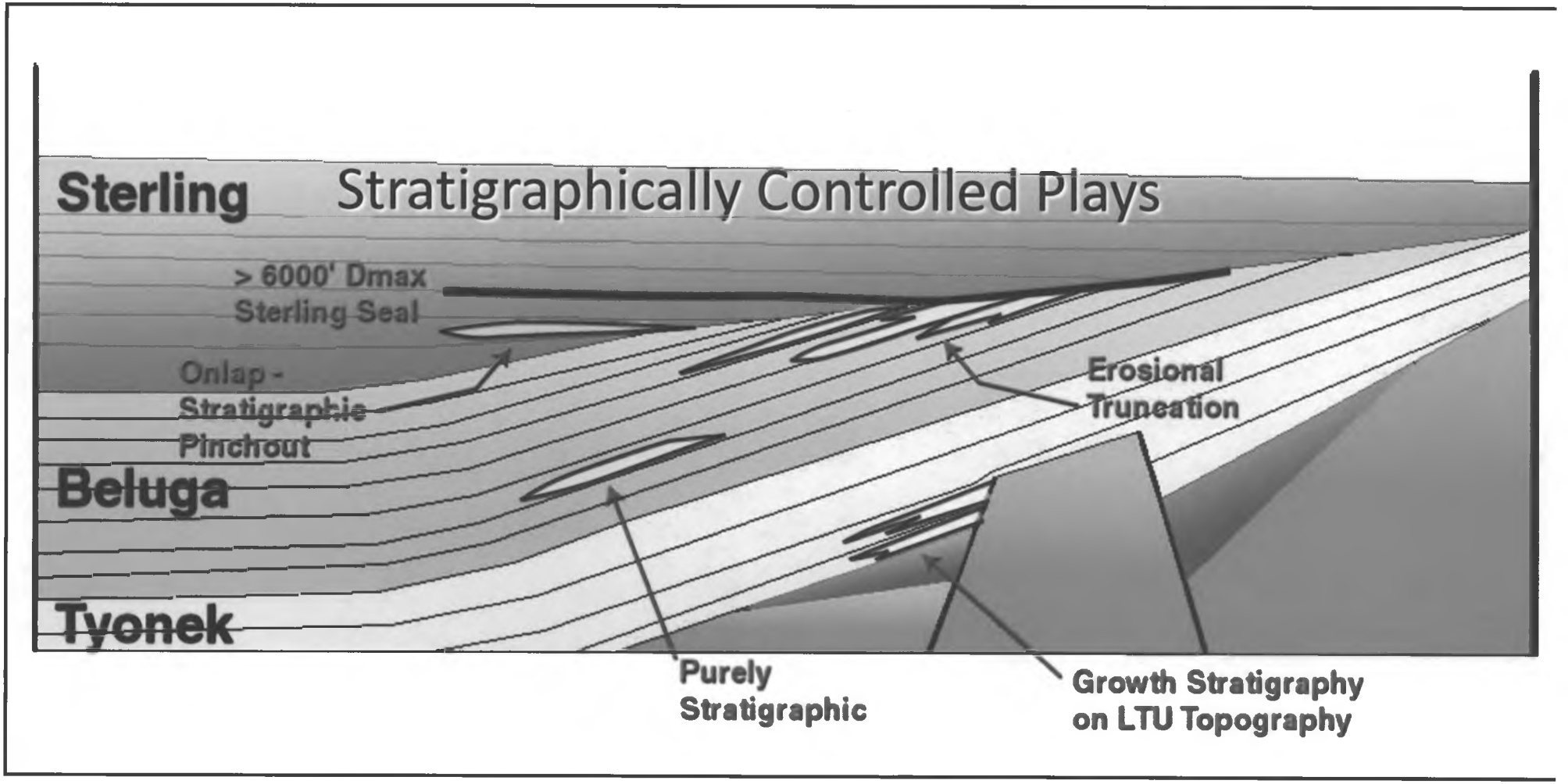
‘New’ Gas in Existing Fields

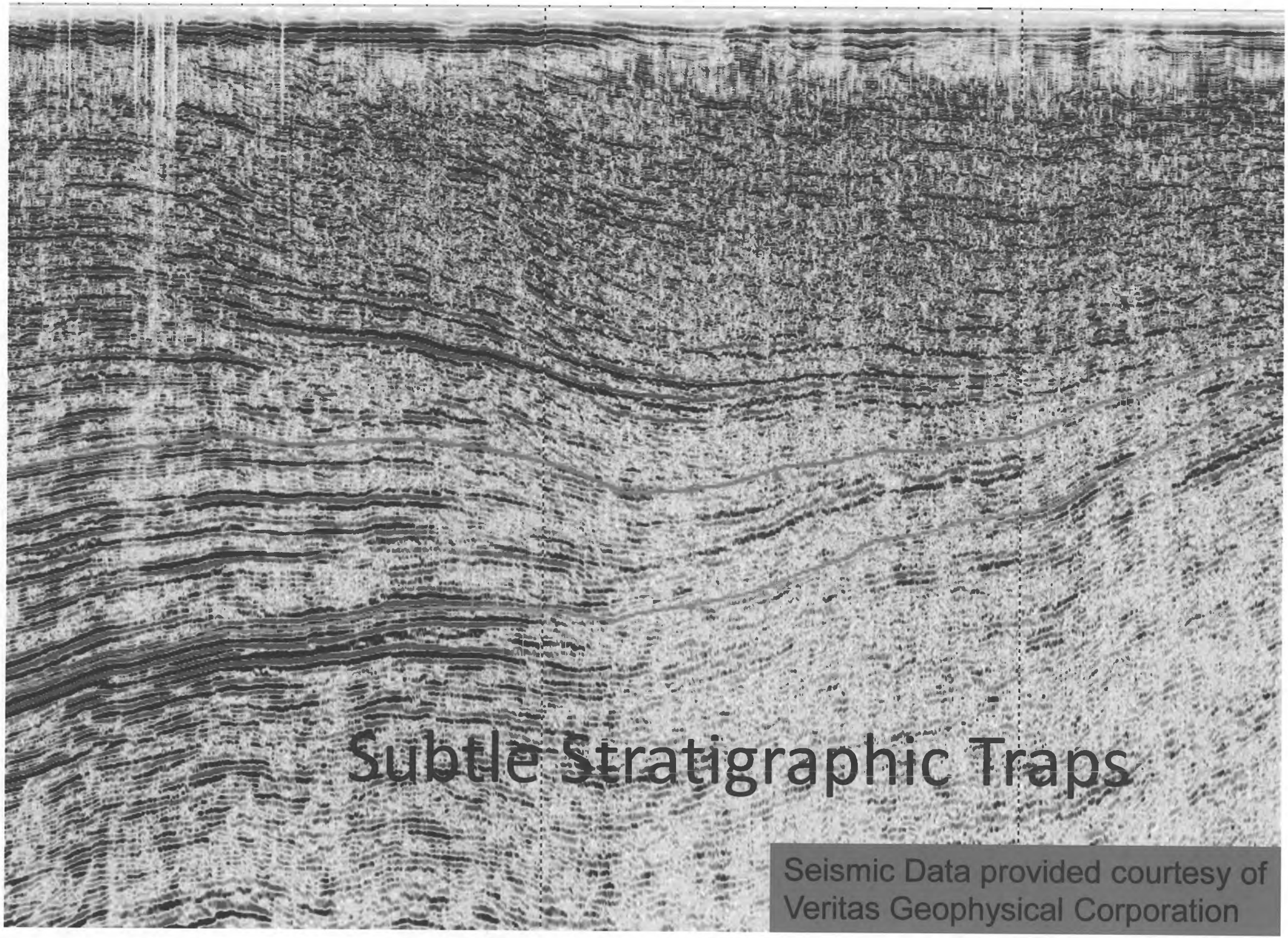




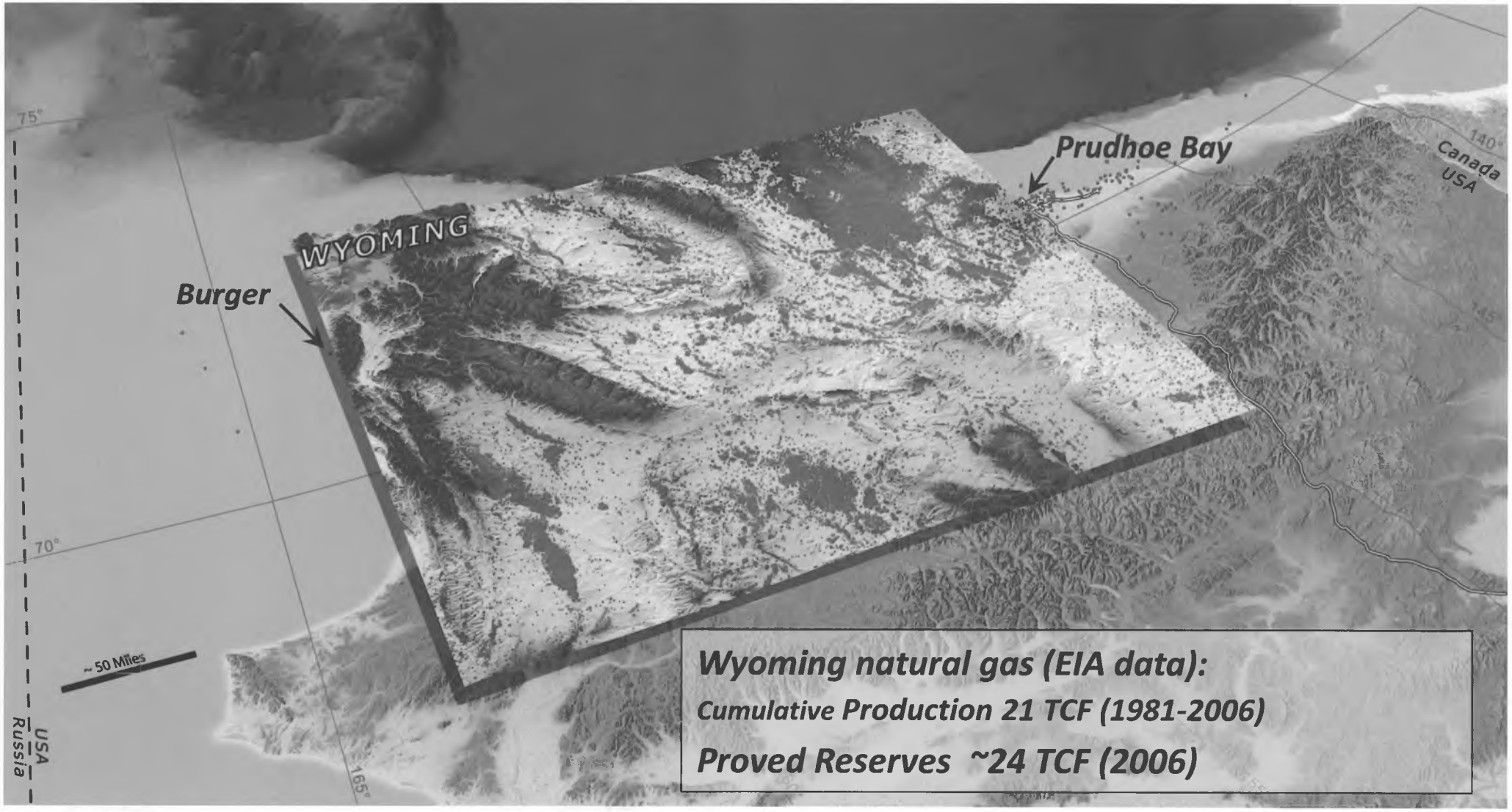
Seismic Data provided courtesy of
Veritas Geophysical Corporation

Un-Explored Plays




Subtle Stratigraphic Traps
Seismic Data provided courtesy of
Veritas Geophysical Corporation

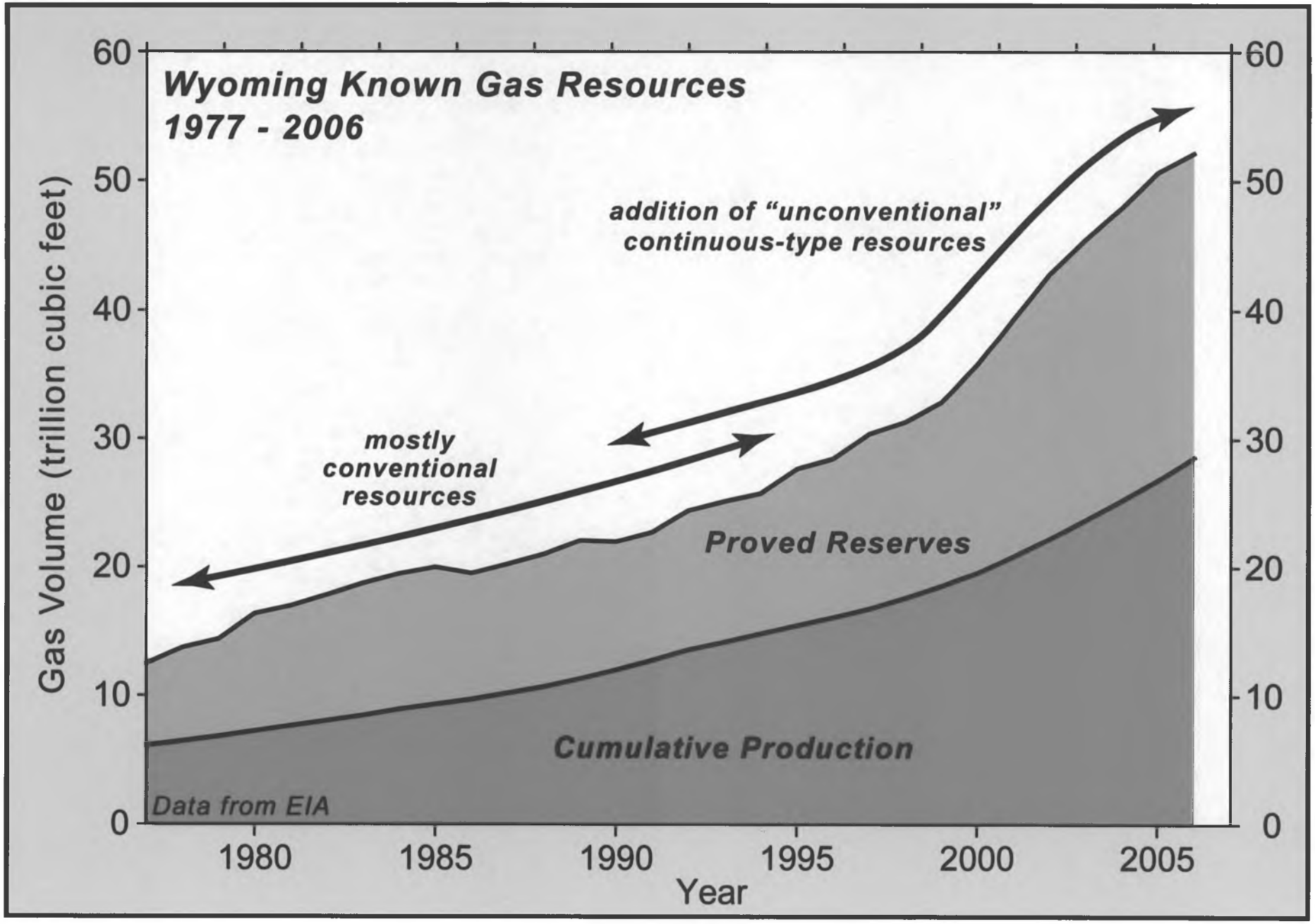
Exploration Maturity



- *Entire state of Wyoming ~100,000 mi² (~250,000 km²)*
- *Many thousand exploration wells; ~70,000 total wells*

USGS slide

Wyoming Gas Reserves & Production History

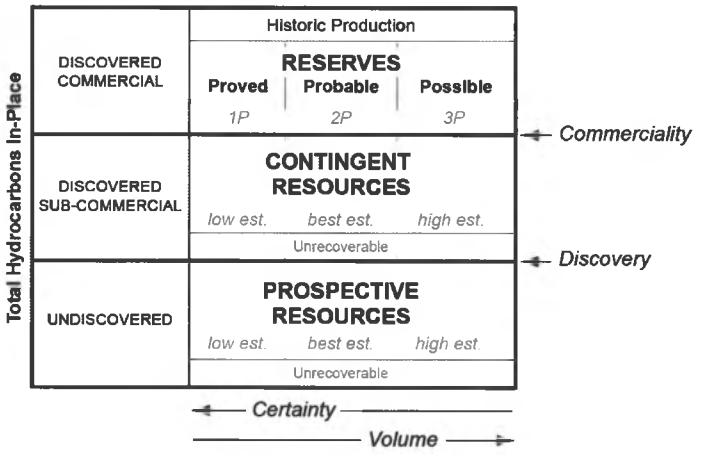


USGS slide

Getting From Undiscovered Resources to Proved Developed Reserves

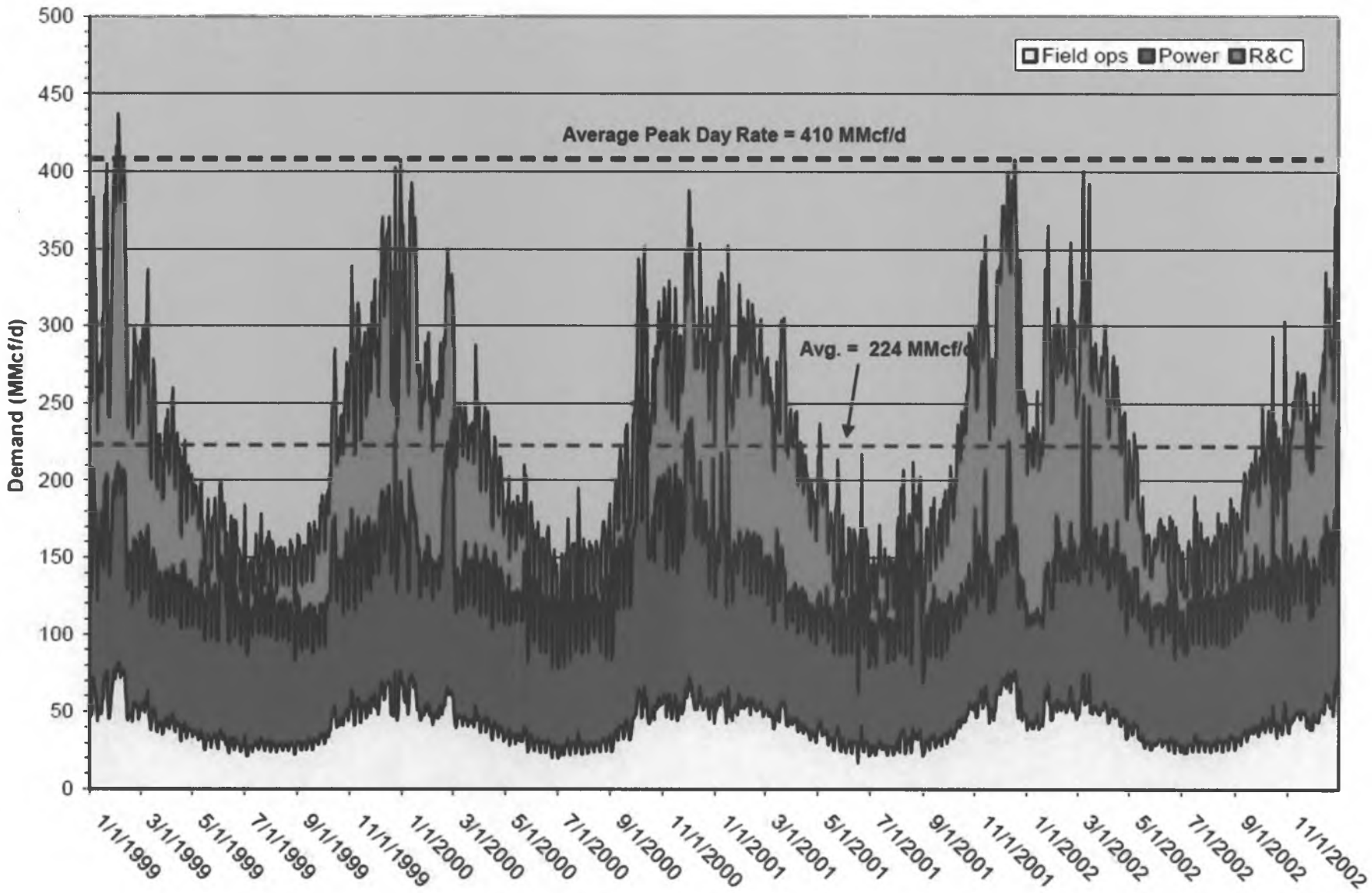
The keys are exploration success and commercial validation

1. ***Find and Map Prospects with Seismic Data***
   - Recon seismic acquisition and G&G interpretation (coarse 2-D grid)
   - Prospect-scale seismic acquisition and GG&E interpretation (tight 2-D grid or 3-D)
2. ***Land/Lease Access to Prospect***
   - Competitive lease sale (e.g., DNR, BOEM, BLM)
   - Private lease (e.g., Native corporations)
   - Exploration license (DNR)
3. ***Exploration Drilling → Reservoir Discovery***
   - Wildcat exploration drilling, logging, testing (80-90% failure rate); refine prospect model
   - Appraisal and delineation drilling of discovery; extensive logging, testing; refine model
4. ***Project Sanction***
   - Engineering analysis, design, costing
   - Environmental/Permitting feasibility
   - Commercial hurdles, board/investor approval
5. ***Development***
   - Gravel construction
   - Facilities & pipeline construction and installation
   - Development drilling

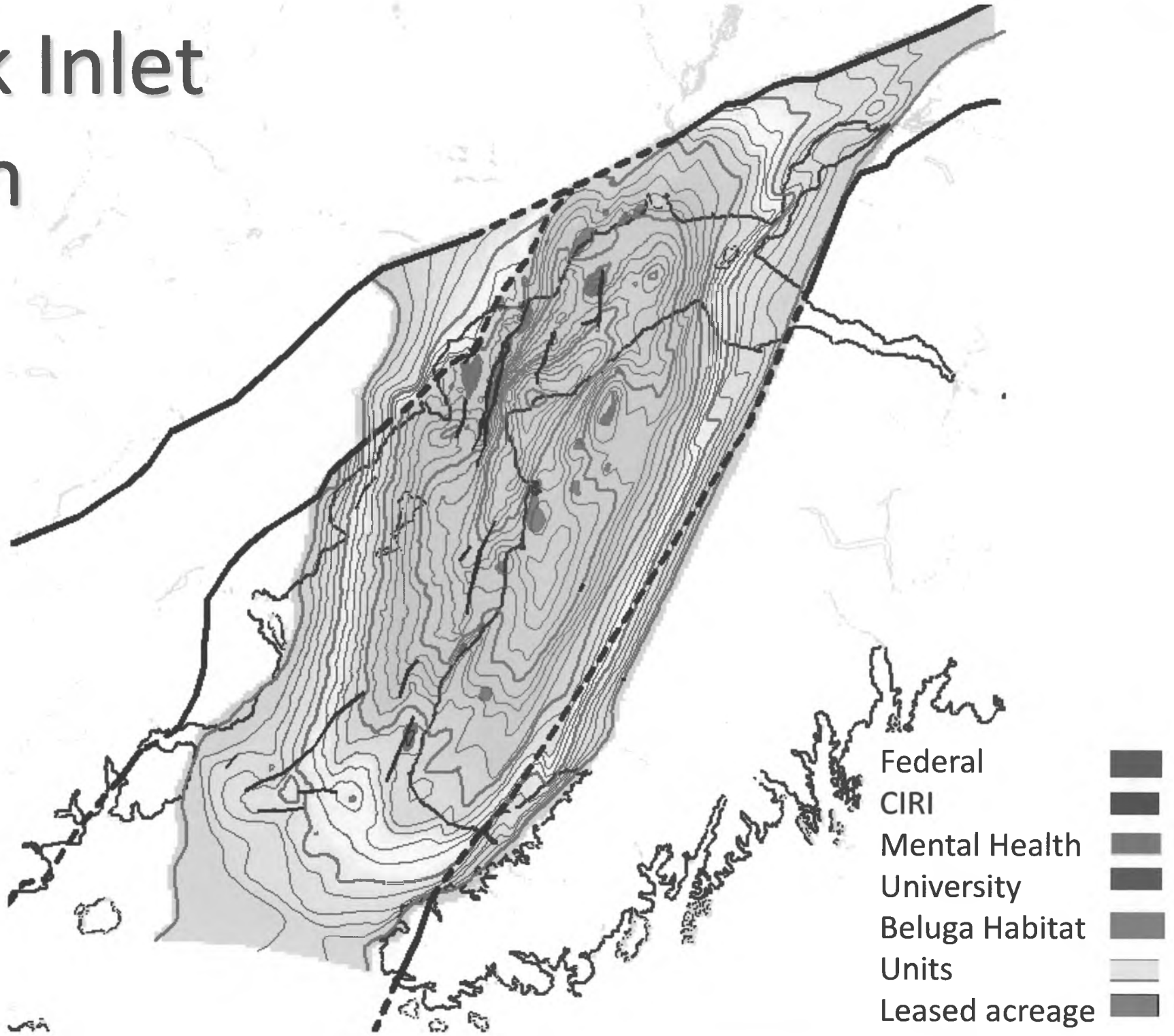


Adapted from SPE and others, 2007

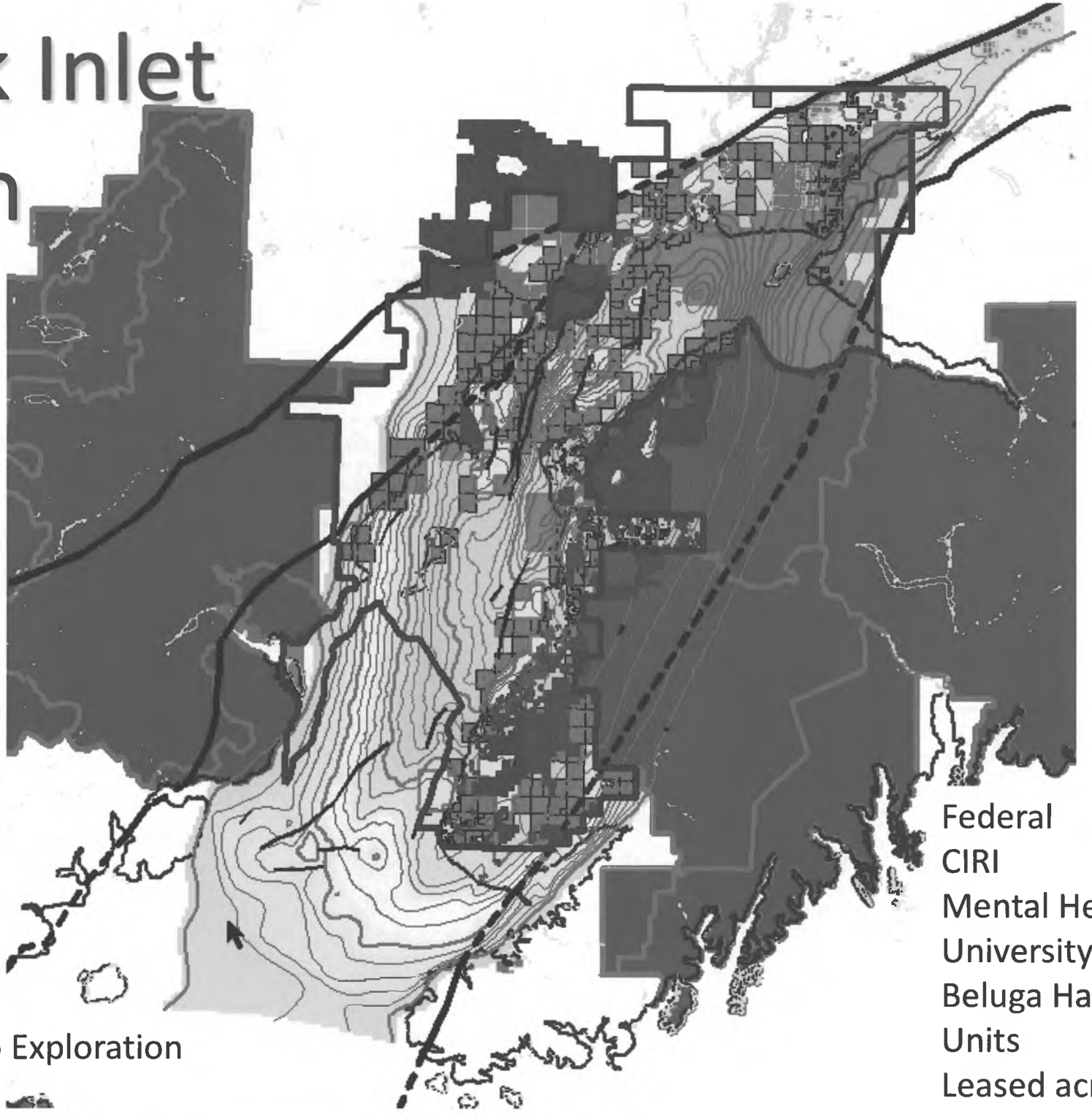
Illustrative South-Central Alaska Daily Demand



Cook Inlet Basin



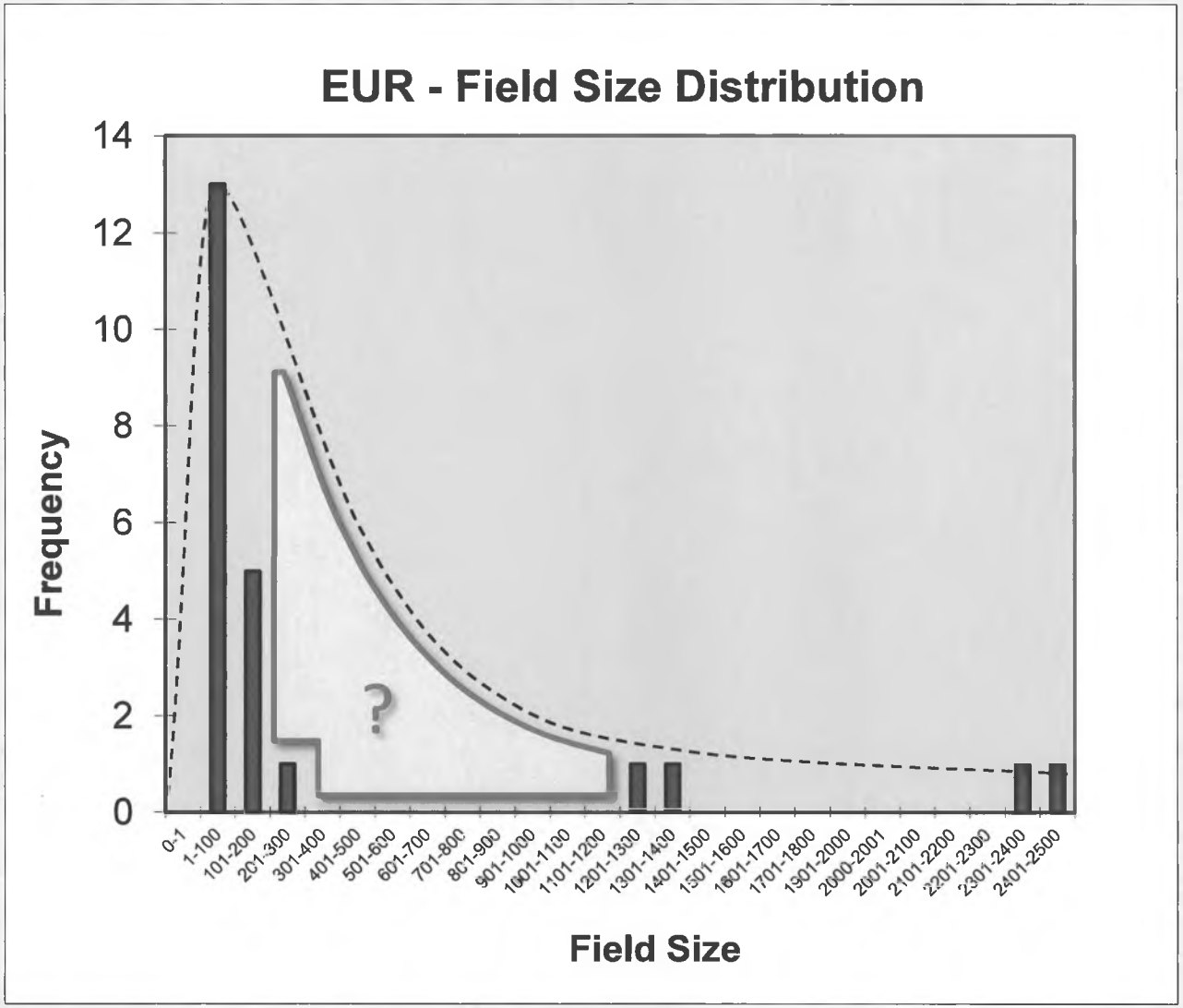
Cook Inlet Basin



Hurdles to Exploration

Gas Field Size Distribution - EUR

Gaps in lognormal distribution suggest undiscovered fields

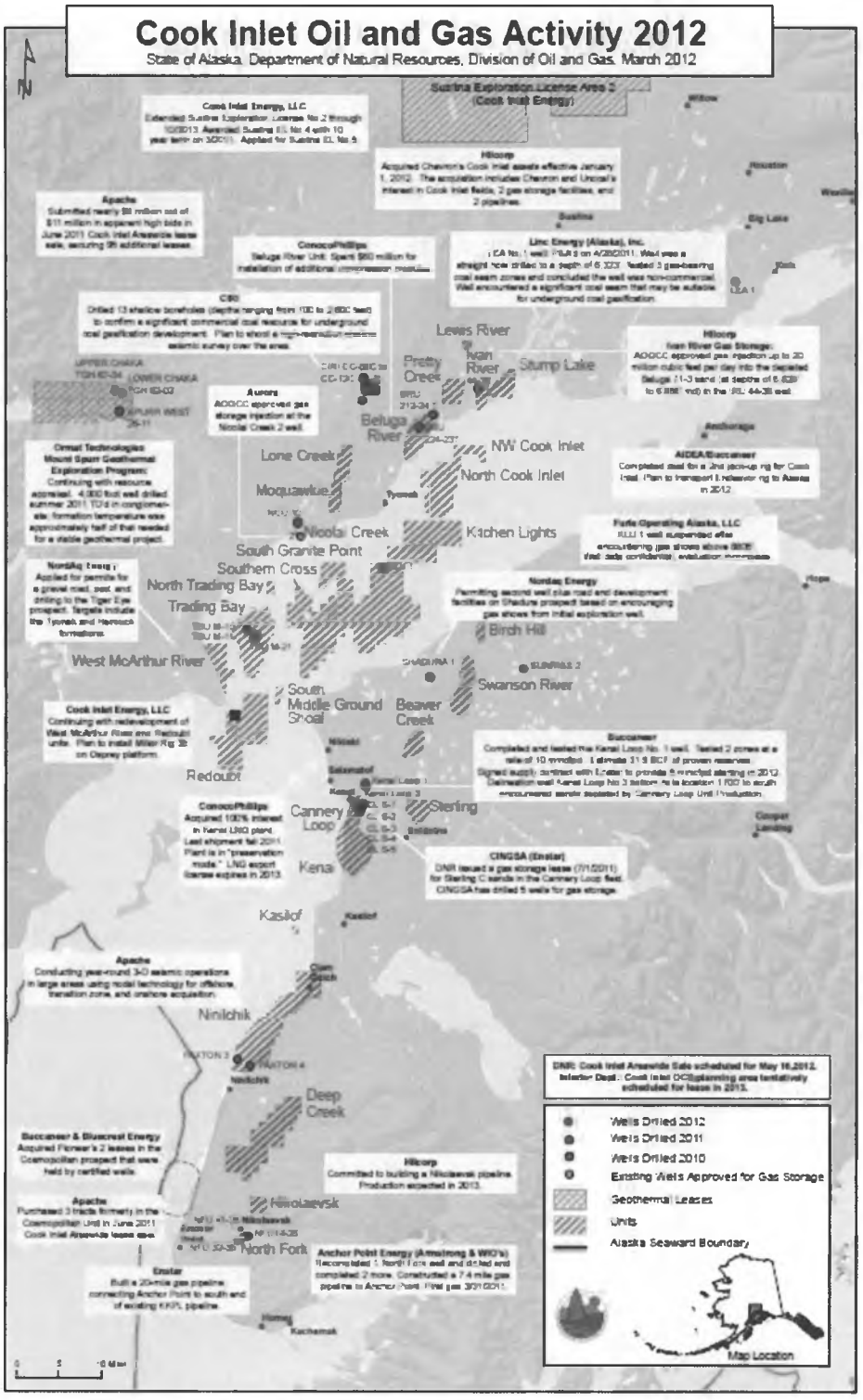


Stump Lake	6
Pretty Creek	6
West Fork	7
Lewis River	9
North Fork	12
Falls Creek	13
Birch Hill	22
Sterling	26
N Trading Bay Unit	30
Moquakie	43
Wolf Lake	50
Trading Bay	90
Ivan River	104
M G S	112
Cannery Loop	116
Granite Point	137
Swanson River	145
Beaver Creek	242
BRU	1266
McAurther River	1384
NCI	2328
Kenai	2425

TOTAL = 8576 Bcf

Mean = 373 Bcf

Dashed curve is schematic, for illustrative purposes only



Apache

- Purchased 95 additional State leases in June, 2011 lease sale. Now holds ~800,000 acres (State, Mental Health)
- Shooting 3-D nodal seismic year-round, 2 wells planned in 2012.

Hilcorp

- Operating former Chevron/Unocal assets
- Constructing a pipeline to bring Nikolaevsk Unit on in 2013.

Furie

- Spartan 151 jack-up rig drilling to resume at Kitchen Lights Unit
- Recently reduced estimate of KLU #1 gas discovery by ~ 80%

Buccaneer

- Kenai Loop #1: 31.5 BCF proven reserves
- Second well Kenai Loop #3 was dry hole (depleted by Cannery Loop)
- Planning to bring AIDEA-subsidized Endeavor jack-up to basin in 2012

Nordaq Energy

- Shadura Prospect: permitting 2 more wells, development road, pads.
- Permitting Tiger Eye prospect onshore near West Foreland

Anchor Point Energy

- Recently drilled and completed 2 wells, recompleted 1
- North Fork gas now on production through new 7.4 mile pipeline to Anchor Point (2011)

Cook Inlet Energy

- Restarted 4 oil wells in West MacArthur River Unit, 2 oil wells in Redoubt Unit (2011)
- Custom rig for Osprey Platform
- Permitting 3 exploration wells at Sting Ray prospect

CIRI

- Underground Coal Gasification (UCG) project -- shallow core drilling

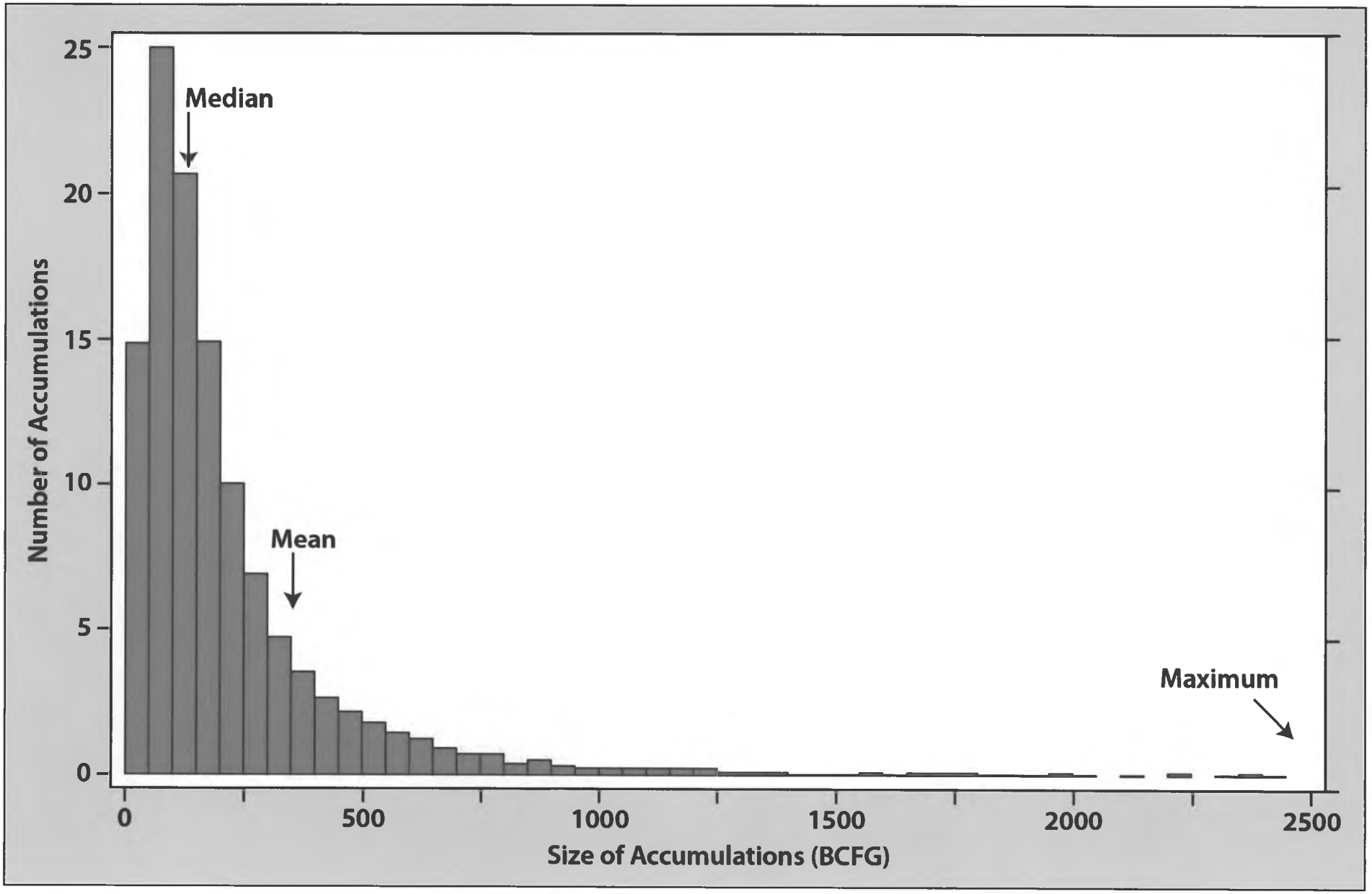
Linc Energy

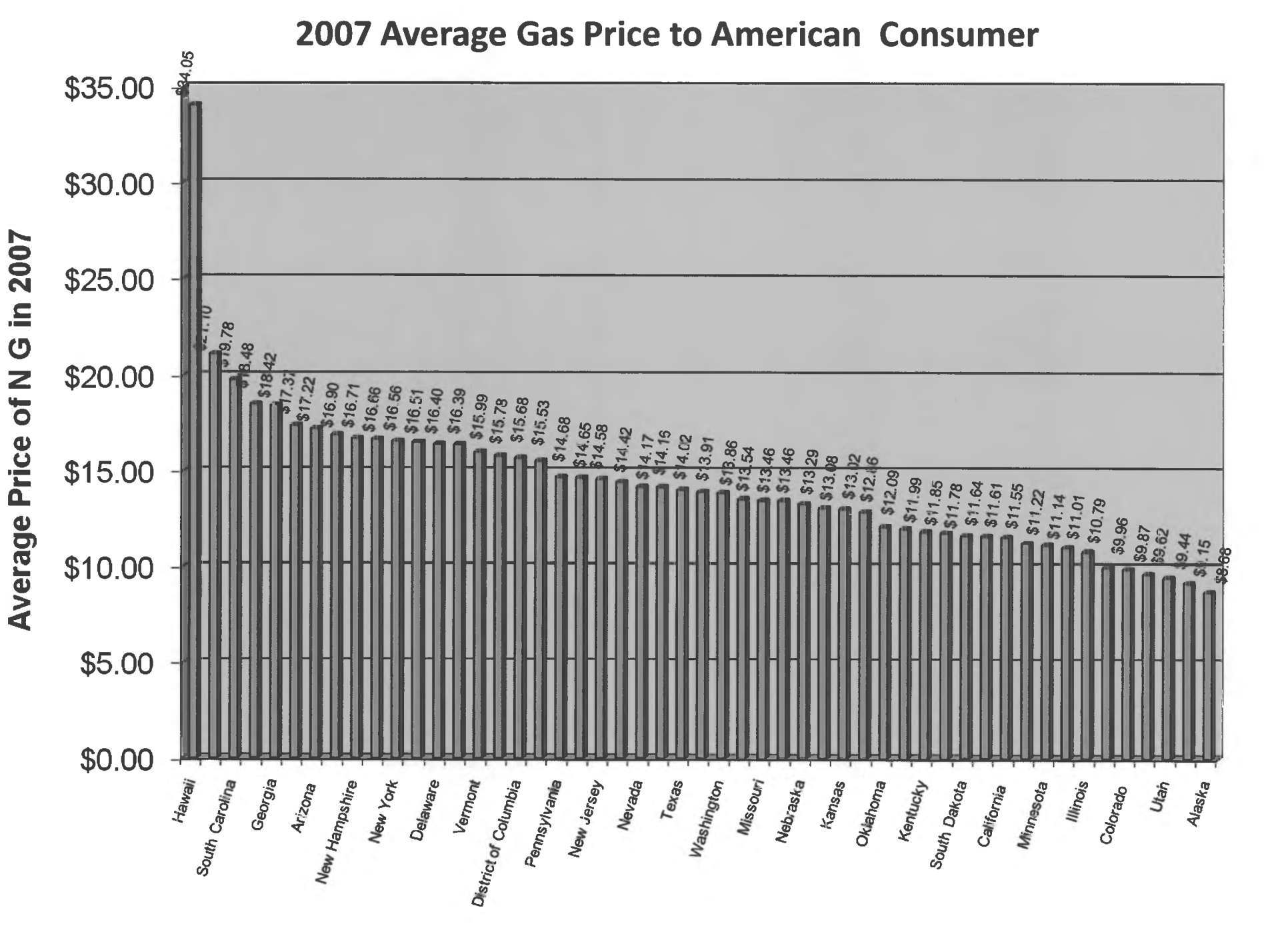
- LEA 1 plugged & abandoned (2011)
- Planned well in Trading Bay area
- Long-term interest in UCG in Cook Inlet

Gas storage

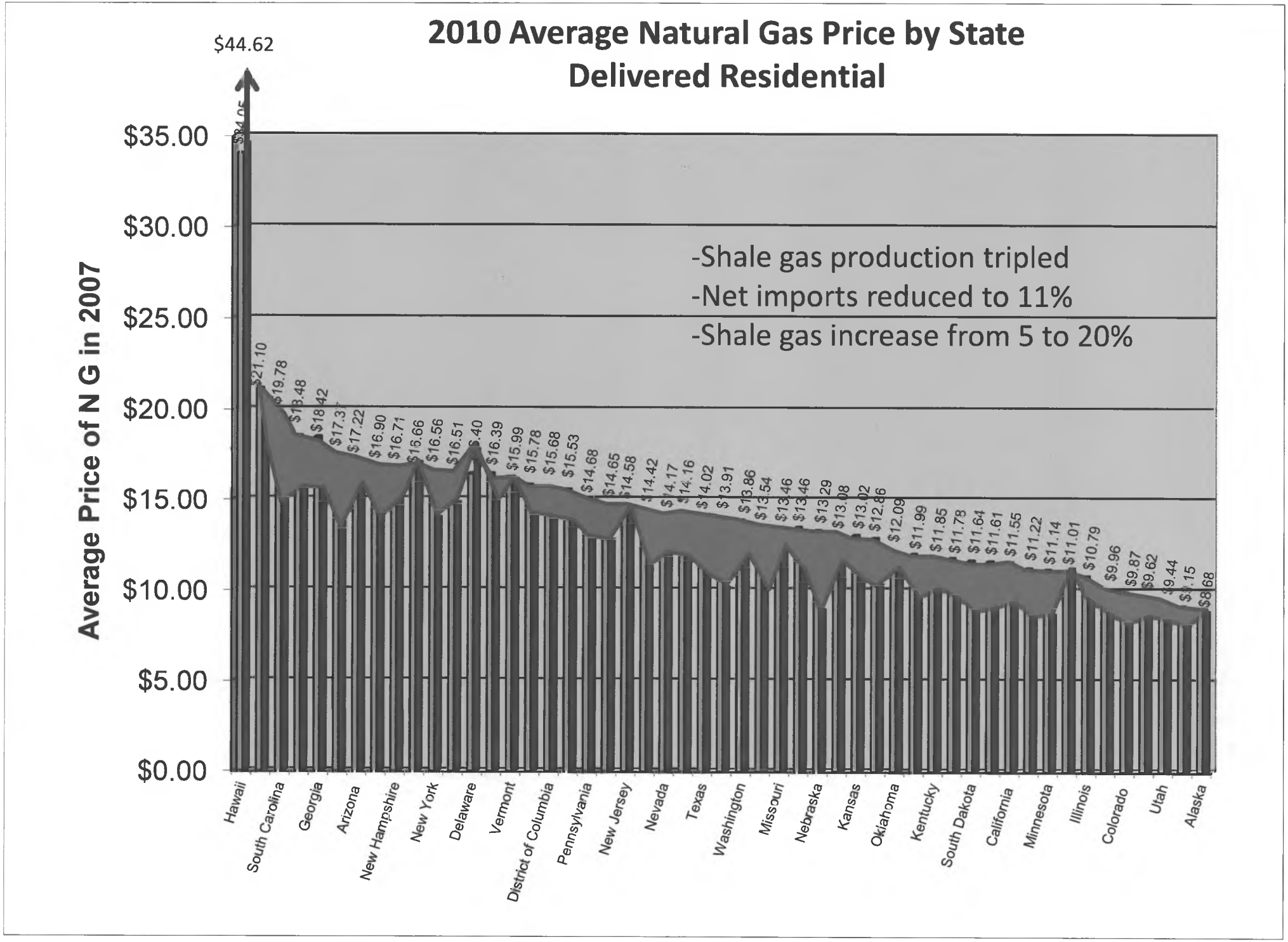
- New: CINGSA startup, Nicolai Creek (?)
- Existing: Swanson River, Pretty Creek, Kenai

Log Normal Distribution of Gas Accumulation Size

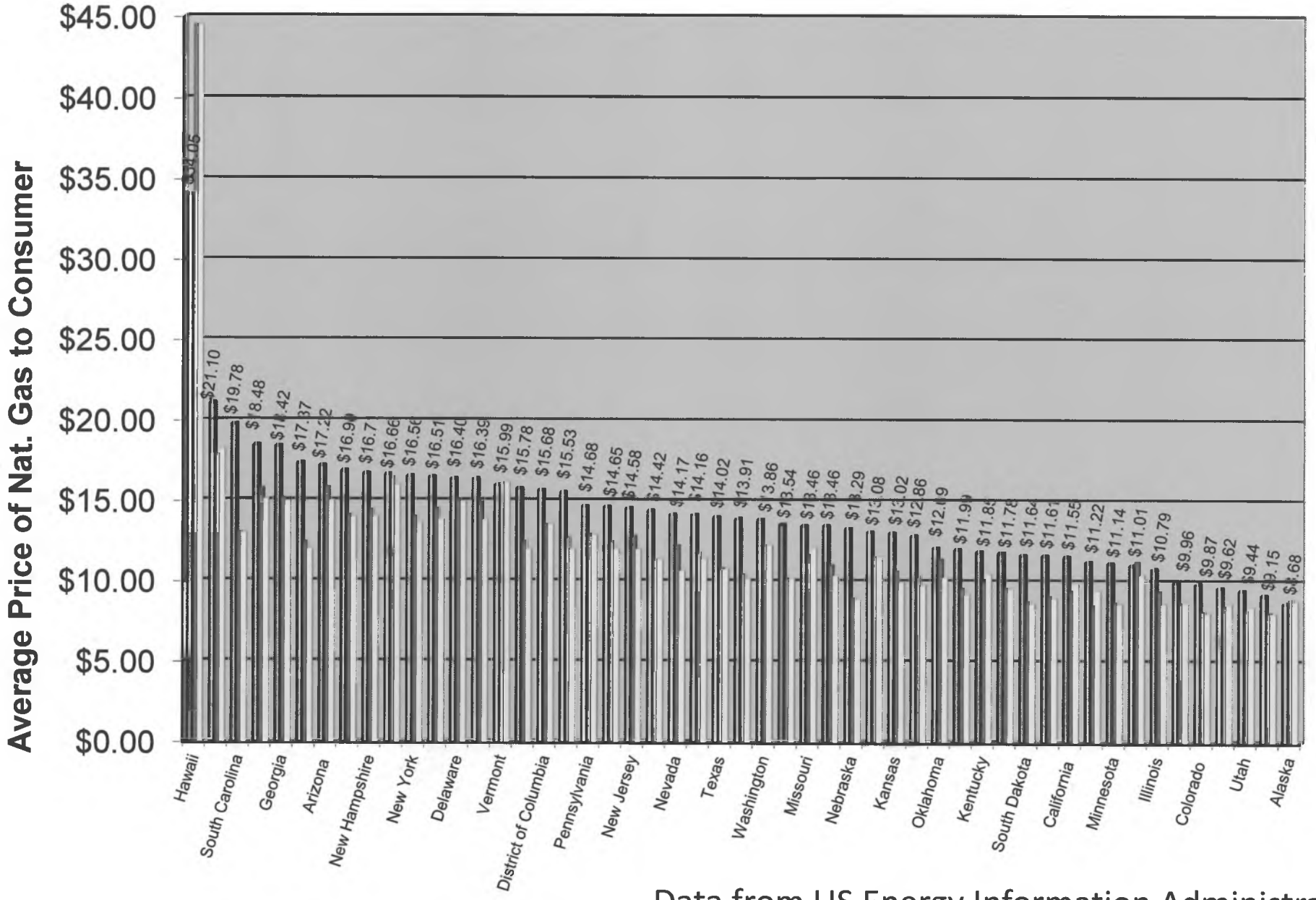




Data from US Energy Information Administration


2010 Average Natural Gas Price by State
Delivered Residential
$44.62
Average Price of N G in 2007
$35.00
$30.00
$25.00
$20.00
$15.00
$10.00
$5.00
$0.00
-Shale gas production tripled
-Net imports reduced to 11%
-Shale gas increase from 5 to 20%
$21.10
$19.78
$18.48
$18.42
$17.22
$16.90
$16.71
$16.66
$16.56
$16.51
$16.39
$15.99
$15.78
$15.68
$15.53
$14.68
$14.65
$14.58
$14.42
$14.16
$14.02
$13.91
$13.86
$13.54
$13.46
$13.46
$13.29
$13.08
$13.02
$12.86
$12.09
$11.99
$11.85
$11.78
$11.64
$11.61
$11.55
$11.22
$11.14
$11.01
$10.79
$9.96
$9.87
$9.62
$9.44
$9.15
$8.68
Hawaii
South Carolina
Georgia
Arizona
New Hampshire
New York
Delaware
Vermont
District of Columbia
Pennsylvania
New Jersey
Nevada
Texas
Washington
Missouri
Nebraska
Kansas
Oklahoma
Kentucky
South Dakota
California
Minnesota
Illinois
Colorado
Utah
Alaska

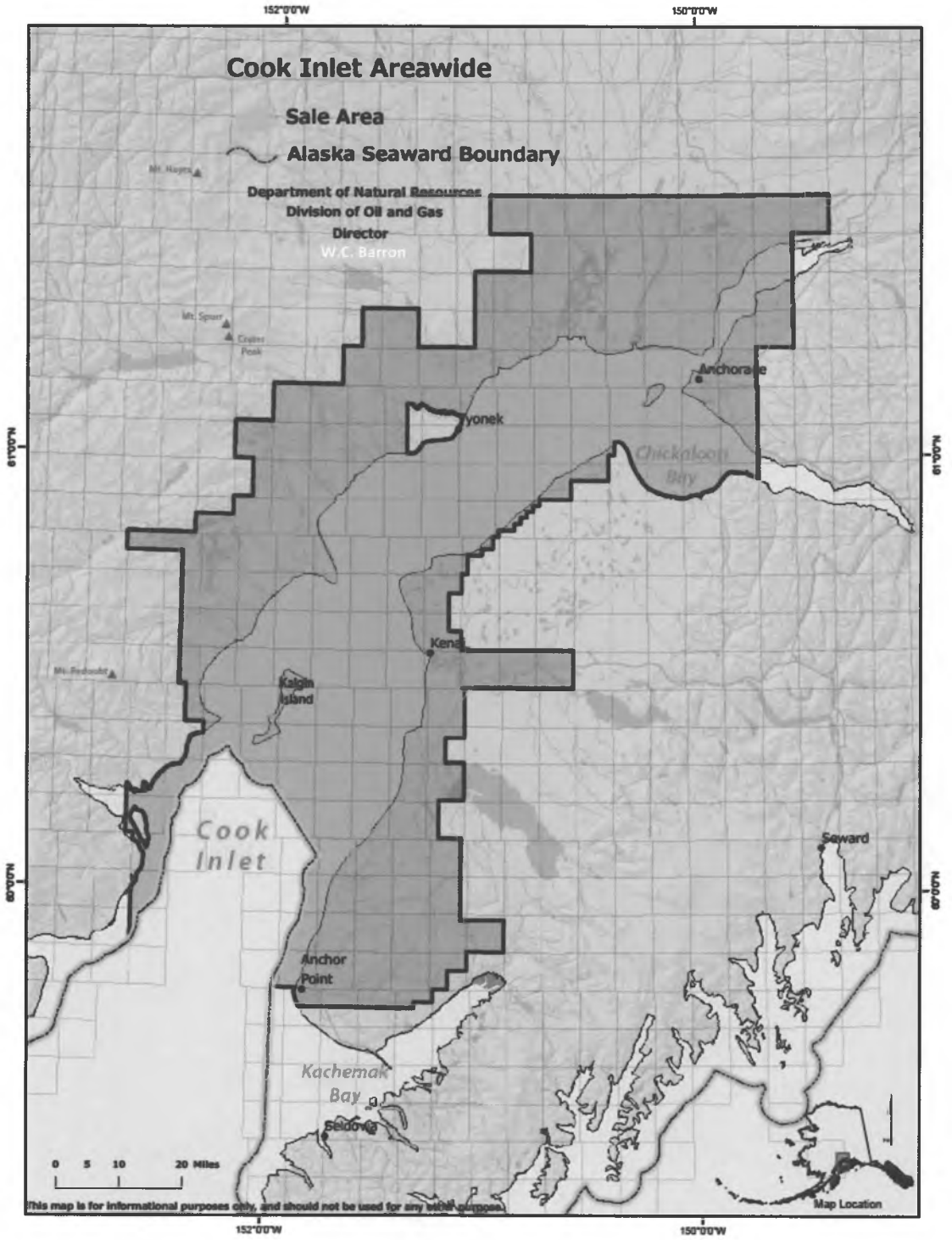
2007 vs. 2010 vs. 2011 Average Gas Price to American Consumer



Data from US Energy Information Administration

Cook Inlet Areawide Lease Sale

- Recent exploration buzz
  - new players
  - new discoveries
- 4.2 million acres
- All open acreage offered
- Notice of Sale with sale details due April 1, 2012
- Bids due May 14, 2012
- Bid opening May 16, 2012



Cook Inlet Gas Supply Study Update

Alaska House of Representatives
Special Committee on Energy

Tom Walsh

April 10, 2012

ENSTAR Natural Gas Company

CHUGACH POWERING ALASKA'S FUTURE

MLP ANCHORAGE, AK SEVENTY-FIVE YEARS

By: Petrotechnical Resources of Alaska

2009 Cook Inlet Study

- In 2009, ENSTAR, Chugach Electric and ML&P commissioned PRA to perform a study of Cook Inlet Supply from existing Fields
- Study allowed Cook Inlet Utilities to better understand their gas supply
  - Impact and drivers of drilling/development activity
  - Further understanding of DNR 2009 CI Gas Report
  - Help predict when gas would need to be imported into the Cook Inlet market
- In 2012, PRA updated the supply study

PRA
Petrotechnical Resources Alaska

Why Do Utilities Care About Cook Inlet Gas?

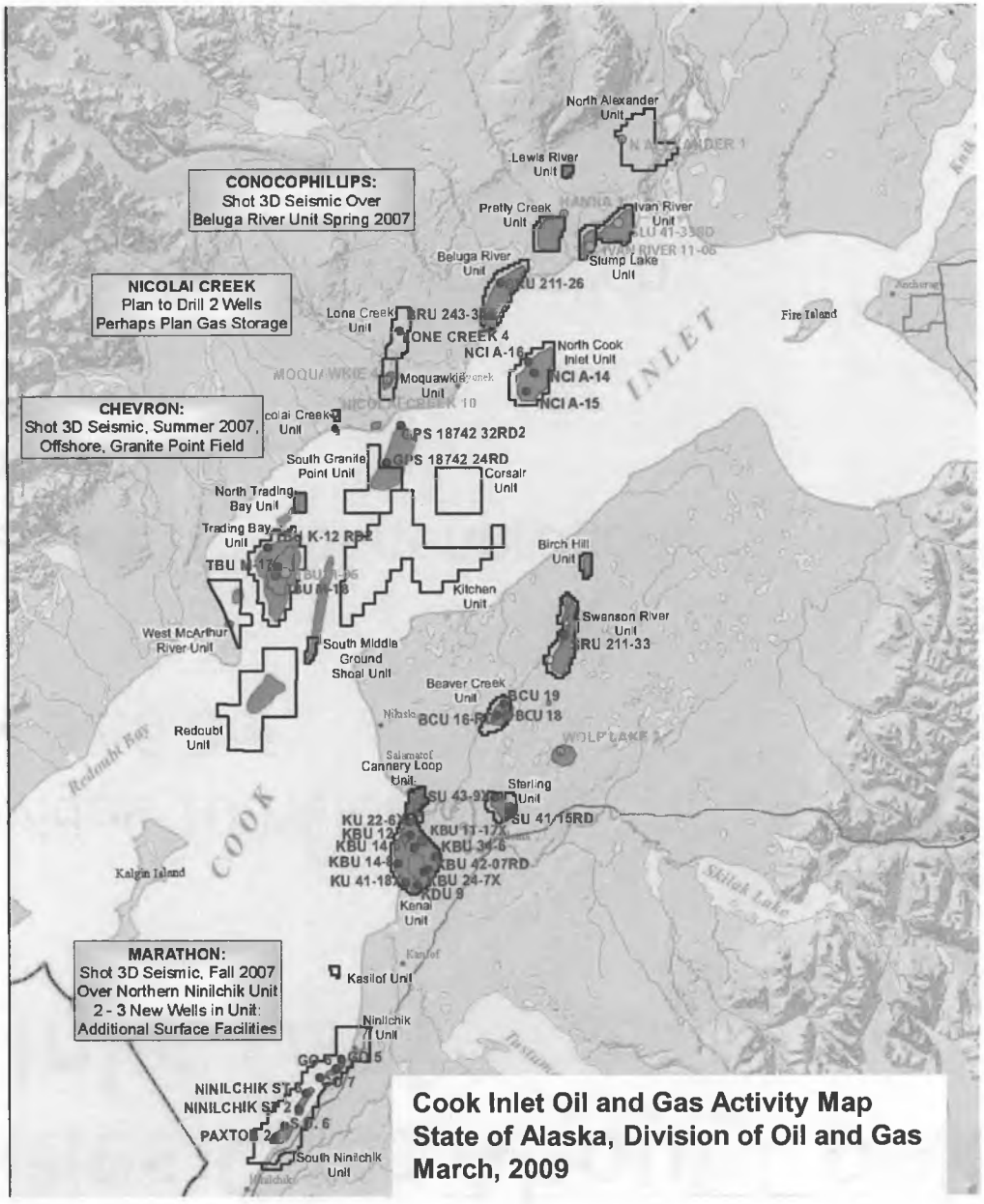
- ENSTAR
  - Cook Inlet gas provides 100% of supply
  - 2009 consumption: 32.5 Bcf
- Chugach
  - Cook Inlet gas used for 90% of generation
  - 2009 consumption: 26 Bcf
- ML&P
  - Cook Inlet gas used for 88% of generation
  - 2009 consumption: 10.8 Bcf

PRA
Petrotechnical Resources Alaska

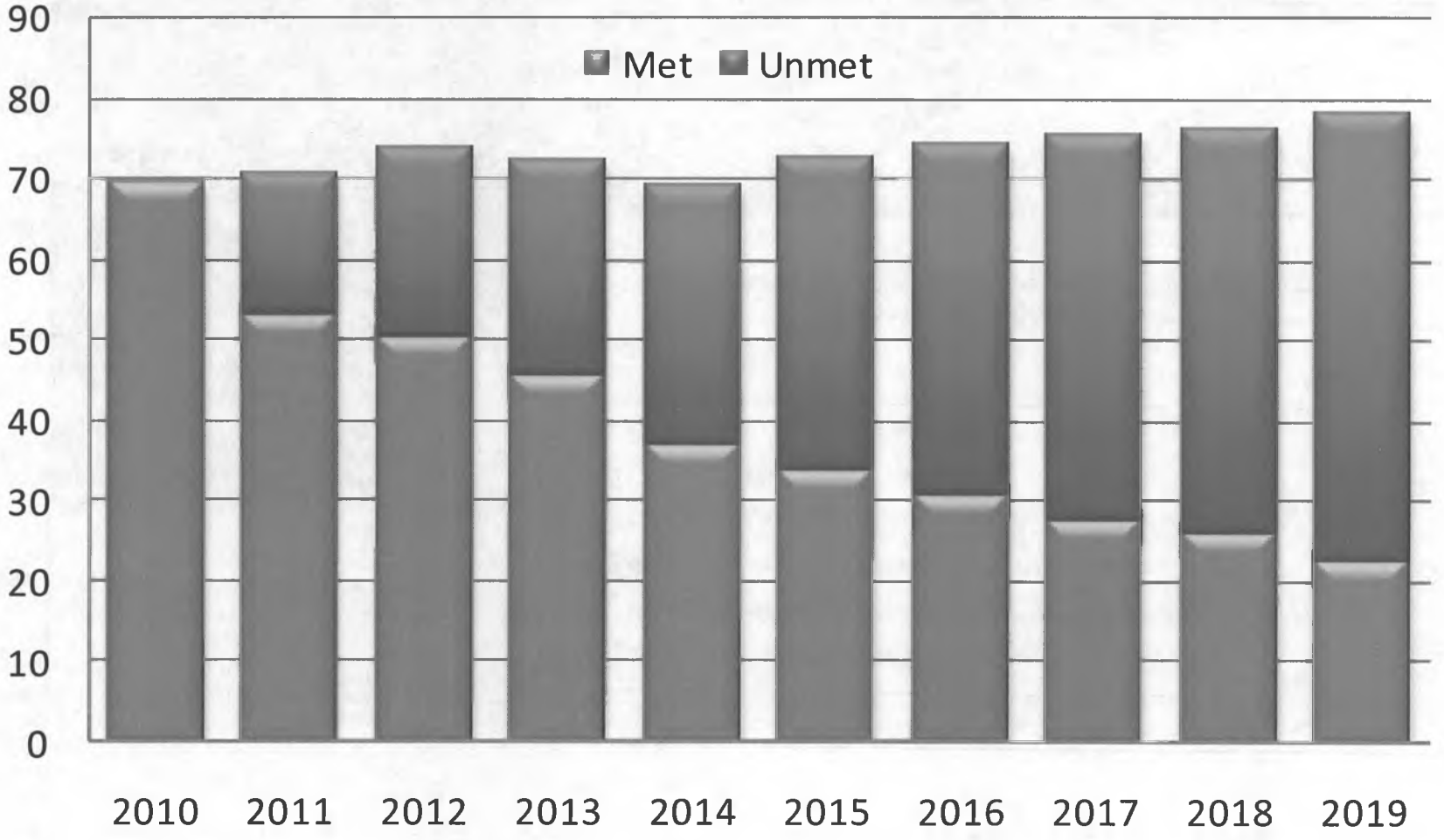
Cook Inlet Fields

2011 Gas Production

Beluga River Unit	27%
TBU	21%
No. CI	13%
Ninilchik	13%
Kenai Unit	11%
Others	15%

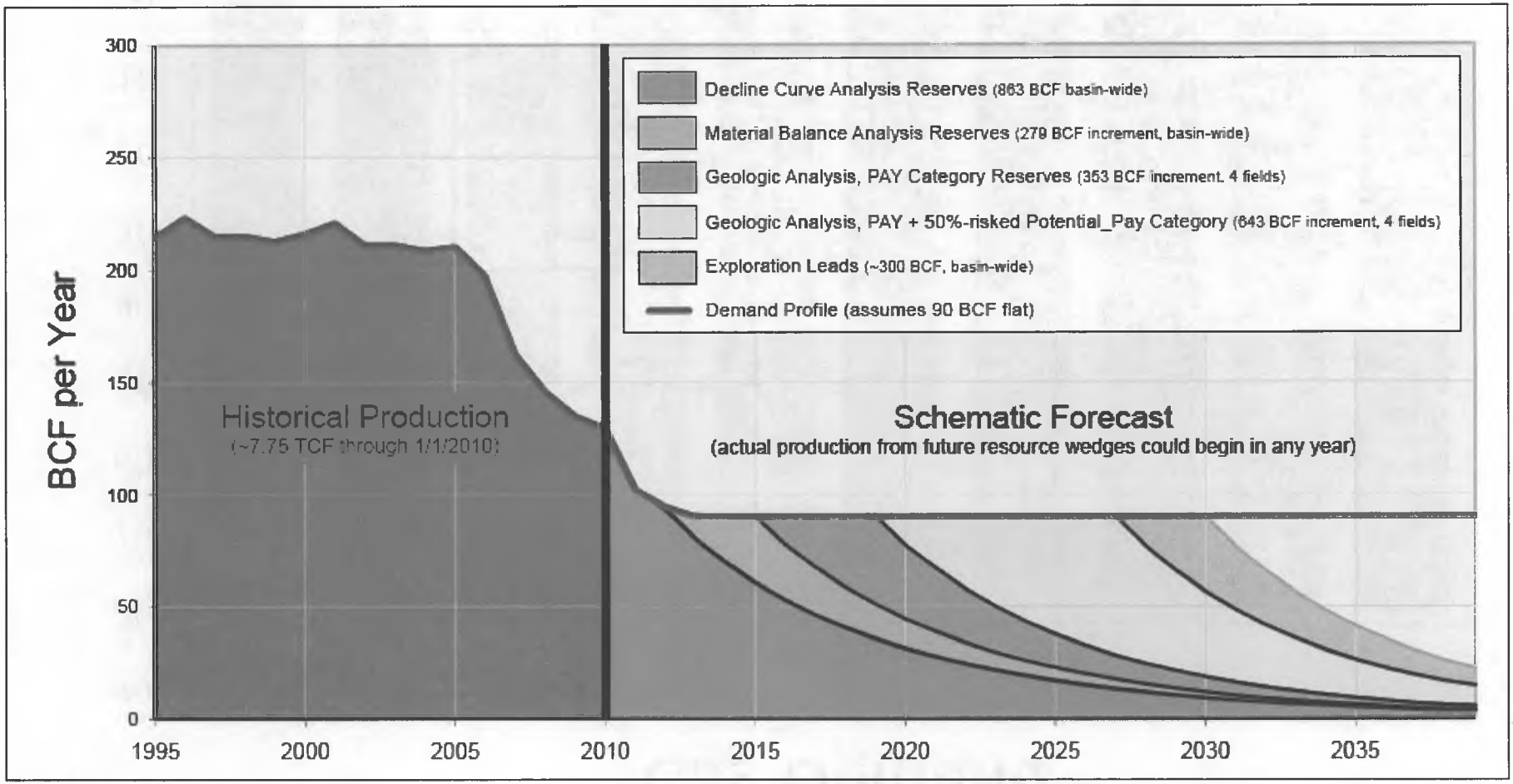


2009 Combined Utility Met and Unmet Gas Demand



PRA
Petrotechnical Resources Alaska

Annual Supply – DNR 2009 Report



Source: AK DNR December 2009 Study

2009 CI Gas Study for Cook Inlet Utilities by PRA

PRA
Petrotechnical Resources Alaska

Study Objectives

- Review DNR reserves analysis
- Review the deliverability of Cook Inlet gas wells drilled from 2001-2009
- Forecast deliverability of existing and future gas wells
- Analyze timing required for delivery of non-Cook Inlet gas sources

PRA
Petrotechnical Resources Alaska

Study Methodology

- Field-level decline curve analysis – most fields
- Individual well decline curve analysis – 5 largest fields: BRU, KU, NCI, NU, TBU
- New well IP decline through time
- Calculate activity required to meet future demand
- POD review
- Analysis of business drivers

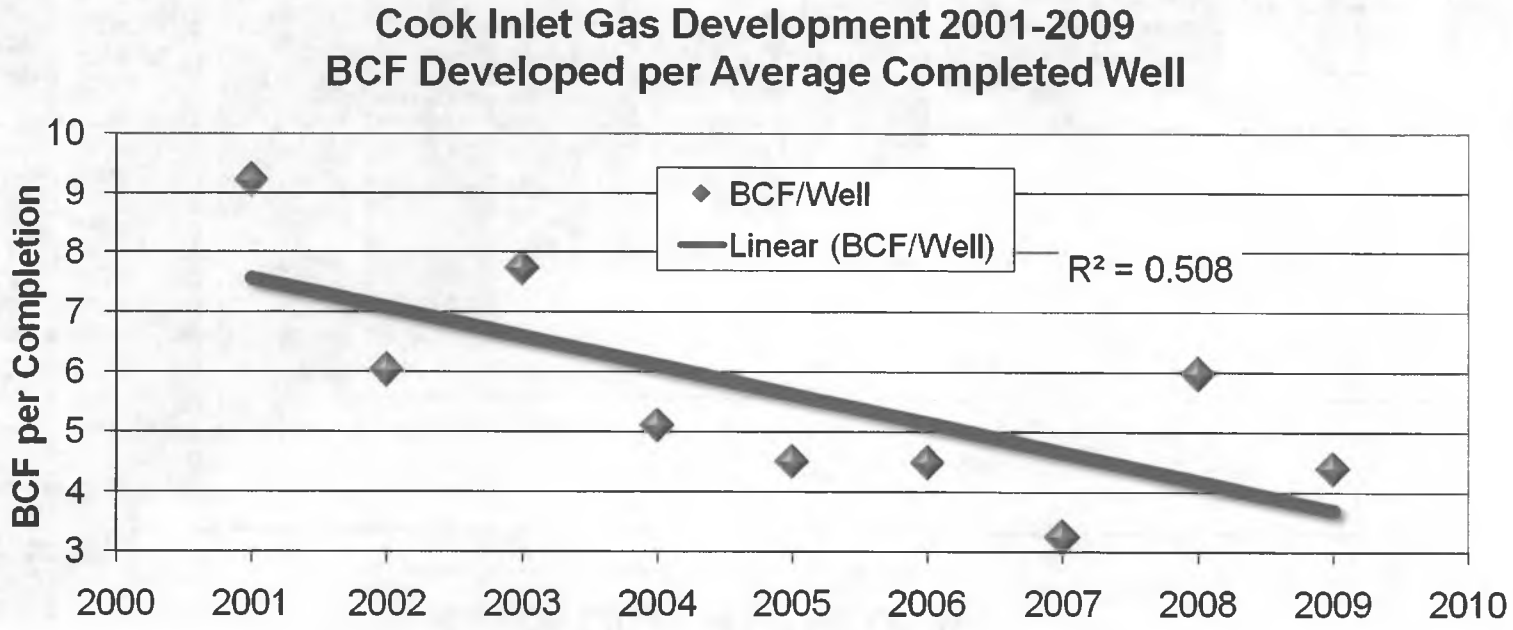
PRA
Petrotechnical Resources Alaska

Cook Inlet Drilling Results

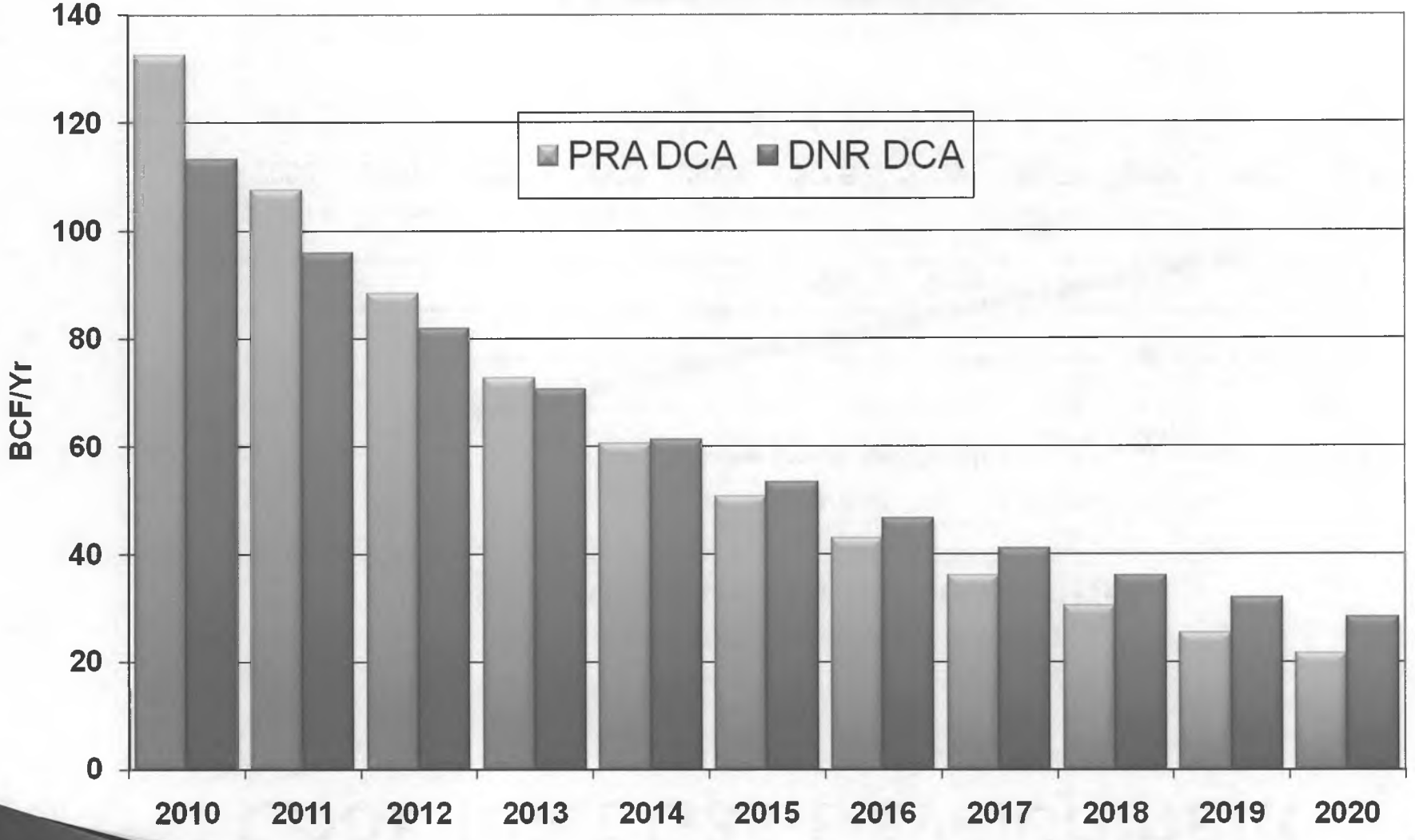
Period	Gas Wells Drilled	Gas Wells Completed	Initial Production (MMCF/day)
2001–2009	128	105	3.6 per well
2007–2009	34	34	3.1 per well

PRA
Petrotechnical Resources Alaska

Cook Inlet Gas Development



Cook Inlet Gas Production Forecast from Decline Curve Analysis PRA and DNR 2009 Studies



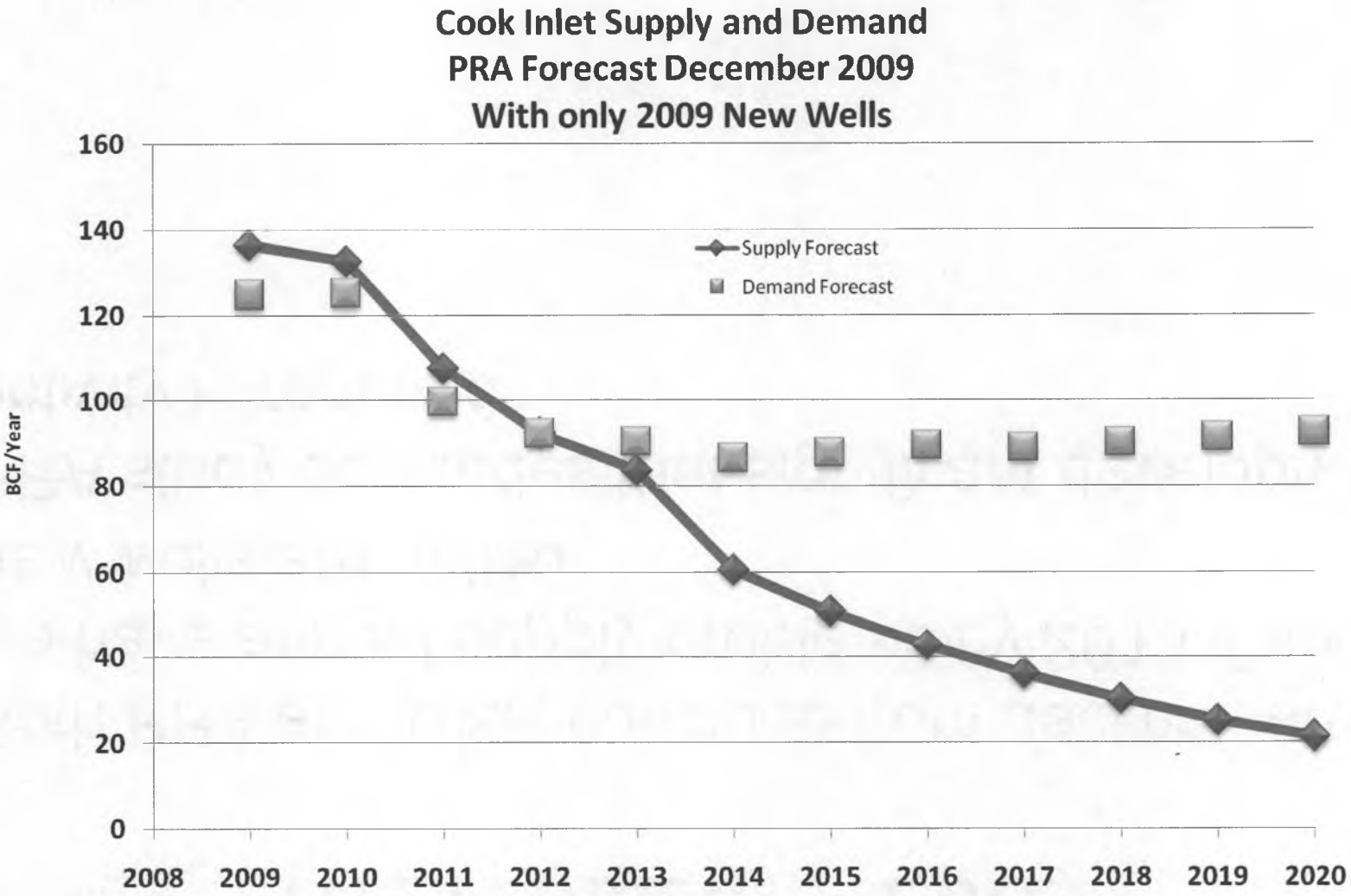
PRA
Petrotechnical Resources Alaska

The Problem – 2009

- Both PRA and DNR conclude from decline curves we have annual supply problems by 2013 if no new wells are drilled
- PRA study concludes that significant development activity is required

PRA
Petrotechnical Resources Alaska

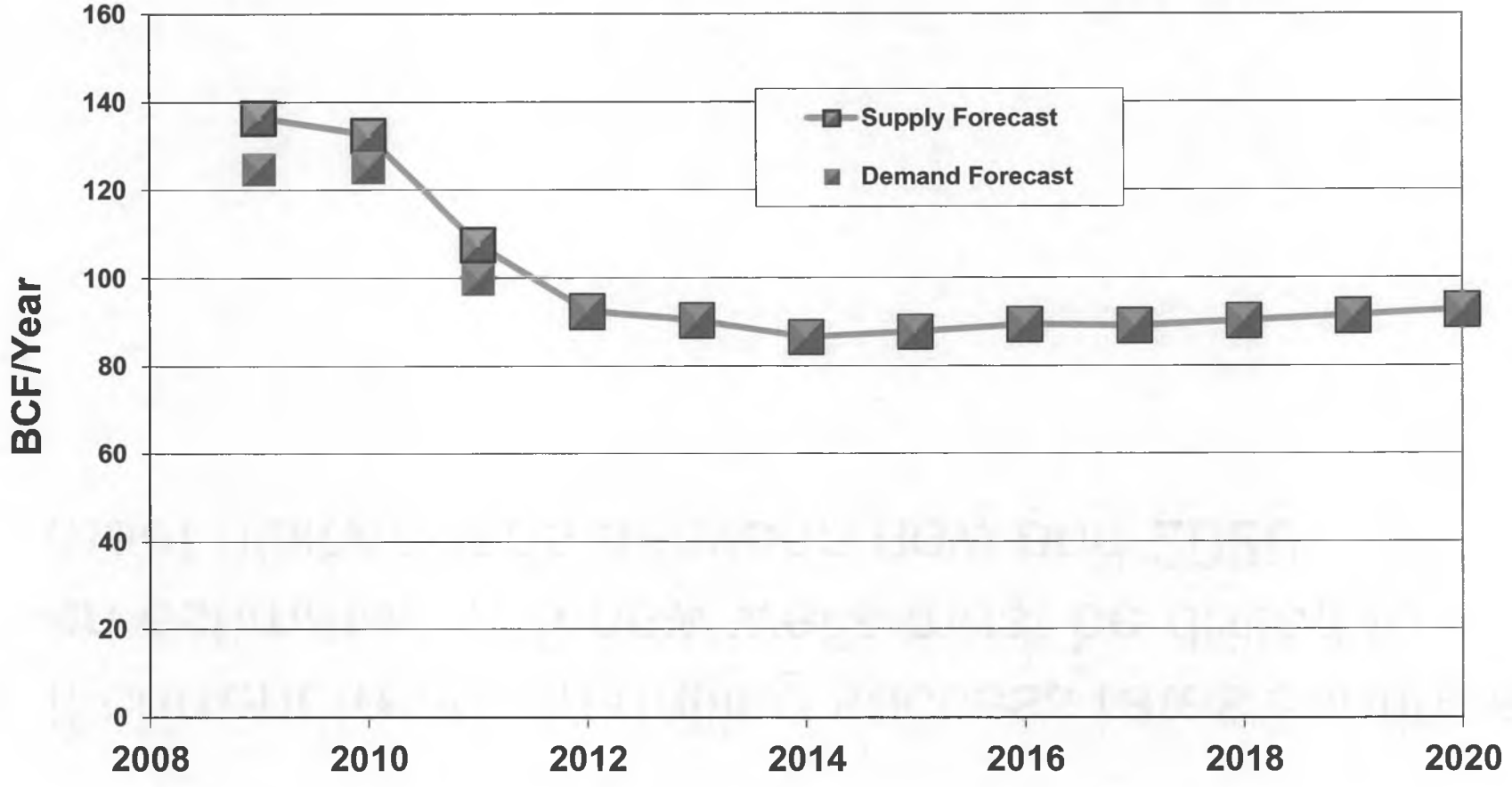
Annual Supply and Demand



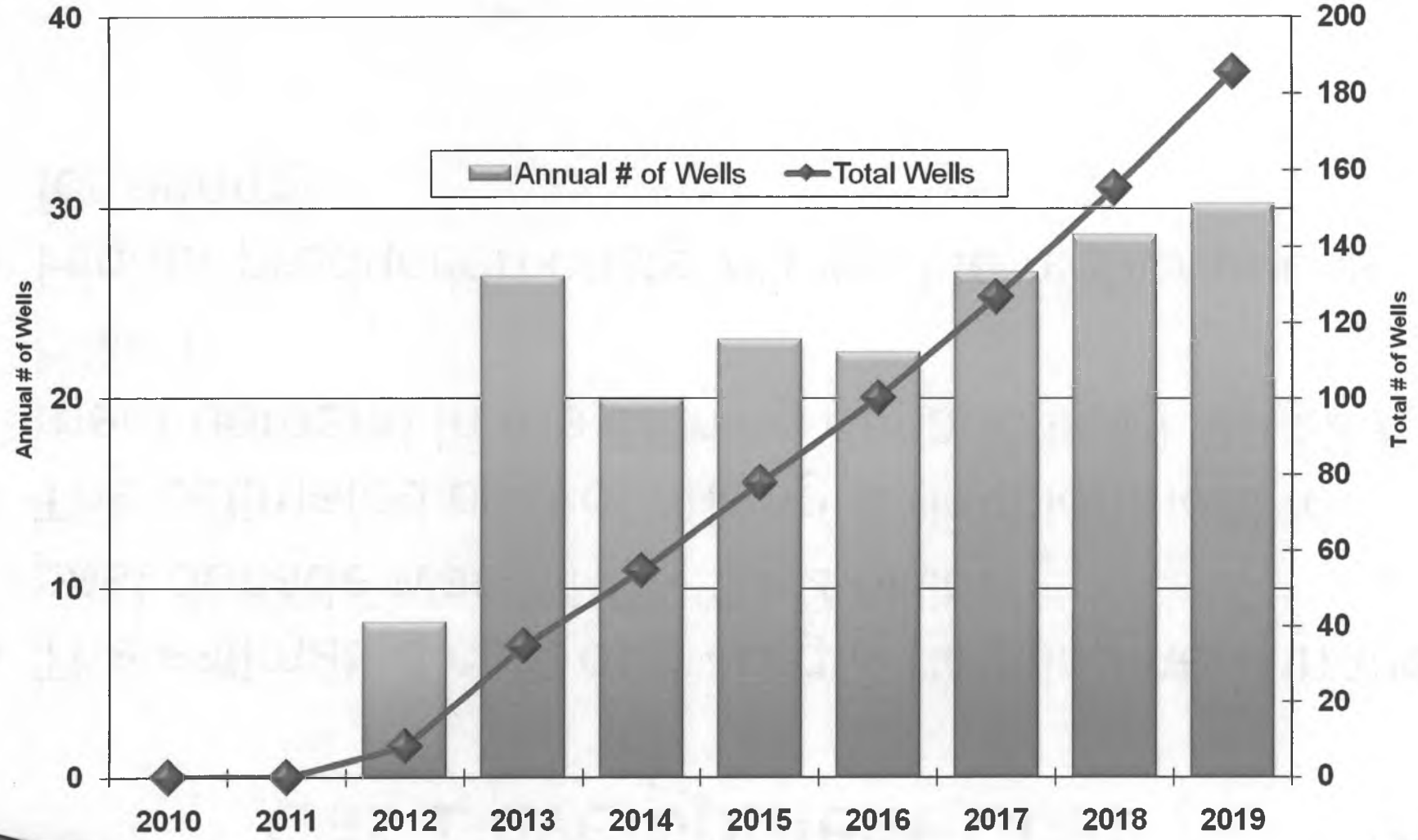
Scenario in 2009 Study

- If current trends in drilling success rates continue, an estimated 185 new wells must be drilled to meet utility needs between now and 2020

Cook Inlet Supply and Demand
PRA Forecast December 2009
Includes 185 Wells Completed to Meet Demand to 2020



185 Wells Completed 2012 to 2019
Meet Demand Through 2020



PRA
Petrotechnical Resources Alaska

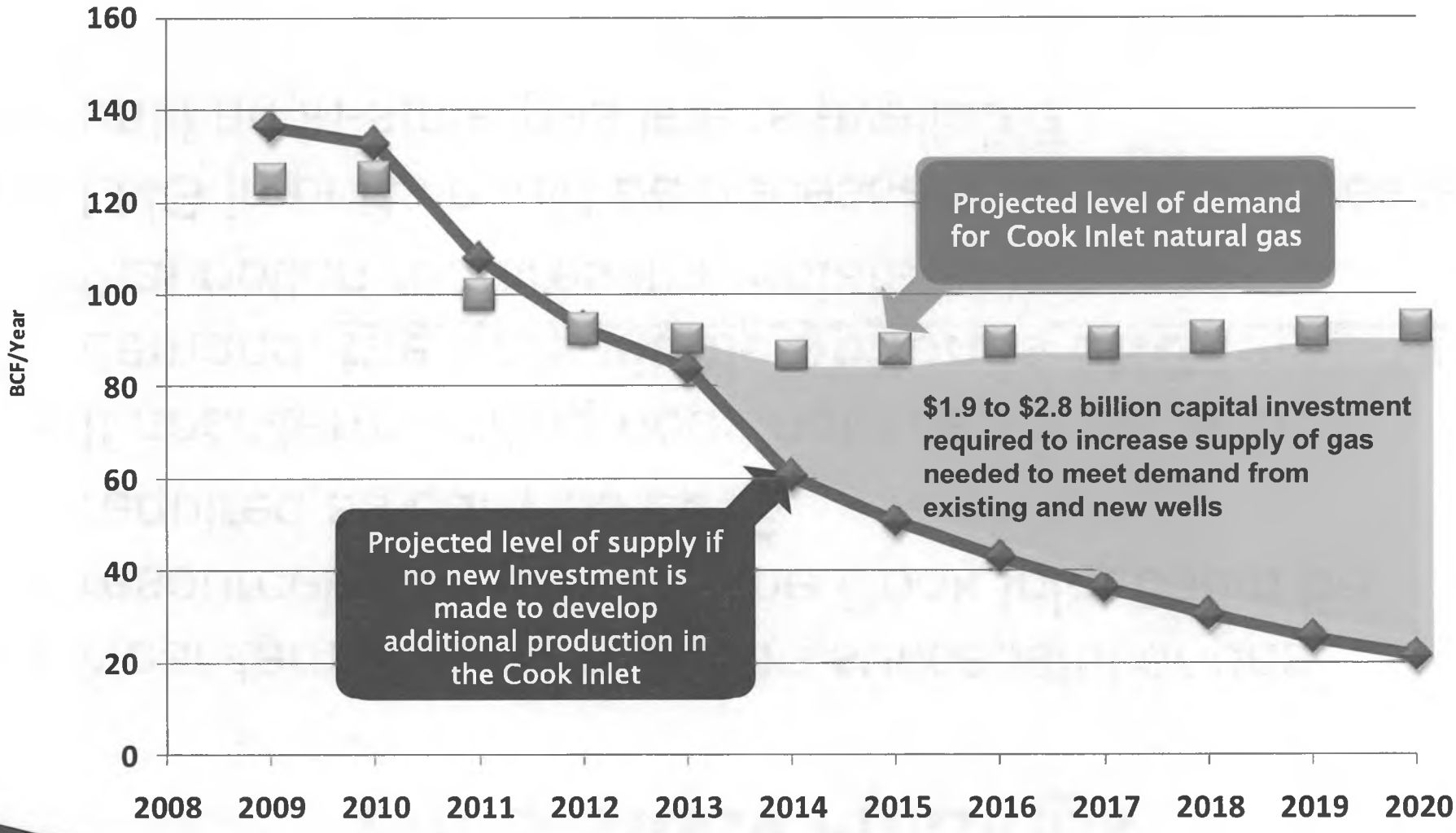
Gas Development Cost

- The estimated cost of drilling & development in the past decade was $1.0 – $1.2 billion
- The estimated cost of drilling & development to meet demand in the coming decade is $1.9 - $2.8 billion
- Higher production costs will lead to higher prices for energy

2009 Study Findings

- Near-term drilling **must** be successful or gas resources from outside the Cook Inlet could be required as early as 2013
- If near-term drilling does not keep pace with demand, **the only viable option is LNG imports**; that option requires immediate action
- LNG imports could be necessary for several years until an in-state gas line is available

2009 Summary



DNR 2011 CI Gas Cost Study

- CI Basin, with investment, is capable of meeting needs until 2018-2020 at prices below available alternatives
- Failure to make investments in lockstep with demand will result in need of alternative sources sooner.

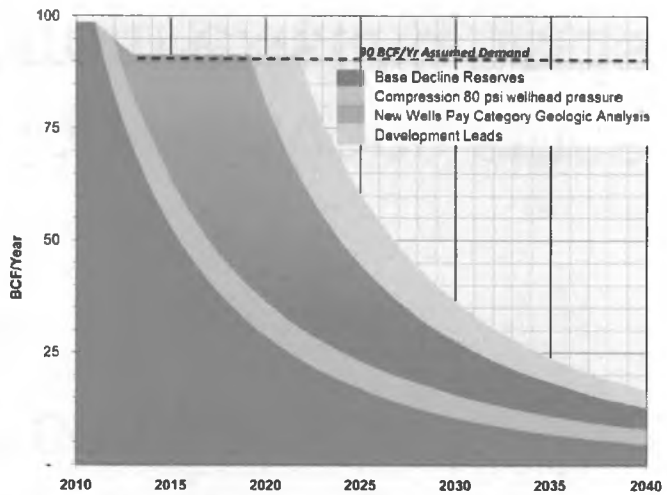


Figure 7. Hypothetical production forecasts resulting from this study for the Cook Inlet basin assuming a constant 90 BCF/Year demand after 2011. Production from future resource wedges could begin in any year. The projected "pay" volumes (green wedge) for this study are greater than that of the 2009 study (Figure 2) due to an error resulting in the understatement of McArthur River Grayling Gas Sands new well pay reserves potential. This error is corrected in this Figure.

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2012 Update

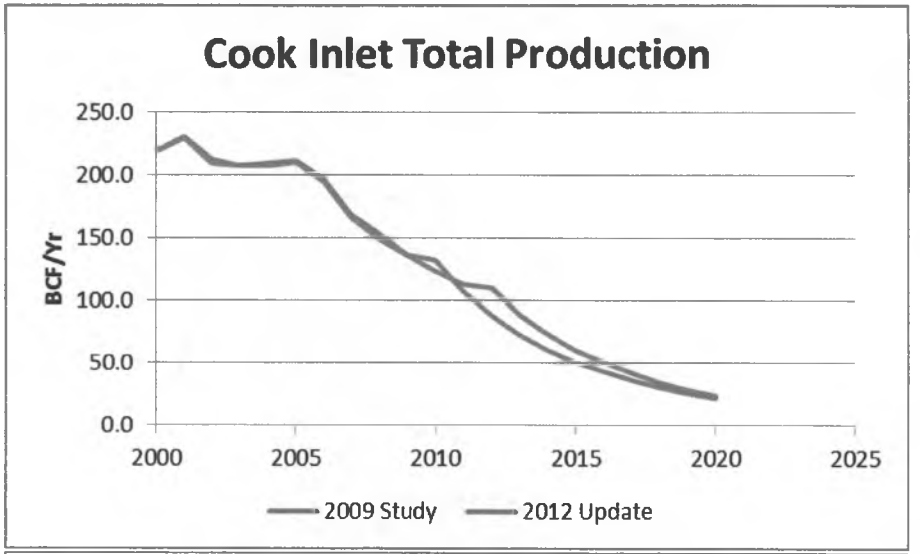
- PRA was asked by CI Utilities to Update the 2009 Study to make a current estimate of supply from existing Cook Inlet Fields for comparison to the current CI Demand Forecast.

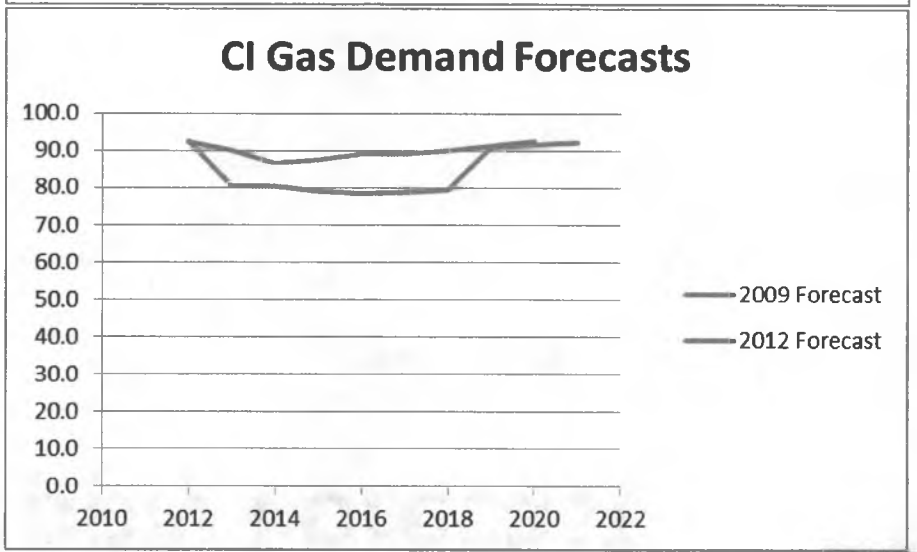
- Due to drilling and compression additions since 2009, the predicted shortfall from existing fields has changed from 2013 to 2014.

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Forecast Changes since 2009 Study

- Supply Forecast is slightly higher than 2009
  - New wells and field compression added
- Generally, Demand Forecast is slightly lower than 2009 except
  - LNG Export 2012
  - Donlin Creek in 2019

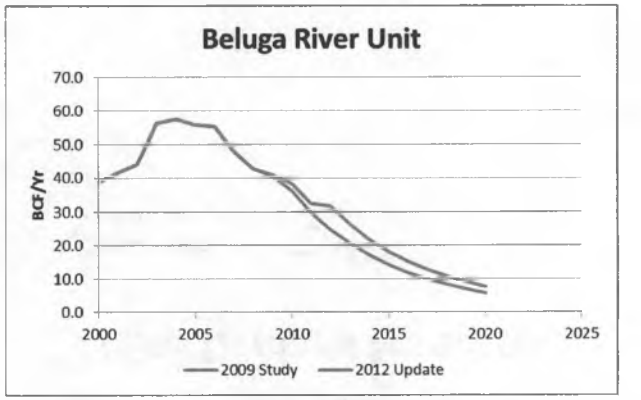


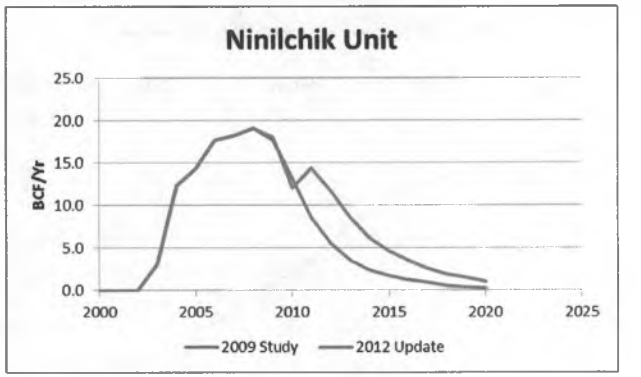


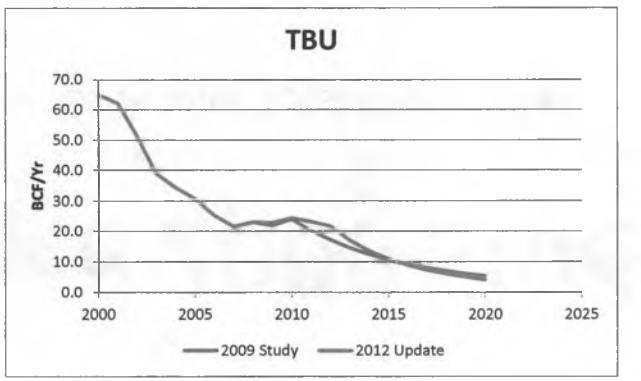
Changes in Supply Forecast

Material increases were in performance in wells mainly in the Beluga River, Trading Bay and Ninilchik Units

- Beluga River
  - Compression
  - 2 redrills
- Ninilchik
  - Compression
  - 2 new wells
- TBU
  - 4 new wells





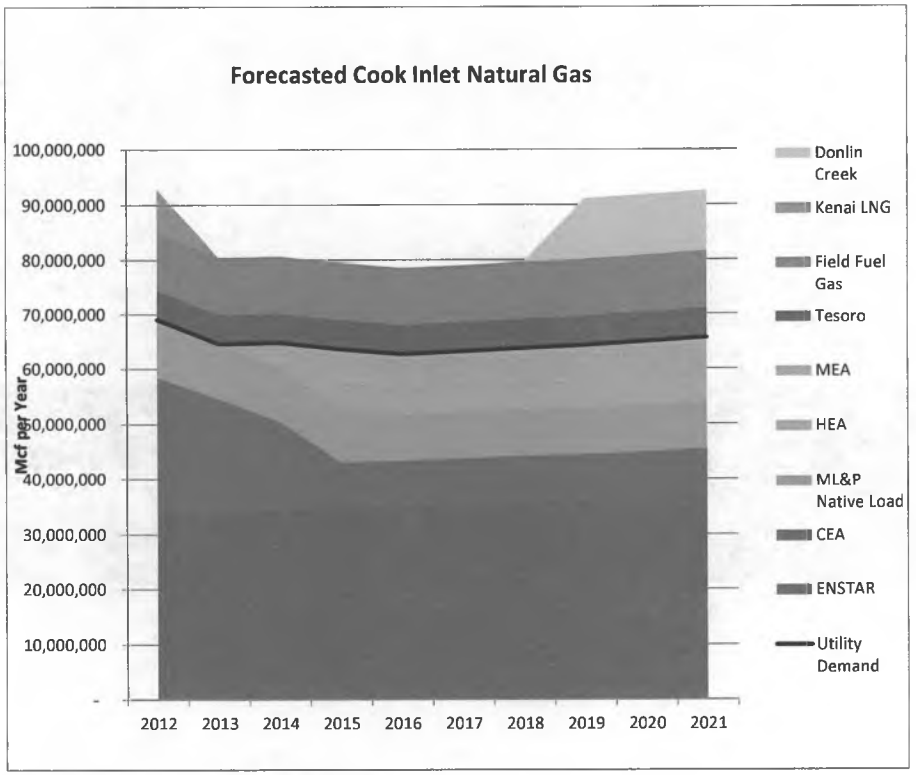


2009-2011 Drilling Activity and Production Adds

Period	# New Completions	Production Rate Added MMSCF/D
Nov-09 to Oct-10	5	18.5
Nov-10 to Oct-11	6	9.9

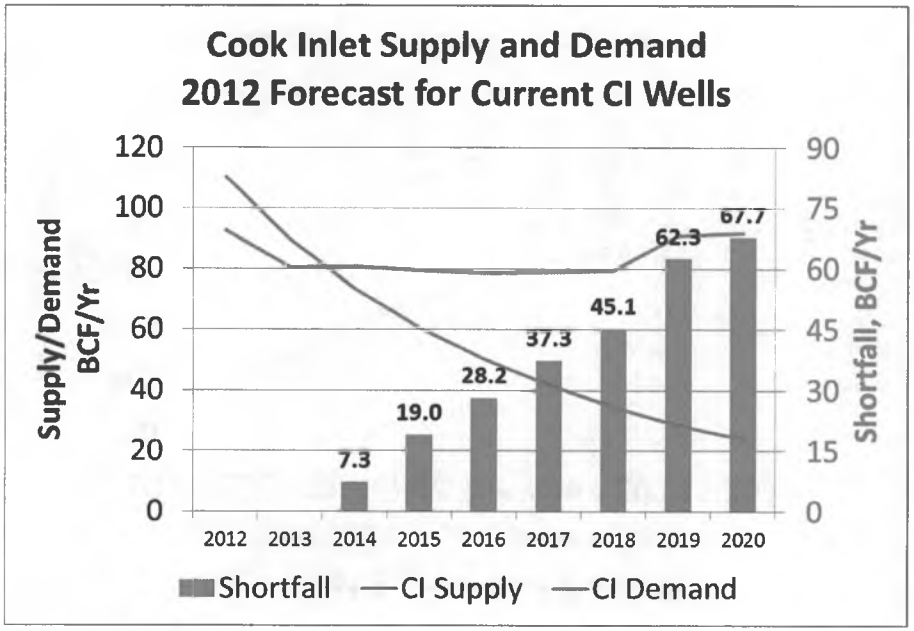
2012 Forecasted CI Demand

- LNG: 3-4 Cargos expected in 2012
- CEA new plant
- HEA and MEA will start contracting for needs (formerly under CEA)
- Field Fuel & Flare 10.5 BCF/year
- Donlin Creek startup 2019



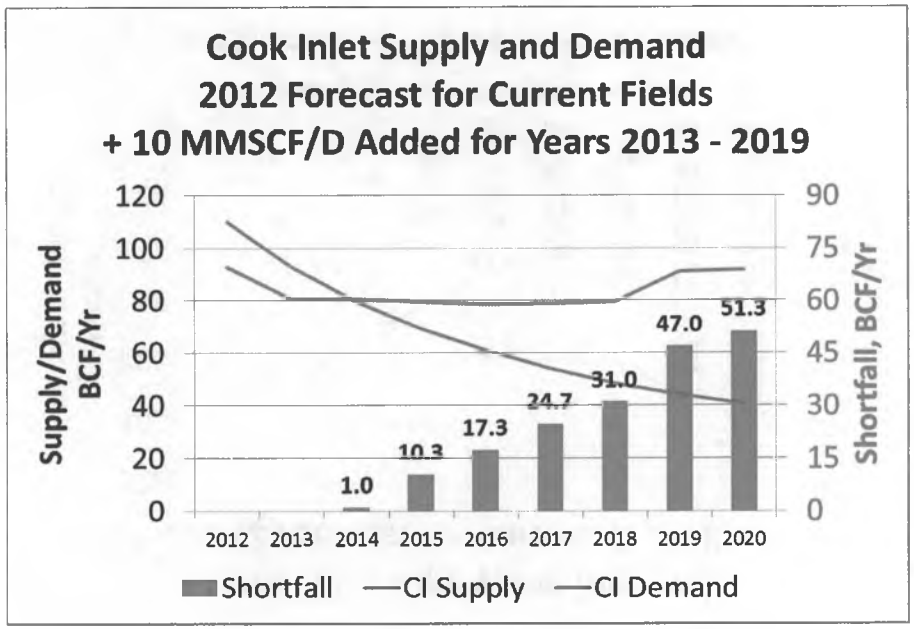
Supply/Demand and Shortfall

- With supply forecast from Annual Average production of existing CI wells, shortfall predicted to occur in 2014



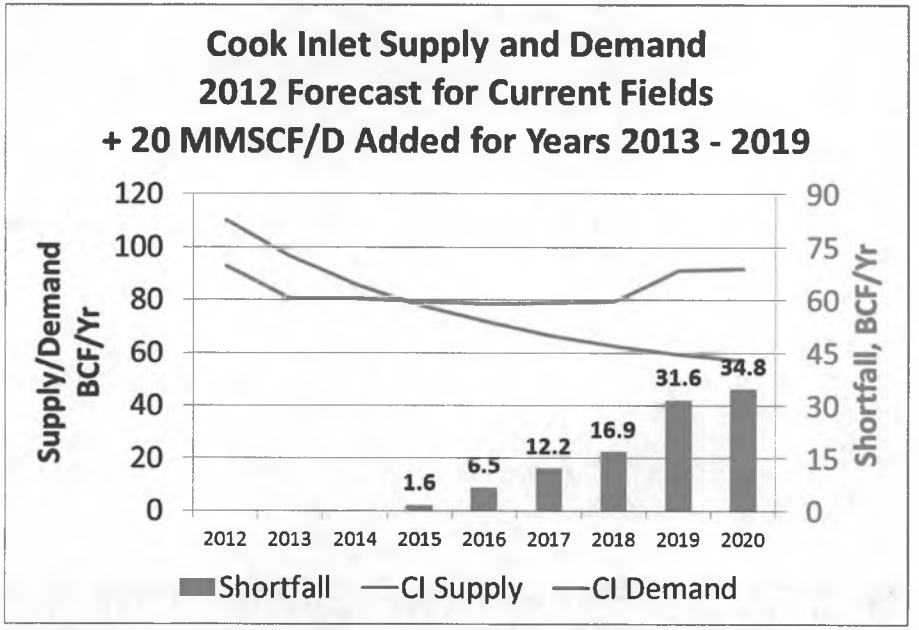
Sensitivity: Current Fields plus 3–4 New Wells Per year going forward

Assuming 3-4 new wells are drilled each year resulting in 10 MMSCF/D of new production added each year from 2012-2019, there still is a shortfall in supply in 2014



Sensitivity: Current Fields plus 6-8 New Wells Per year going forward

Assuming 6-8 new wells are drilled each year resulting in 20 MMSCF/D of new production added each year from 2012-2019, the shortfall in supply occurs in 2015



Summary of CI Shortfall Cases

Case	Initial Year of Shortfall	Initial Year Shortfall Amount, BCF
Existing CI Fields	2014	7.3
Existing Fields + Annual Addition of 10 MMSCF/D Production from New Wells 2013–2019	2014	1.0
Existing Fields + Annual Addition of 20 MMSCF/D Production from New Wells 2013–2019	2015	1.6

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Conclusion

- Absent major new large discoveries that can be brought online in 1-2 years, the current pace of development will mean a shortfall in Cook Inlet supply to meet demand in 2014 or 2015.

Questions?

Petrotechnical Resources Alaska

HB

36

<TARGET><BILL>HB 36</BILL><SUBJECT>HB
36</SUBJECT><COMM>HENE27</COMM></TARGET>

ALASKA STATE LEGISLATURE

REPRESENTATIVE KURT OLSON

- Chair: Labor and Commerce
- Vice Chair: Rules, Administrative Regulation Review
  Economic Development Trade & Tourism
- Member: Energy, Legislative Budget & Audit

Session: January - April
State Capitol, Room 24
Juneau, AK 99801-1182
Phone: 907-465-2693
Fax: 907-465-3835

Official Business

Interim: May - December
145 Main Street Loop, Ste 221
Kenai, AK 99611
Phone: 907-283-2690
Fax: 907-283-2763

Sponsor Statement

HB 36 - Energy Efficient Small Business Grant Fund and Program

Rising energy costs in Alaska mean that energy expenditures have an increasingly substantial impact on the bottom line of small businesses in the state. As such, building energy efficient business structures is in the interest of any small business owner who wishes to save energy and money.

Currently, the state provides an incentive for homeowners to improve the energy efficiency of their homes through the Alaska Housing Finance Corporation's Home Energy Rebate Program. House Bill 36 is modeled after this residential program and aims to help small business owners optimize energy usage at the lowest possible cost.

The Small Business Energy Rebate Fund and Program would allow small business owners wishing to make energy efficiency improvements on their businesses to receive a rebate for some of their expenditures. The program requires an energy rater to evaluate the business structure before and after the improvements. Rebates would then be dependent on the relative amount of efficiency gained and receipts from eligible improvements chosen by the business owner from the energy rating's improvement options list.

There are over 16,000 small employers in Alaska today. Extending the energy efficiency grants that homeowners enjoy to small business owners is one way to encourage energy efficiency and to help the small business owners that are such an important source of employment and opportunity in Alaska.

I respectfully ask for your consideration of this bill and look forward to hearing your questions and concerns.

27-LS0213\A
Last Modified 2/9/11
Jennifer Senette

Email: Representative_Kurt_Olson@legis.state.ak.us

ALASKA STATE LEGISLATURE

REPRESENTATIVE KURT OLSON

- Chair: Labor and Commerce
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Official Business

Sectional Summary

HB 36 - Energy Efficient Small Business Grant Fund and Program

The following is a sectional summary of HB 36 and is not an authoritative representation of the bill. For an authoritative interpretation, please refer to the bill itself.

Section 1: amends AS 18.56.010 which establishes the purpose for the Alaska Housing Finance Corporation

Subsection (h) is added enabling the Alaska Housing Finance Corporation to expand the concept of the Alaska energy efficient home grant fund to include small businesses

Section 2: amends AS 18.56 by adding new section titled Alaska Energy Efficient Small Business Grant Fund

Subsection (a) establishes the Alaska energy efficient small business grant fund in the corporation

Subsection (b) permits the corporation to make a grant from the fund to qualifying businesses provided that

1) the assessed value of the structure to be retrofitted or constructed with the grant does not exceed $1,000,000
2) the structure is owned by a person who is licensed to do business in the state or by persons who are licensed to do business in the state, and that none of the grant applicants have outstanding liabilities to the state
3) the structure meets other criteria adopted by the corporation

Subsection (c) requires the corporation to adopt guidelines and procedures setting out the criteria for administration of the Alaska energy efficient small business grant fund

27-LS0213\A
Last Modified 2/9/11
Jennifer Senette

Email: Representative_Kurt_Olson@legis.state.ak.us

Home Energy Rebate Frequently Asked Questions (FAQ)

1. What is the rebate program?
2. What's the difference between the Home Energy Rebate program and the Weatherization program?
3. Can I participate in both the Home Energy Rebate program and the Weatherization program?
4. Do I have to be a homeowner to apply for a rebate?
5. Will the Home Energy Rebate program be available for rentals or businesses?
6. Are mobile homes eligible for a rebate?
7. Are condos eligible for the Home Energy Rebate program?
8. How much time do I have to apply for the rebate program?
9. How do I get a Home Energy Rebate?
10. Where can I get a homeowner Home Energy Rebate application?
11. Who pays for the energy ratings for the Home Energy Rebate program?
12. Who pays the up front cost for the energy-efficiency improvements in the Home Energy Rebate program?
13. What if I don't have the money up front to pay for the energy improvements in the Home Energy Rebate?
14. Where do I get more information on how to make energy efficiency improvements?
15. Should I get an energy rating on my home now so I can participate in the Home Energy Rebate program?
16. If I start working now on my house to make it more energy efficient, will I get a Home Energy Rebate?
17. How long will it take to get my Home Energy Rebate after I submit an application to AHFC?
18. I heard there will be a rebate for buying a new 5 Star Plus home. How do I apply?
19. Are energy-efficient appliances and lighting eligible for the rebate program?
20. I want to become an energy rater for the Home Energy Rebate program. Who do I contact?
21. What is the difference between and "As-Is" rating and a "Post" rating?

Q1. What is the rebate program?

The rebate program assists homeowners in making the best energy-efficiency improvements for their home. The program requires a certified home energy rater to evaluate homes before and after the improvements. The more a home's energy efficiency improves, the greater the possible rebate.

Q2. What's the difference between the Home Energy Rebate program and the Weatherization program?

The Home Energy Rebate program has no income requirements and focuses on owner-occupied homes. Homeowners pay for certain energy-efficiency improvements and are rebated a portion of the cost for doing so. The Weatherization program has income requirements, and the weatherization work is provided for free by specific weatherization agencies and housing authorities.

Q3. Can I participate in both the Home Energy Rebate program and the Weatherization program?

No. You may participate in one or the other program, but not both.

Q4. Do I have to be a homeowner to apply for a rebate?

Yes. The rebate program is only for owner-occupied housing.

Q5. Will the Home Energy Rebate program be available for rentals or businesses?

The Home Energy Rebate program is focused on owner-occupied homes. AHFC intends to make the rebate program available to as wide a range of housing as practical. Condos may qualify.

Currently the rebate program does not include rentals or businesses (such as a Bed and Breakfast).

Q6. Are mobile homes eligible for a rebate?

Yes.

Q7. Are condos eligible for the Home Energy Rebate program?

Yes. Click here for the Condo Factsheet for details. *New!*

Q8. How much time do I have to apply for the rebate program?

The time limit to apply for the rebate has been extended to 18 months from the date of the initial As-Is energy rating.

Q9. How do I get a Home Energy Rebate?

You can sign up for a rater for the energy rebate program via this site or by calling the rebate call center at 1-877-AKRebate (1-877-257-3228). You will be assigned to a certified energy rater who will follow up with you directly and perform your initial As-Is energy rating. The rater will provide you with a list of possible energy improvements, choose from that list the improvements you want to make, do the improvements yourself or hire a contractor, have the rater return to verify the work and provide a new rating showing how much the home's energy efficiency has improved, and apply for the rebate. For more details about the program, rebate amounts, and requirements, click here for the home energy rebate program guidelines.

Q10. Where can I get a homeowner Home Energy Rebate application?

An application is not needed until after you have the required initial energy rating performed and received copies of the recommended energy improvements, which will be provided by the rater. Click here for application form.

Q11. Who pays for the energy ratings for the Home Energy Rebate program?

The homeowner will be reimbursed directly by AHFC a total of $500 for the combined ratings: Up to $325 is allowed for the initial As-Is rating and up to $175 for the Post Improvement rating. Any rating costs over these amounts are the responsibility of the homeowner. The actual cost of ratings may vary by rater and individual house characteristics. We recommend that you ask for price quote before your rater begins work on your As-Is or Post-improvement rating. If you would like a different rater, contact the AKRebate call center and you will be put back at the top of the list.

Q12. Who pays the up front cost for the energy-efficiency improvements in the Home Energy Rebate program?

The homeowner. However, AHFC is offering loans to qualified borrowers up to $30,000 through the Second Mortgage for Energy Conservation. Click here for details.

Q13. What if I don't have the money up front to pay for the energy improvements in the Home Energy Rebate?

AHFC is offering loans to qualified borrowers up to $30,000 through the Second Mortgage for Energy Conservation. Click here for details.

Q14. Where do I get more information on how to make energy efficiency improvements?

Visit the AHFC Research Information Center web page. Please note: only items listed in the AkWarm® Improvement Options Report following your home energy rating will be eligible for the Home Energy Rebate. Talking with your energy rater about the best improvements and what you should do is critical.

Q15. Should I get an energy rating on my home now so I can participate in the Home Energy Rebate program?

An "As-Is" energy rating performed between April 5, 2008, and May 15, 2008, will be accepted as the initial rating for the Home Energy Rebate Program. However, the costs of these ratings are paid by the homeowner and will not be reimbursed by AHFC. The cost of ratings done after May 15, 2008, will be reimbursed by AHFC directly to the homeowner, up to $325 for the As-Is rating and $175 for the Post-improvement rating. You will have 18 months from the date of the As-Is rating to make improvements, have the Post-improvement rating completed, and submit your application to AHFC for a rebate.

Q16. If I start working now on my house to make it more energy efficient, will I get a Home Energy Rebate?

The Home Energy Rebate program requires an AkWarm® energy rating prior to any work. Only items listed in the AkWarm® Improvement Options Report will be eligible for the program.

Q17. How long will it take to get my Home Energy Rebate after I submit an application to AHFC?

It's estimated that there will be a 60-day turnaround time.

Q18. I heard there will be a rebate for buying a new 5 Star Plus home. How do I apply?

There will be a $7,500 rebate available for home buyers purchasing certain 5 Star Plus homes. Click here for the application and guidelines.

Q19. Are energy-efficient appliances and lighting eligible for the rebate program?

Energy Star appliances and lighting are a great idea when upgrading your home and can help reduce your energy bills. However, appliances and lighting are not eligible for a rebate at the present time.

Q20. I want to become an energy rater for the Home Energy Rebate program. Who do I contact?

AHFC trains raters through contracts with other training entities. There have been more than 1,000 requests, and more than 400 applications from people wishing to become energy raters. We anticipate the need at about 50 to 60, most of whom will be trained by the end of July. We have two additional rater training classes scheduled for September and October, although those are wait listed. Unless the legislature allocates additional money, we anticipate that the ratings for the rebate program will be completed in Anchorage, Mat-Su, and Fairbanks by November.

Q21. What is the difference between an "As-Is" and a "Post" rating?

The As-Is rating is the initial rating of your home. The Post-improvement rating is the second rating of your home after you have made some or all of the recommended improvements. You can sign up for both ratings here or call 1-877-akrebate (1-877-257-3228).

NFIB

The Voice of Small Business•

ALASKA

February 10, 2011

The Honorable Kurt Olson
State Capitol Building
Juneau, Alaska 99801-1182

RE: Houser Bill 36

Dear Representative Olson:

On behalf of the National Federation of Independent Business/Alaska, I wish to respectfully share our support for House Bill 36. The National Federation of Independent Business is the largest small-business advocacy group in Alaska.

The cost of energy is a critical issue to the many small businesses in Alaska as it has a direct impact on the profitability of the business. Thus, building energy efficient business structures is in the interest of small business owners.

The Small Business Energy Rebate Fund and Program, proposed in House Bill 36, would allow small business owners wishing to make energy efficiency improvements on their buildings, valued at less than $1,000,000, to receive a rebate for some of those expenditures. Aggregate grants are limited by the amount of appropriations.

This approach will assist many Alaskan small business owners improve their operational efficiency by reducing the use of energy and lower the cost of operations.

We appreciate your concern with the viability of many of Alaska's small businesses.

Sincerely yours,

Dennis L. DeWitt
Alaska State Director

Cc: NFIB/AK Leadership Council
House Energy Committee

Alaska Housing
FINANCE CORPORATION

Home Energy Rebate Program Guidelines

The Home Energy Rebate Program for existing homes will rebate ***up to*** $10,000 to a homeowner, who improves the energy efficiency of his or her home. A qualified homeowner must improve the energy efficiency of the home at least **1 step** using the energy rating system described below in **Energy Rating and Rating Points**. (See also **Additional Requirements**.)

A final rating of a 1 Star Plus (1★+) or greater must be achieved to qualify for a rebate. This is a one-time rebate, for any one family, borrower, or home.

Rebate funds are subject to appropriation by the Alaska Legislature, and are subject to funding availability. If or when funding becomes limited, the Alaska Housing Finance Corporation may terminate the program. Public notice shall be provided on the AHFC website www.ahfc.us .

To participate in this program:

- Request an AkWarm energy rating by signing-up on the waiting list at www.akrebate.com or calling 1-877-AKREBATE (1-877-257-3228).

- The As-Is energy rating generates an *Energy-Efficiency Improvement Options Report* that serves as a guideline for AHFC and the homeowner regarding the energy savings, cost of the improvement and return on the energy improvement investment.

- Submit to AHFC copies of the Home Energy Rating certificate (As-Is), Energy Efficiency Improvement Options report (As-Is), proof of ownership (tax parcel notice, transfer deed or deed of trust, that matches property address on the rating and confirms the homeowners name), energy rater's receipt or check copy, and the As-Is Energy Rating Reimbursement Form, (HER-1 Invoice) signed by the rater and the homeowner. Within 60 days of receipt, AHFC will reimburse the homeowner for the As-Is rating. Submitting this paperwork indicates to AHFC that a homeowner is participating in the rebate program and funds for a possible rebate are encumbered for 18 months from the date of the As-Is rating.

- Make improvements selected from the *Energy-Efficiency Improvement Options Report* (within 18 months, see **Additional Requirements** below). Rating points are listed for each improvement option. Choose the improvements that will gain enough points to increase the energy rating. Homeowners may complete the improvements (rebate is applicable to materials only) or hire a contractor (rebate applicable to materials and labor). Only those items relating to energy efficiency and recommended in the *Energy-Efficiency Improvement Options Report* are eligible for the rebate.

- After the work is completed, request an AkWarm Post-Improvement energy rating by signing-up on the waiting list at www.akrebate.com or calling 1-877-AKREBATE (1-877-257-3228). The rater will verify the improvements and provide the homeowner with a new energy rating certificate. The rebate amount is determined by the increase in the

Post-Improvement rating. (For example, if the As-Is rating was 3 Star+ and the Post-Improvement rating is 4 Star that is a One Step increase, eligible for a rebate of up to $4,000.00).

Maximum Rebate Amounts:

One Step	Up to $4,000
Two Steps	Up to $5,500
Three Steps	Up to $7,000
Four Steps	Up to $8,500
Five Steps	Up to $10,000

- A homeowner is only eligible to receive a rebate of **actual expenses**. For example: A homeowner spends $3,500 on energy efficient improvements and the home's energy rating increases Two Steps. The homeowner will only receive a rebate of the **actual expenses** or $3,500, not $5,500 as a Two Step improvement would indicate above. Submit to AHFC copies of the Post-Improvement Home Energy Rating certificate, the energy rater's receipt or check copy for Post-Improvement energy rating, proof of payment for the eligible improvements completed, and the Post-Improvement Rating Reimbursement & Rebate Form (HER-2 Invoice) within 18 months from the date of the As-Is energy rating. Within 60 days of receipt, AHFC will reimburse the homeowner for the Post-Improvement rating and provide the rebate.

You are not eligible for the Home Energy Rebate for existing homes if:

- You participated in the Weatherization Assistance Program after May 1, 2008.
- You received a Home Energy Rebate after May 1, 2008.
- Your As-Is rating was done before April 5, 2008*.
- Your As-Is rating is more than 18 months old.
- You fail to provide the requested information with your application for a rebate.
- You participated in the 5 Star Plus New Construction Energy Rebate program.

AHFC will reimburse the homeowner for the cost of ratings done after May 15, 2008, up to $500 for the combined cost of the pre-improvement (As-Is) and the Post-Improvement rating. A homeowner is reimbursed up to $325 for the As-Is rating, and up to $175 of the Post Improvement rating.

The homeowner is responsible for submitting all requested paper work for reimbursements & rebates.

**An energy rating done between April 5 and May 15, 2008, can qualify a homeowner for rebate purposes; however, AHFC does not reimburse homeowners for the cost of ratings performed during this period.*

Energy Rating and Rating Points

The amount of the rebate is determined by the increase in the number of steps between the As-Is and Post-Improvement energy ratings.

This chart can help you understand the correlation between your energy rating points and the energy rating stars for your home's energy rating. There are 10 steps between rating levels:

Points	Rating	Points	Rating
0-39	1 Star	73-77	3 Star +
40-49	1 Star +	78-82	4 Star
50-59	2 Star	83-87	4 Star+
60-67	2 Star +	88-91	5 Star
68-72	3 Star	92-100	5 Star+

For example:

A 2 Star Plus (60-67 points) rating, increased to 3 Star (68-72 points) after making energy improvements, would equal one step. A 2 Star (2★) rating, increased to 3 Star (3★) after making energy improvements, would equal two steps.

Additional Requirements:

To be eligible for a rebate, the final energy rating must be at least 1 Star Plus (1★+), and have increased one step and at least five points. This is applicable to all homes with a final rating of 3 Stars (< 3★) or less. For homes with a final rating of 3 Star plus (> 3★+) or more, at least one step and three points increase is required.

The home energy rebate reimbursement & rebate applications must be submitted to the Alaska Housing Finance Corporation at:

Alaska Housing Finance Corporation
ATTN: R2D2
PO Box 101020
Anchorage, AK 99510-1020

The homeowner must be the year-round occupant of the upgraded home and submit the rebate application and required documents within eighteen months of the date on the As-Is rating. Each family and property is eligible for one rebate only. The person to whom the rebate is paid will be required to submit a Social Security number, and the amount of the rebate will be reported to the United States Internal Revenue Service. An IRS Form 1099 will be mailed to the homeowner at the end of the year in which the homeowner received the rebate.

Rebate funds are subject to appropriation by the Alaska Legislature, and are subject to funding availability. If or when funding becomes limited, the Alaska Housing Finance Corporation may terminate the program. Public notice shall be provided on the AHFC website www.ahfc.us .

5 Star Plus New Construction Energy Rebate Program

Requirements for the 5 Star Plus New Construction Energy Rebate program may be found in the "5 Star Plus New Construction Energy Rebate Encumbrance Request (HER-50 Form)" and the "5 Star Plus New Construction Energy Rebate Form (HER-51 Invoice)" available at www.ahfc.us/energy .

For more information contact:

Alaska Housing Finance Corporation
PO Box 101020
Anchorage, AK 99510-1020
907-338-6100 (Anchorage)
1-800-478-2432 (toll free statewide)
www.ahfc.us

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version **HB36**
() Publish Date

Identifier (file name): HB36-DOR-AHFC-03-15-11
Title: Energy Efficient Small Business Grant Fund / Program
Sponsor: Representative Olson
Requester: House Special Committee on Energy

Dept. Affected: Revenue
Appropriation: Alaska Housing Finance Corp
Allocation: AHFC Operations
OMB Component Number: 110

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other (please identify)							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version (if initial version, please note as such)

initial version

Prepared by: Cary Bowling, Officer Governmental Affairs — Phone 907-330-8449
Division: Alaska Housing Finance Corporation — Date/Time 3/14/11; 8:09am
Approved by: Dan Fauske, CEO — Date 3/14/11; 10:07am
Alaska Housing Finance Corporation

FISCAL NOTE

STATE OF ALASKA **BILL NO.** HB 36
2011 LEGISLATIVE SESSION

Analysis

HB 36 would establish the energy efficient small business grant fund and program in the Alaska Housing Finance Corporation.

There is currently no appropriation for the energy efficient small business grant program. If no appropriation is made for the program, additional staff and management costs will not be needed.

Should there be an appropriation by the legislature for HB 36 that would exceed $100 million, the Corporation would require the addition of 4 new staff positions to administer the program as well as funds for travel, marketing and outreach. The estimate for program administration would be approximately $500,000 annually. This would be funded through CIP Receipts from the legislative appropriation for HB 36.

HB

37

<TARGET><BILL>HB 37</BILL><SUBJECT>HB
37</SUBJECT><COMM>HENE27</COMM></TARGET>

ALASKA STATE LEGISLATURE

REPRESENTATIVE KURT OLSON

- Chair: Labor and Commerce
- Vice Chair: Rules, Administrative Regulation Review
  Economic Development Trade & Tourism
- Member: Energy, Legislative Budget & Audit

Session: January - April
State Capitol, Room 24
Juneau, AK 99801-1182
Phone: 907-465-2693
Fax: 907-465-3835

Interim: May - December
145 Main Street Loop, Ste 221
Kenai, AK 99611
Phone: 907-283-2690
Fax: 907-283-2763

Official Business

Sponsor Statement
HB 37 - Net Metering

With our windy coasts, untapped rivers, and huge tidal resources, Alaska has the potential to be a national leader in the development of renewable energy sources. Though the state already produces 25% of its energy from renewable sources, we can do more to promote the use of these resources to meet Alaska's energy needs. House Bill 37 is an opportunity to do just that. This legislation promotes the private investment in renewable energy systems by giving Alaskans the option of net metering.

Net metering allows grid-tied customers who generate electricity from renewable resources to receive credit from their utility for the excess power they generate beyond what they consume. HB 37 allows customers to apply these credits towards the following billing period or to sell unused credits back to the retailer. This legislation thus provides a simple arrangement that allows customers to use the excess electricity they generate to offset electricity used at other times during the billing period.

Not only does this legislation encourage Alaskans to take ownership of their own energy generation, it is an inexpensive way for the state to promote the use of renewable energy systems. Alaska is rich with renewable energy sources, and giving consumers a financial incentive to tap into them benefits both the state and the environment.

Forty states currently provide a net metering option to consumers. Though these requirements are often enacted by state utility regulators, state lawmakers may step in to enact net metering laws through legislative action. The legislatures of Washington, Oregon, and California have addressed net metering in this fashion, and I urge this body to follow their lead

House Bill 37 is a chance to encourage Alaskans to take advantage of our renewable energy resources and an opportunity that should not be missed. I respectfully ask for your consideration of this bill and look forward to hearing your questions and concerns.

27-LS0214\A
Last Modified 2/9/11
Jennifer Senette

Email: Representative_Kurt_Olson@legis.state.ak.us

ALASKA STATE LEGISLATURE

REPRESENTATIVE KURT OLSON

- Chair, Labor and Commerce
- Member: Rules, Resources

Session: January – April
State Capitol
Juneau, AK 99801-1182
Phone: 907-465-2693
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Official Business

Sectional Summary

HB 37 – Net Metering

The following is a sectional summary of HB 37 and is not an authoritative representation of the bill. For an authoritative interpretation, please refer to the bill itself.

Section 1: amends AS 42.05 by adding a new section to read:
Section 42.05.686. Net metering of electrical energy

Subsections (a) and (b) address the applicability of the net metering requirement and the possibility of waiving requirements upon application

Subsection (c) allows the commission to adopt by regulation additional requirements for consumer generation systems participating in the net metering program

Subsection (d) makes an exception for certain systems of an electric utility

Subsections (e)-(h) relate to the net metering of electricity, including setting an overall capacity limitation on net metering

Subsection (i) allows an electric utility to request an increase in the limit on total capacity of eligible consumer generation systems participating in the net metering program

Subsection (j) describes circumstances in which an electric utility may deny participation in a net metering program

Subsection (k) allows an electric utility to install additional metering equipment for net metering consumers

Subsection (l) specifies eligibility criteria for consumer generation facilities, including a generation capacity limit of 25 kilowatts

Subsections (m)-(p) address charges or credits for net electricity

Email: Representative_Kurt_Olson@legis.state.ak.us

Subsection (q) defines the terms used in this bill

Section 2: provides for an effective date

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version **HB 37**
() Publish Date

Identifier (file name) HB037-CCED-RCA-03-11-11
Title Net Energy Metering
Sponsor Representative Kurt Olson
Requester House Energy

Dept. Affected DCCED
Appropriation Regulatory Commission of Alaska
Allocation Regulatory Commission of Alaska
OMB Component Number 2417

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other (please identify)							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version (if initial version, please note as such)

This is the initial fiscal note to HB 37 from the Regulatory Commission of Alaska.

Prepared by Robert M. Pickett, Chairman
Division Regulatory Commission of Alaska
Approved by Susan K. Bell, Commissioner
Commerce, Community, and Economic Development

Phone 276-6222
Date/Time 3/11/11 3:15 PM
Date 3/11/2011

(Revised 1/27/2011 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** HB 37
2011 LEGISLATIVE SESSION

Analysis

This legislation mandates that net metering services be provided by certain economically regulated utilities, establishes conditions for interconnection and net metering, exempts certain systems of an electric utility, and allows the Regulatory Commission of Alaska (RCA) to modify or waive a requirement in whole or in part.

This legislation would require that certain factors be recognized or considered when the RCA reviews net metering issues. The RCA expects to implement the provisions of this legislation with existing resources.

TESTIMONY OF MARILYN LELAND,
EXECUTIVE DIRECTOR, ALASKA POWER ASSOCIATION

Before the House Special Committee on Energy

March 15, 2011

House Bill 37, Relating to Net Metering of Electric Energy

Thank you for the opportunity to comment on House Bill 25. My name is Marilyn Leland and I am the Executive Director of the Alaska Power Association. APA is the statewide trade association that represents the electric utilities that supply power to about more than a half million Alaskans from Barrow to Southwestern Alaska, through the Interior and Southcentral and down the Inside Passage.

In the way of background, I'd first like to give you a little history of how we got to where we are today. In 2006-2008, net metering was being considered by the Regulatory Commission of Alaska in its docket on the adoption of regulations to implement amendments to the Public Utility Regulatory Policies Act of 1978 by the Energy Policy Act of 2005. In that docket, the Commission was required to make a decision as to whether it would adopt the federal standard for Alaska for net metering. The Commission decided that it would not adopt the federal standard, but opened a docket to determine whether it would require net metering standards specific for Alaska.

The docket was opened in January 2009 and several workshops were held for interested parties to work on proposed regulations. Because this docket was already open and under consideration during the last legislative session, APA recommended that the legislature not take action on any of the net metering bills that were before it. No further action was taken by the legislature last session on any of the bills and the RCA process was a success. There was exceptionally good participation in the workshops, with more public participation than the RCA had experienced in any of its dockets. In the workshops, Commission staff, utility representatives and a variety of public participants worked through proposed regulations and came to agreement that all who participated could live with. I would like to commend the RCA for the process it used in this docket.

The Commission issued an Order Adopting Regulations on January 15, 2010. However – and this is very important – the agency has not yet completed work on its net metering regulations. The RCA is considering further revisions to the currently effective net metering regulations, to address interconnection requirements for net metered generation. As presently proposed, the new requirements will be added as a section within the current net metering regulations. An RCA order in R-09-2 is expected by May 5, but it can take months for Department of Law review and certifications before regulations are finalized and placed into effect. APA and its members support the intent of the sponsor of HB37.

However, we believe that codification is at the least premature, and we urge that no action be taken at this time.

In fact, we believe that putting the RCA's net metering regulations in statute is not necessary. The RCA has addressed the issue well and is the best suited to address any needed changes in the future. Codifying the current regulations will limit the RCA's ability to implement any needed changes in the future and could well lead to unintended consequences by not allowing the RCA to make future changes using its public docket process. Current net metering requirements, and any future changes, involve careful balancing of issues of utility ratemaking, utility system operations, consumer input and policy. APA understands the good intention that codifying net metering regulations guards against precipitous future changes, but based on the RCA's open and thoughtful rulemaking process employed thus far, APA is comfortable leaving net metering in the regulatory arena. As I said, APA understands there are good arguments for the statutory as well as the regulatory approach, but favors the regulatory approach at this point in time.

The RCA is empowered and tasked by statute, and has the technical expertise and experience, to conduct the research and the balancing of interests necessary to address net metering. In addition, APA believes the RCA's well-established rulemaking process provides the necessary opportunity for public comment, workshops, and analysis. Also important to note is that some state legislatures have enacted net metering statutes because their public utilities commissions were not able or willing to adequately address the issue. That is not the case in Alaska.

The members of APA not opposed to small scale renewable generation, or to purchasing power from such consumer-owned generation. Our members are likewise not opposed to consumers reducing their electric purchases by using their own generation. The issue is making sure that a purchased-power rate is not just fair for the seller of that power, but is equitable to all ratepayers of a utility who must share in any subsidized rate.

APA believes that the Regulatory Commission is best equipped to make those determinations.

STATE OF ALASKA

THE REGULATORY COMMISSION OF ALASKA

Before Commissioners: Robert M. Pickett, Chairman
Kate Giard
Paul F. Lisankie
T.W. Patch
Janis W. Wilson

In the Matter of the Consideration of the Adoption of Regulations Implementing Net Metering	R-09-1 ORDER NO. 4

ORDER READOPTING REGULATIONS

BY THE COMMISSION:

Summary

We readopt regulations establishing net metering requirements to incorporate editorial changes made by the Department of Law.

Background

We adopted regulations implementing net metering at our October 14, 2009, public meeting, and subsequently issued an order formalizing adoption of the regulations.[1] We transmitted the regulations to the Department of Law for review. The Department of Law made edits to the regulations that we considered at our April 13, 2010, public meeting.[2]

[1] *See* Order R-09-1(3), dated January 15, 2010, and titled *Order Adopting Regulations*.

[2] A copy of the regulations approved at our April 13, 2010, public meeting are attached as an appendix.

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Discussion

The Department of Law edited our net metering regulations to clarify language and ensure consistent terminology. The Department of Law also made stylistic changes complying with the *Drafting Manual for Administrative Regulations* adopted by Department of Law under AS 44.62.050. More significant Department of Law revisions are discussed below.

Waiver Provisions

As initially adopted, the net metering regulations included a provision that allowed modification or waiver of any part of our net metering regulations on our own motion or upon application and a good cause showing.[3] The Department of Law added a provision stating that any requirement of the net metering regulations that is also required by AS 42.05 may be modified or waived upon application and a showing that waiver is in the public interest.[4]

Interconnection Standards

As initially adopted, the net metering regulations required utilities to interconnect with net metering customers in accordance with interconnection standards "approved or accepted by this commission."[5] The Department of Law revised this section to specify that utilities are required to interconnect with net metering customers in accordance with interconnection standards "contained in the electric utility's tariff."[6] A similar revision was made to our section addressing interconnection of net metering facilities, which previously stated that we may adopt regulations addressing

[3]Order R-09-1(3), Appendix A at 1 (3 AAC 50.900(c)).

[4]Appendix at 1 (3 AAC 50.900(c)).

[5]Order R-09-1(3), Appendix A at 1 (3 AAC 50.910(a)(2)).

[6]Appendix at 1 (3 AAC 50.910(a)(2)).

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interconnection standards.[7] The Department of Law revised this section to provide that "[u]ntil the commission adopts by regulation safety, power quality, and interconnection requirements for eligible consumer generation systems, the electric utility shall provide in its tariff for the requirements necessary to protect public safety and system reliability."[8]

Refusal to Interconnect Based on System Capacity Limits

Under the net metering regulations, utilities are allowed to deny interconnection to net metering customers based on a predefined system limit.[9] We required the utility to notify us when it refused to interconnect with a potential net metering customer based on the system limit, but we did not state a time period for the utility to provide the required notification.[10] The Department of Law revised this section to establish a deadline of 30 days for the utility to notify us of its refusal to interconnect with a potential net metering customer.[11]

Additional Metering Equipment

As initially adopted, the net metering regulations allowed a utility to install additional metering equipment for net metering customers.[12] The Department of Law modified this provision by adding the qualifying phrase "if the electric utility's tariff contains a requirement to install the equipment." We revised the Department of Law

[7]Order R-09-1(3), Appendix A at 3 (3 AAC 50.940).

[8]Appendix at 4 (3 AAC 50.940).

[9]Specifically, net metering is not required when the total nameplate capacity of net metering customers exceeded 1.5 percent of the utility's average retail demand.

[10]Order R-09-1(3), Appendix A at 1-2 (3 AAC 50.910(b)).

[11]Appendix at 2 (3 AAC 50.910(b))

[12]Order R-09-1(3), Appendix A at 2 (3 AAC 50.910(g)).

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language at the April 13, 2010, public meeting to state a utility may install additional metering "if the electric utility's tariff allows the electric utility to install the equipment."[13]

Eligible Customer Generation System

As initially adopted, qualifications for an "eligible customer generation system" included a requirement that the generation system be "located on, or adjacent to, the consumer premises."[14] The Department of Law removed the phrase "or adjacent to," requiring that generation systems be located on the consumer premises.[15]

Definitions

Eligible Customer Generation System

As initially adopted, we defined "eligible facility" by the sources of generation and included this provision in our definitional section. Our definition of "eligible facility" included a provision that provided us with the discretion to allow additional sources of generation.[16] The Department of Law moved provisions regarding eligible facility generation sources to the section addressing substantive requirements for eligible generation systems,[17] explaining that a substantive right provided to this agency cannot be stated in a definitional section.[18]

Biomass Energy

Finally, the Department of Law modified the definition of biomass energy to include landfill gas, biogas, wastewater, anaerobic digesters, or municipal solid

[13]Appendix at 2 (3 AAC 50.910(g)).

[14]Order R-09-1(3), Appendix A at 2 (3 AAC 50.920(2)(B)).

[15]Appendix at 3 (3 AAC 50.920(2)(B))

[16]Order R-09-1(3), Appendix A at 4 (3 AAC 50.949(9)(I)).

[17]Appendix at 2 (3 AAC 50.920(1)).

[18]April 13, 2010, public meeting transcripts at 8

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waste.[19] All of these sources of energy were included in the language originally adopted by the commission, but were consolidated by the Department of Law under biomass energy.[20]

Conclusion

We believe the Department of Law's modifications to be reasonable and within the scope of our public notice. With the exception of the revision discussed previously under *Additional Metering Equipment*, the final regulations attached as an appendix to this order incorporate all edits proposed by the Department of Law. We adopt the regulations.

ORDER

THE COMMISSION FURTHER ORDERS that the proposed regulations set out in the appendix to this order are adopted.

DATED AND EFFECTIVE at Anchorage, Alaska, this 26th day of April, 2010.

BY DIRECTION OF THE COMMISSION



[19]Appendix at 3 (3 AAC 50.920(1)(C)).

[20]Order R-09-1(3), Appendix A at 4 (3 AAC 50.949(9)(C), (H)).

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3 AAC 50 is amended by adding new sections to read:

Article 3. Net Metering Standards.

Section

900. Applicability and waiver
910. Net metering of electric energy
920. Eligible consumer generation systems
930. Charges or credits for net electric energy
940. Interconnection of eligible consumer generation systems
949. Definitions

3 AAC 50.900. Applicability and waiver. (a) Except as provided in (b) of this section, the net metering requirements set out in 3 AAC 50.900 – 3 AAC 50.949 apply to an electric utility that is subject to economic regulation.

(b) The net metering requirements set out in 3 AAC 50.900 – 3 AAC 50.949 do not apply to

(1) an independent electric system owned and operated by an electric utility that is subject to economic regulation if, except for fossil fuel generation for standby and emergency power, 100 percent of the independent electric system's power is supplied by a facility that produces electric energy derived from one or more of the sources listed in 3 AAC 50.920(1)(A) - (H);

(2) an independent electric system owned and operated by an electric utility that is subject to economic regulation, if the independent electric system had total retail sales of less than 5,000,000 kilowatt-hours during the previous calendar year; or

(3) any portion of the distribution system of an electric utility that is subject to economic regulation, if the electric utility demonstrates to the commission that limiting net metering installations in that portion of its distribution system is reasonably necessary to address system stability constraints or other operational issues.

(c) A requirement in 3 AAC 50.900 - 3 AAC 50.949, other than one also required by a provision of AS 42.05, may be modified or waived, in whole or in part, by order of the commission upon application and a showing of good cause or on the commission's own motion. Application for waiver must be in writing and set out the pertinent facts in sufficient detail to support a finding by the commission that no legitimate public interest will be served by enforcing the requirement designated in the application. A requirement in 3 AAC 50.900 - 3 AAC 50.949 that is also required by a provision of AS 42.05 may be modified or waived, in whole or in part, by order of the commission upon application in writing and a showing that the modification or waiver is in the public interest. (Eff. ___/___/____, Register ____)

Authority: AS 42.05.141 AS 42.05.291 AS 42.05.711
AS 42.05.151 AS 42.05.691

3 AAC 50.910. Net metering of electric energy. (a) Except as provided in (b) of this section, an electric utility shall

(1) make a net metering program available to each of its retail consumers; and

(2) allow consumer generation systems eligible under 3 AAC 50.920 to be interconnected to the electric utility's facilities in accordance with interconnection standards contained in the electric utility's tariff.

(b) An electric utility may refuse to interconnect with a consumer requesting net metering, if interconnection would cause the total nameplate capacity of all eligible consumer generation systems participating in the net metering program to exceed 1.5 percent of the electric utility's average retail demand stated in the electric utility's tariff as required in (d) of this section. The electric utility shall notify the commission no later than 30 days after refusal if the electric utility refuses, for the reason set out in this subsection, to interconnect with a consumer requesting net metering.

(c) An electric utility that has a decrease in average retail demand that results in the total nameplate capacity of eligible consumer generation systems exceeding 1.5 percent of average retail demand shall allow existing net metering consumers to continue participating in the net metering program.

(d) On or before March 1 of each year, an electric utility shall file a tariff advice letter with accompanying tariff sheet stating the number of kilowatts equivalent to 1.5 percent of the electric utility's average retail demand for the previous calendar year and the total nameplate capacity of eligible consumer generation systems participating in the net metering program at the time of filing.

(e) An electric utility may request, by tariff advice letter, to use a limit on total nameplate capacity of eligible consumer generation systems participating in the net metering program above 1.5 percent of the electric utility's average retail demand.

(f) An electric utility may deny participation in a net metering program to a consumer that

(1) participates in another program that allows the consumer to collect, through voluntary contributions from other participating customers of the electric utility, more than the non-firm power rate per kilowatt-hour for the sale of electric energy; or

(2) sells electric energy under an existing contract that allows the consumer to collect more than the non-firm power rate per kilowatt-hour for the sale of electric energy.

(g) An electric utility may install additional metering equipment for net metering consumers, if the electric utility's tariff allows the electric utility to install the equipment. The electric utility

(1) is responsible for all costs related to the purchase, installation, and maintenance of the additional metering equipment; and

(2) may not assess a recurring charge for the additional metering equipment.

(Eff. ___/___/____, Register ____)

Authority: AS 42.05.141 AS 42.05.291 AS 42.05.321
AS 42.05.151 AS 42.05.311

3 AAC 50.920. Eligible consumer generation systems. To be eligible for interconnection under a net metering program, a consumer generation system must

(1) be a facility that produces electric energy derived from one or more of the

following sources:

(A) solar photovoltaic and solar thermal energy;

(B) wind energy;

(C) biomass energy, including landfill gas or biogas produced from organic matter, wastewater, anaerobic digesters, or municipal solid waste;

(D) hydroelectric energy;

(E) geothermal energy;

(F) hydrokinetic energy;

(G) ocean thermal energy;

(H) other sources as approved by the commission that generally have similar environmental impact;

(2) be operated and either owned or leased by the consumer, and

(A) have a total nameplate capacity of no more than 25 kilowatts per consumer premises;

(B) be located on the consumer premises;

(C) be used primarily to offset part or all of the consumer's requirements for electric energy; and

(D) include an inverter;

(3) include an electric generator and its accompanying equipment package; and

(4) be physically interconnected to the consumer's side of the meter from which the electric utility provides electric service to the consumer. (Eff. ___/___/____, Register ____)

Authority: AS 42.05.141 AS 42.05.291 AS 42.05.321
AS 42.05.151 AS 42.05.311

3 AAC 50.930. Charges or credits for net electric energy. (a) An electric utility with a consumer participating in a net metering program shall measure the net electric energy during each monthly billing period, and

(1) if the electric utility supplied more electric energy to the consumer than the consumer supplied to the electric utility during the monthly billing period, the electric utility shall bill the consumer for the number of kilowatt-hours of net electric energy supplied by the electric utility to the consumer at the applicable rates contained in the electric utility's currently effective tariff; or

(2) if the consumer supplied more electric energy to the electric utility than the electric utility supplied to the consumer during the monthly billing period, the electric utility shall credit the consumer's account with an amount derived by multiplying the kilowatt-hours of net electric energy supplied by the consumer to the electric utility by the non-firm power rate contained in the electric utility's currently effective tariff, unless a different non-firm power rate has been established in a commission-approved contract.

(b) Dollar amounts credited to the account of a net metering consumer for furnishing electric energy to the electric utility under (a)(2) of this section

(1) shall be used to reduce dollar amounts owed by the consumer in

subsequent monthly billing periods; and

(2) do not expire or otherwise revert to the electric utility.

(c) Except as otherwise provided in (a) and (b) of this section regarding per-kilowatt hour charges, the electric utility may bill a net metering consumer for all applicable charges authorized by the electric utility's approved tariff.

(d) An electric utility administering a net metering program may not charge a consumer participating in the net metering program any additional fee for standby, capacity, interconnection, or other net metering expense unless approved by the commission.

(e) An electric utility may petition the commission to change electric rate designs, consistent with 3 AAC 48.500 - 3 AAC 48.560, to include appropriate rate classes for net metering consumers, if the utility can demonstrate an adverse material rate impact on utility consumers that do not participate in the net metering program. (Eff. ___/___/____, Register ____)

Authority: AS 42.05.141 AS 42.05.291 AS 42.05.411
AS 42.05.151 AS 42.05.391 AS 42.05.431

3 AAC 50.940. Interconnection of eligible consumer generation systems. Until the commission adopts by regulation safety, power quality, and interconnection requirements for eligible consumer generation systems, the electric utility shall provide in its tariff for the requirements necessary to protect public safety and system reliability. (Eff. ___/___/____, Register ____)

Authority: AS 42.05.141 AS 42.05.291 AS 42.05.321
AS 42.05.151 AS 42.05.311 AS 42.05.411

3 AAC 50.949. Definitions. In 3 AAC 50.900 - 3 AAC 50.949, unless the context requires otherwise,

(1) "average retail demand" means the number expressed in kilowatts and determined by dividing the total retail sales of the electric utility, measured in kilowatt-hours, for a calendar year with

(A) 365 days, by 8,760 hours;

(B) 366 days, by 8,784 hours;

(2) "biomass energy"

(A) means energy derived from

(i) plant matter, including trees, grasses, and agricultural crops; or

(ii) animal matter, including fish;

(B) does not include energy derived from fossil fuels;

(3) "consumer" means a customer

(A) of an electric utility that is subject to economic regulation;

(B) who consumes the electricity purchased from the electric utility;

(4) "consumer-generated electric energy" means electric energy that is generated by a consumer eligible for participation in a net metering program;

(5) "consumer premises" means all buildings and associated grounds owned

by, leased by, rented to, or licensed to a consumer at a single location where an electric utility provides service through one or more utility meters;

(6) "economic regulation" has the meaning given in 3 AAC 48.820;

(7) "electric system" means an integrated electrical system that includes at least generation and distribution;

(8) "eligible consumer generation system" means a system that complies with 3 AAC 50.920;

(9) "equipment package" means a group of components connecting an electric generator to an electric utility's electric distribution system; "equipment package" includes all interface equipment and the interface equipment's controls, switchgear, inverter, and other interface devices;

(10) "excess consumer-generated electric energy" means the amount of consumer-generated electric energy in excess of the consumer's consumption from the eligible consumer generation system during a monthly billing period, as measured at the electric utility's meter;

(11) "geothermal energy" means energy generated from heat stored in the earth, or the collection of absorbed heat derived from underground;

(12) "hydroelectric energy" means energy generated from falling or flowing water;

(13) "hydrokinetic energy" means energy generated from waves or directly from the flow of water in ocean currents, tides, or inland waterways;

(14) "independent electric system" means an electric system that is not interconnected with any other electric system;

(15) "inverter" means a device that converts direct-current power into alternating-current power so that the generated power is compatible with power generated by an electric utility;

(16) "nameplate capacity" means the maximum rated output of a generator, prime mover, or other electric power production equipment under specific conditions designated by the manufacturer;

(17) "net electric energy" means, as metered by the electric utility for a specified period and expressed in kilowatt-hours,

(A) the amount by which the quantity of electric energy supplied by the electric utility to the consumer exceeds the quantity of electric energy supplied by the consumer to the electric utility; or

(B) the amount by which the quantity of electric energy supplied by the consumer to the electric utility exceeds the quantity of electric energy supplied by the electric utility to the consumer;

(18) "net metering" means measuring the amount of net electric energy as described in 3 AAC 50.930(a) for the applicable billing period;

(19) "net metering program" means a program administered by an electric utility that allows a consumer operating and either owning or leasing an eligible consumer generation system to

(A) generate electric energy primarily for the consumer's own use;

(B) supply consumer-generated electric energy to the electric utility; and

(C) receive a credit under 3 AAC 50.930 if net metering results in excess consumer-generated electric energy during a billing period;

(20) "non-firm power rate" means the rate updated quarterly in an electric utility's tariff in accordance with 3 AAC 50.770(d), or established in a commission-approved contract as described in 3 AAC 50.930(a)(2);

(21) "ocean thermal energy" means the conversion of energy arising from the temperature difference between warm surface water of oceans and cold deep-ocean current into electrical energy or other useful forms of energy;

(22) "retail sales" means sales of electricity to the end-use consumer, exclusive of wholesale sales;

(23) "solar photovoltaic energy" means the conversion of sunlight into electricity through a photovoltaic cell;

(24) "solar thermal energy" means a technology for harnessing solar energy for thermal energy;

(25) "switchgear" means the combination of electrical disconnects, fuses, or circuit breakers used to

(A) isolate electrical equipment; and

(B) de-energize equipment to allow work to be performed. (Eff. ___/___/____, Register ____)

Authority: AS 42.05.141 AS 42.05.151

Catching wind of alternative energy: Legislature to consider codifying net metering regulations

By Molly Dischner | *Peninsula Clarion*

Friday, March 11, 2011
Story last updated at 3/11/2011 - 12:49 pm

Among the energy considerations in front of the Alaska State Legislature this week is a bill to codify net metering regulations instituted last summer.

Rep. Kurt Olson, R-Soldotna, proposed the bill to formalize rules adopted by the Regulatory Commission of Alaska last year.

"This would formalize it and make it harder to change," Olson said.

Net metering enables Alaskans to connect their own energy systems to a grid and get credited or paid for the energy they produce.

Last year, the commission opened a docket to investigate the matter.

"The bill that I did this year took the results of that docket," he said.

The net metering legislation allows solar, wind, biomass, hydroelectric, hydrokinetic, ocean thermal, biogas and other similar energy sources approved by the commission to be part of a utility's grid, as long as the system is 25 kilowatt hours or smaller. Producers are metered on a monthly basis.

Alaskan Wind Industries' Nadia Daggett said that when they produce 600 kW in a month, they get a credit for 600 kW on their bill. That's a step closer to yearly metering, which Daggett said is more ideal for producers. But it's much better than minute-by-minute metering, she said. That sort of metering reduces the incentive to produce energy because producers rarely use energy precisely when they are producing it, and frequently end up getting paid at a wholesale rate and then turning around and buying their energy at a retail rate a few hours later.

In his sponsor statement, Olson said that 40 states currently have some form of net metering legislation.

Daggett said that the basis of net metering is an old federal law requiring consumers to be able to connect their own energy systems to the grid. What's left up to the states is how to negotiate payment.

Only major utilities --like Homer Electric -- are governed by these rules. The smallest, like Seward, are not.

The legislation specifies that up to 1.5 percent of an area's consumption can be provided via individual producers.

"That's pretty normal," Daggett said.

Most other states have similar regulations when they first codify net metering, she said. Eventually it gets changed.

For Homer Electric Association customers, that's about 119 5 kW systems, Daggett said.

How fast will the Peninsula hit those caps?

"Very, very quickly," Daggett said.

Her company has installed most of the systems that are on the central Peninsula's grid.

"We're about a quarter of the way into our demand and that was only the first year," she said.

So that number might need to be negotiated up, something Daggett said has happened in other states.

Olson's bill has a provision to allow the commission to make changes. It states that the commission can adopt additional regulations that deal with issues related to net metering -- like safety, power quality and connection standards -- to ensure that net metering doesn't pose a hazard for communities.

Individual utilities can also adopt their own regulations with RCA approval, Daggett said.

Molly Dischner can be reached at molly.dischner@peninsulaclarion.com.

STATE OF ALASKA

THE REGULATORY COMMISSION OF ALASKA

Before Commissioners:	Robert M. Pickett, Chairman Kate Giard Paul F. Lisankie Anthony A. Price Janis W. Wilson
In the Matter of the Consideration of the Adoption of Regulations Implementing Net Metering	R-09-1 ORDER NO. 3

ORDER ADOPTING REGULATIONS

BY THE COMMISSION:

Summary

We adopt regulations establishing net metering requirements for certain electric utilities.

Background

After declining to adopt a federal net metering standard,[1] we opened this docket to consider regulations implementing an Alaska-specific net metering standard.

[1] *See* Order R-06-5(7), dated August 27, 2008 and titled *Order Declining to Adopt Federal Net Metering, Fuel Diversity, and Fossil Fuel Generation Efficiency Standards.*

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We issued a straw man proposal to generate comment on elements of a net metering requirement,[2] and held a technical conference to discuss the net metering requirement.[3] We issued proposed regulations for comment[4] and provided public notice of our intent to consider net metering regulations.[5]

[2]*See* Order R-06-5(8)/R-09-1(1)/R-09-2(1), dated February 6, 2009 and titled *Order Closing Docket, Opening Dockets, Subsuming Applicable Portions of Docket R-06-5 Record into Dockets R-09-1 and R-09-2, Scheduling Technical Conferences, and Requiring Filings.*

[3]The technical conference was held as scheduled on March 4, 2009. Organizations represented at the net metering technical conference included Alaska Center for the Environment (Margaret Adsit), Alaska Power Association (Crystal Enkvist and Dean Thompson), Alaska Power & Telephone Association (Danny Gonce), Alaska Village Electric Cooperative (Meera Kohler), Alaskan Wind Industries (Nadia Daggett), Chilkoot Indian Association (Scott Hansen), Chugach Electric Association, Inc. (Don Edwards and Rick Freymiller), Golden Valley Electric Association (Kirk Gibson, Ethan Falatko, and Mike Wright), Homer Electric Association (Jim Patras and Rick Eckert), Interstate Renewable Energy Council (Jason Keyes), Matanuska Electric Association (Jim Walker), MEA Ratepayers Alliance (Tim Leach), the Municipality of Anchorage d/b/a Municipal Light & Power (Robert Reagan), the National Wildlife Foundation (Pat Lavin), the Regulatory Affairs and Public Advocacy Section of the Alaska Attorney General's Office (Sam Cason and Janet Fairchild), Rural Energy Enterprises (Lonnie Jackson), Sitka Global Warming Group (Michelle Putz), TDX Power (Jennifer Owens), and Your Clean Energy LLC (Andy Baker). Individuals appearing on their own behalf were David Mogar, Will Schlein, Jim Stimpfle, and Jeff Turner (Chief of Staff for Representative Charisse Millet).

[4]*See* Order R-09-1(2), dated June 12, 2009 and titled *Order Issuing Proposed Regulations for Comment.*

[5]*See Notice of Proposed Changes in the Regulations of the Regulatory Commission of Alaska*, dated June 12, 2009.

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We reviewed over 45 comments during the public comment period, which included an opportunity for initial and reply comments.[6]

Commission Staff presented a comment summary and suggested several revisions to the proposed regulations based on public comment. After reviewing the public comments and agreeing on revisions to the proposed regulations at our October 14, 2009 public meeting, we voted to adopt the net metering regulations that are attached to this order as Appendix A.[7]

Discussion

Net metering allows a consumer to reduce his or her load requirement by interconnecting on-site generation facilities to electric utility facilities. The amount of customer-generated power is compared to the customer's electric consumption for the applicable billing period, with the customer either billed for net electric consumption or credited for generating more electricity than used in a billing period.

We adopted a net metering requirement that will apply to certain Alaskan electric utilities. While the parameters of our net metering requirement vary from

[6]Initial comments were filed by Representative Alan Austerman, Alaska Center for the Environment, Alaska Power Association, Ole Anderson, Melissa Aronson, Christopher Brewton, Robert Burns, Chugach Electric Association, Nina Faust and Edgar Bailey, Dr. Frederick Foster, Jeff Friedman, Golden Valley Electric Association, Matt Gray, Dianne Holmes, Frank L. Holmes, Homer Electric Members Forum, Interstate Renewable Energy Council, Pat Irwin, Tim June, Philip Kaluza, Sherry Kimmons, Kootznoowoo Incorporated, James Lawrence, J.T. Lindholm, Bill Lynch, Peter McKay, Mark Masteller, Duff Mitchell, Deborah Nakada, the National Wildlife Federation, Representative Paul Seaton, Peter Schneidler, Rebecca Shaffer, Phil St. John, Michael J. Van Note, Paulette Wellington, Lawrence Whiting, Michelle Wilber, Yukon River Inter-Tribal Watershed Council, and Bryan Zak. Reply comments were filed by Alaska Power Association, Chugach Electric Association, the National Wildlife Federation, and the Municipality of Anchorage d/b/a Municipal Light and Power.

[7]October 14, 2009 public meeting transcripts at 173-175.

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pending net metering legislation,[8] we believe that our net metering regulations reflect an appropriate compromise that facilitates net metering in Alaska and adequately protects the interests of utilities, net metering consumers, and utility customers that do not net meter. We create a new Article in Chapter 50 (*Energy Conservation)* to incorporate net metering requirements (3 AAC 50.900 – 3 AAC 50.949). The elements of our proposed net metering regulations are discussed below.

3 AAC 50.900, Applicability and Waiver

This section addresses the applicability of our net metering requirement by identifying categories of electric utilities subject to the net metering requirement.[9] Generally speaking, the net metering requirement applies to all electric utilities subject to economic regulation by this agency. However, the requirement does not apply to an economically regulated electric utility (1) with 100 percent of its electrical power supplied by an eligible facility, as defined in 3 AAC 50.949,[10] or (2) for independent systems that have retail sales of less than 5,000,000 kilowatt hours during the utility's previous fiscal year.[11] In addition, an electric utility demonstrating that limiting net metering

[8]The 26th Alaska State Legislature has three pending legislative bills that would require retailer suppliers of electricity to provide net metering - House Bill 31, House Bill 66, and Senate Bill 131.

[9]Appendix B to this Order lists the utilities subject to the net metering requirement.

[10]Specifically, "eligible facility" means a facility that produces electric energy derived from solar photovoltaic and solar thermal energy; wind energy; biomass energy; hydroelectric energy; geothermal energy; hydrokinetic energy; ocean thermal energy; landfill gas or biogas produced from organic matter, wastewater, anaerobic digesters, or municipal solid waste; and other sources as approved by us that generally have similar environmental impact. *See* 3 AAC 50.949(9).

[11]For example, Alaska Power Company provides service to 21 different communities, each having a separate electrical system. Only five of the separate electric systems sold more than 5,000,000 kilowatt during the 2007 fiscal year. These five systems would be the only portions of Alaska Power Company required to participate in the net metering program.

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installations is reasonably necessary to address system stability constraints or other operational issues is not required to provide net metering over the affected portion of its distribution system. This section also allows us to waive any requirement in 3 AAC 50.900 – 3 AAC 50.949 upon application and for good cause shown.

3 AAC 50.910, Net Metering of Electricity

Subsection (a) requires covered electric utilities to make net metering available to its customers, and allows the interconnection of customer generation systems to the electric utility's facilities. Subsection (b) states an overall capacity limitation on net metering, allowing an electric utility to refuse net metering service if the overall nameplate capacity of all net metering systems interconnected with the utility exceeds a pre-defined cap (1.5 percent of the electric utility's average retail demand). Subsection (c) precludes a utility from disconnecting existing net metering customers should the cumulative nameplate capacity of net metering systems interconnected to the utility's distribution system exceed the cap as a result of a decrease in average demand. Subsection (d) requires an electric utility to annually publish in its tariff the number of kilowatt hours equivalent to 1.5 percent of the electric utility's average retail demand.

3 AAC 50.920, Consumer Generation System

This section specifies eligibility criteria for consumer generation facilities, including a generation capacity limit of 25 kilowatts.

3 AAC 50.930, Charges or Credits for Net Electricity

Subsection (a) requires an electric utility to measure a net metering consumer's energy consumption and generation, with net metering consumers being billed for net consumption and receiving bill credits when the customer's generation exceeds usage. Subsection (b) addresses the application of bill credits as dollar amounts to subsequent monthly billing periods. Subsection (c) allows an electric utility

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to charge a net metering consumer for non-generation related consumer charges provided those charges are authorized by the electric utility's tariff. Subsection (d) precludes an electric utility from charging a net metering consumer additional fees for net metering service unless we approve the charge. Subsection (e) states an electric utility may request a change to its rate design to incorporate a net metering customer class. It requires the electric utility to demonstrate an adverse material rate impact on non-net metering customers to justify a net metering customer class.

3 AAC 50.940, Interconnection of Customer Generation Facilities

This section allows us to establish interconnection requirements for customer generation systems.

3 AAC 50.950, Definitions

This section defines terms used in the net metering regulations, including a definition specifying eligible sources of electricity for net metering purposes.[12]

ORDER

THE COMMISSION FURTHER ORDERS that the regulations set out in Appendix A to this order are adopted.

DATED AND EFFECTIVE at Anchorage, Alaska, this 15th day of January, 2010.

BY DIRECTION OF THE COMMISSION
(Commissioner Anthony A. Price, dissenting.)



[12]See footnote 10.

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Utilities Required to Allow Net Metering*

2nd exception →

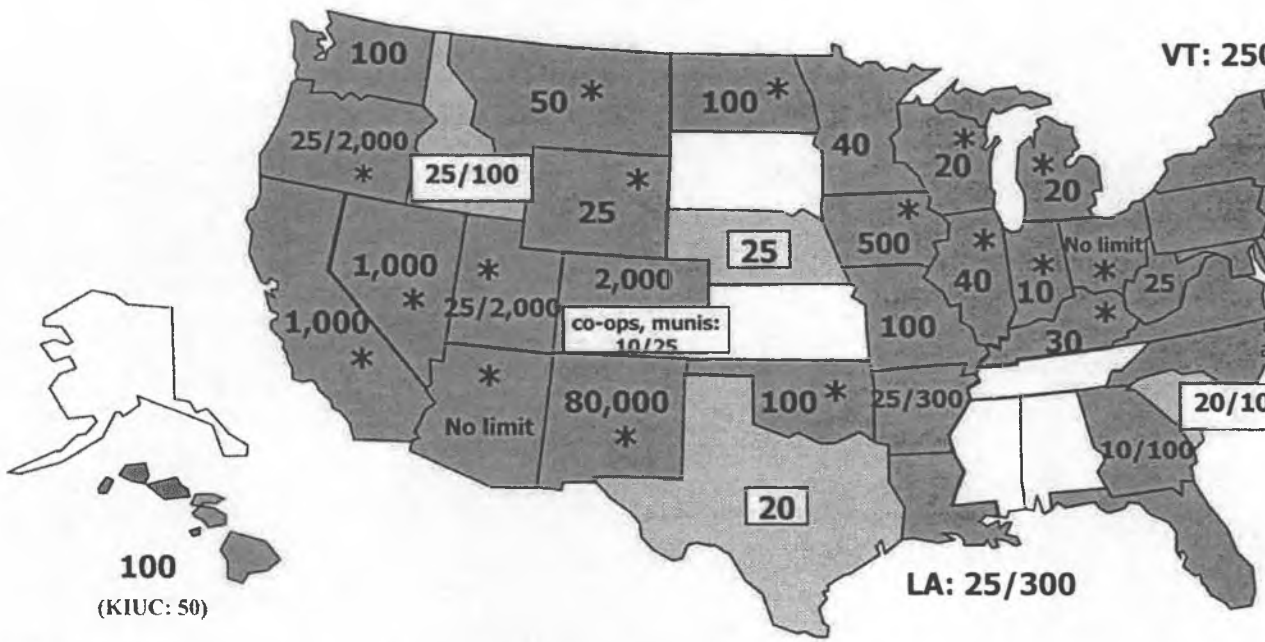
Utility	Community	Retail Sales (kWh)	PCE Eligible	Source
Alaska Power Company	Craig	9,718,808	Yes	FY 2007 PCE Report
	Haines	12,091,366	Yes	FY 2007 PCE Report
	Klawock	8,833,579	Yes	FY 2007 PCE Report
	Skagway	12,072,805	Yes	FY 2007 PCE Report
	Tok	10,340,324	Yes	FY 2007 PCE Report
Bethel Utilities Corporation	Bethel	39,103,836	Yes	FY 2007 PCE Report
Inside Passage Electric Cooperative	Hoonah	5,011,912	Yes	FY 2007 PCE Report
TDX North Slope Generating	Deadhorse	41,721,461	No	FY 2008 Annual Report Data
Alaska Electric Light & Power	Juneau	346,840,000	No	FY 2008 Annual Report Data
Homer Electric Association	Kenai Peninsula	523,330,000	No	FY 2008 Annual Report Data
Matanuska Electric Association	Mat-Su Valley	700,924,000	No	FY 2008 Annual Report Data
Municipal Light & Power	Anchorage	1,118,751,652	No	FY 2008 Annual Report Data
Chugach Electric Association	Anchorage, Eagle River, Girdwood	1,205,832,000	No	FY 2008 Annual Report Data
Golden Valley Electric Association	Fairbanks, North Pole	1,349,251,000	No	FY 2008 Annual Report Data

Note: The above utlities would be subject to net metering requirements based on total annual retail sales (see 3 AAC 50.900(a), (b)(2)). However, the above utilities may apply for a partial exemption for a portion of its system based on a demonstration that limiting net metering installations is necessary to address system stability constraints or other operational issues (3 AAC 50.910(b)(3)). In addition, any utility (including those listed above) that provides 100 percent of its power (excluding backup and emergency power) from an eligible facilities is exempt from net metering requirements (3 AAC 50.910(b)(3)). Generally speaking, an "eligible facility" means a facility that produces electricity from a renewable energy source (see 3 AAC 50.949(9)).

DSIRE: www.dsireusa.org

February 2009

Net Metering



VT: 250

NH: 100
MA: 60/1,000/2,000*
RI: 1,650/2,250/3,500*
CT: 2,000*
NY: 25/500/2,000*
PA: 50/3,000/5,000*
NJ: 2,000*
DE: 25/500/2,000*
MD: 2,000
DC: 1,000
VA: 10/500*
NC: 20/100*

FL: 2,000*

LA: 25/300

Net metering is available in 44 states + D.C.

State-wide net metering for all utility types

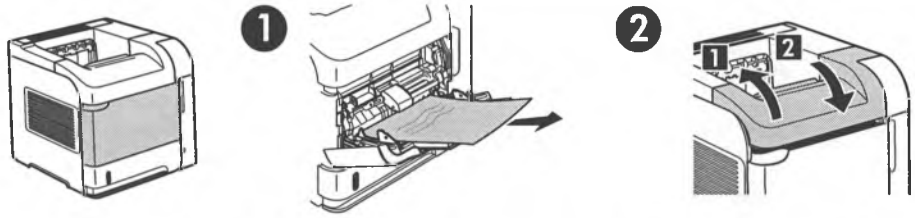
* State-wide net metering for certain utility types only (e.g., investor-owned utilities)

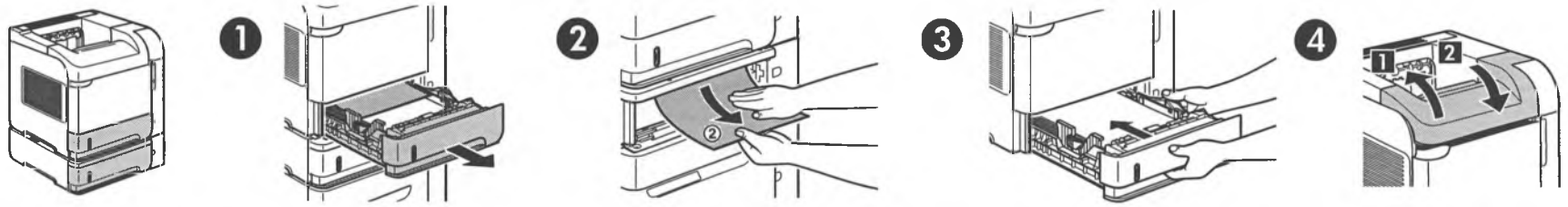
Net metering offered voluntarily by one or more individual utilities

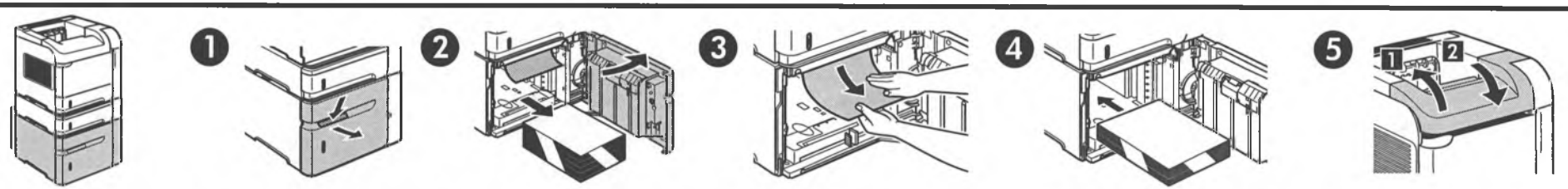
Note: Numbers indicate individual system size limit in kilowatts (kW). Some states' limits vary by customer type, technology and/or system application; this is the case when multiple numbers appear for one state. Other limits may also apply. For complete details, see www.dsireusa.org.

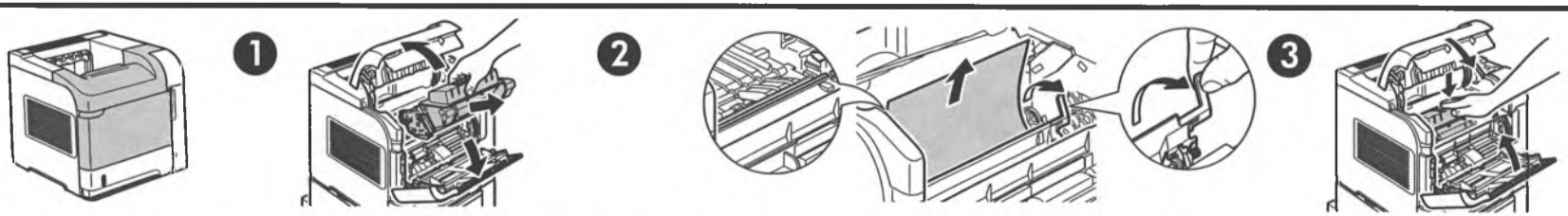
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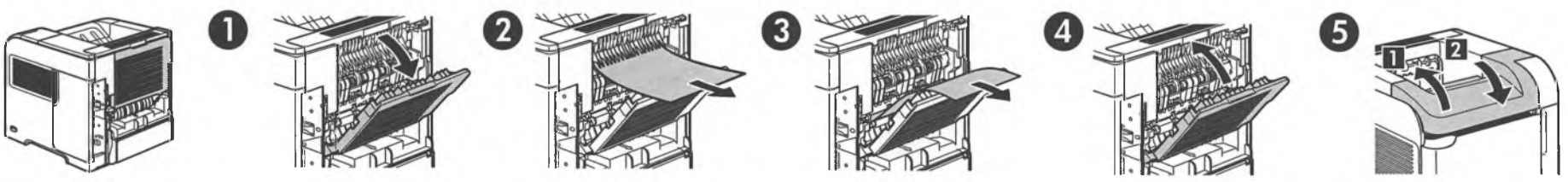
Clear Jams
清除卡纸
Elakadások elhárítása
Устранение замятий
Eliminer les bourrages
Odstranění uvíznutých médií
용지 걸림 해결
Rensa trassel
Staus beseitigen
Afhjælp papirstop
Fjerne fastkjørt papir
清除卡紙
Eliminazione degli inceppamenti
Storingen verhelpen
Usuwanie zacięć
Kağıt Sıkışmalarını Giderme
Eliminación de atascos
Tukosten poistaminen
Limpar atolamentos
Eliminació d'embussos
紙詰まりの解消





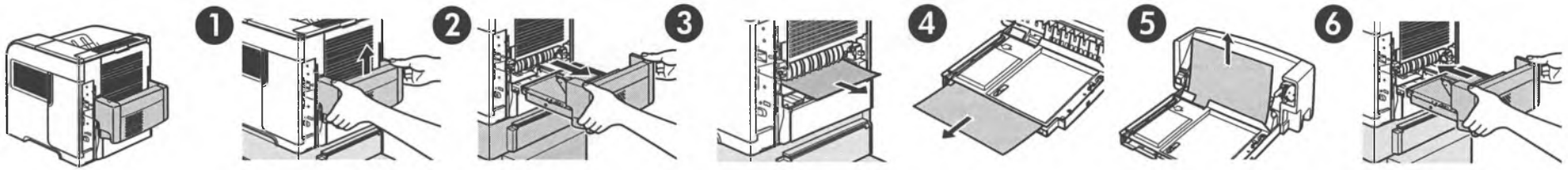


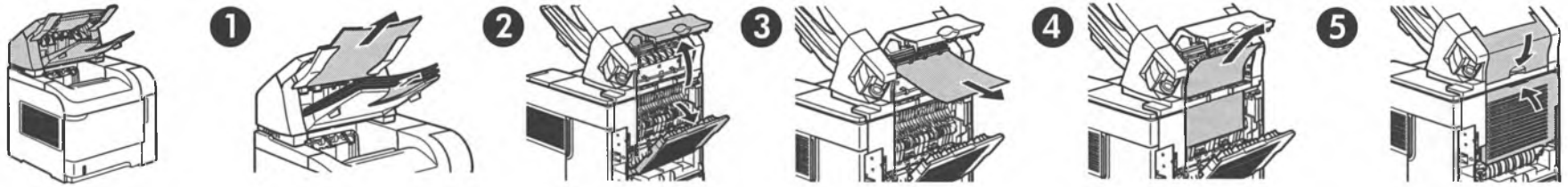


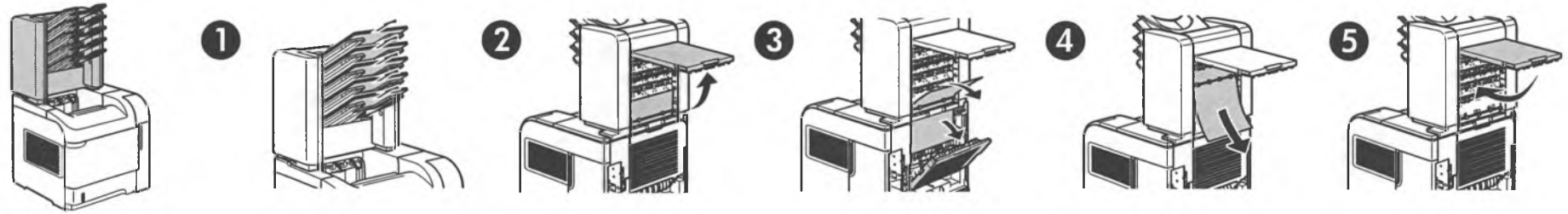


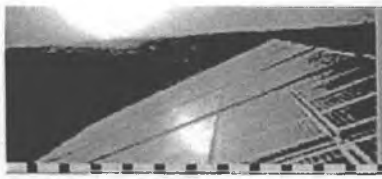
HP LaserJet P4010 and P4510 Series Printers

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Eliminación de atascos
Tukosten poistaminen
Limpar atolamentos
Eliminació d'embussos
紙詰まりの解消







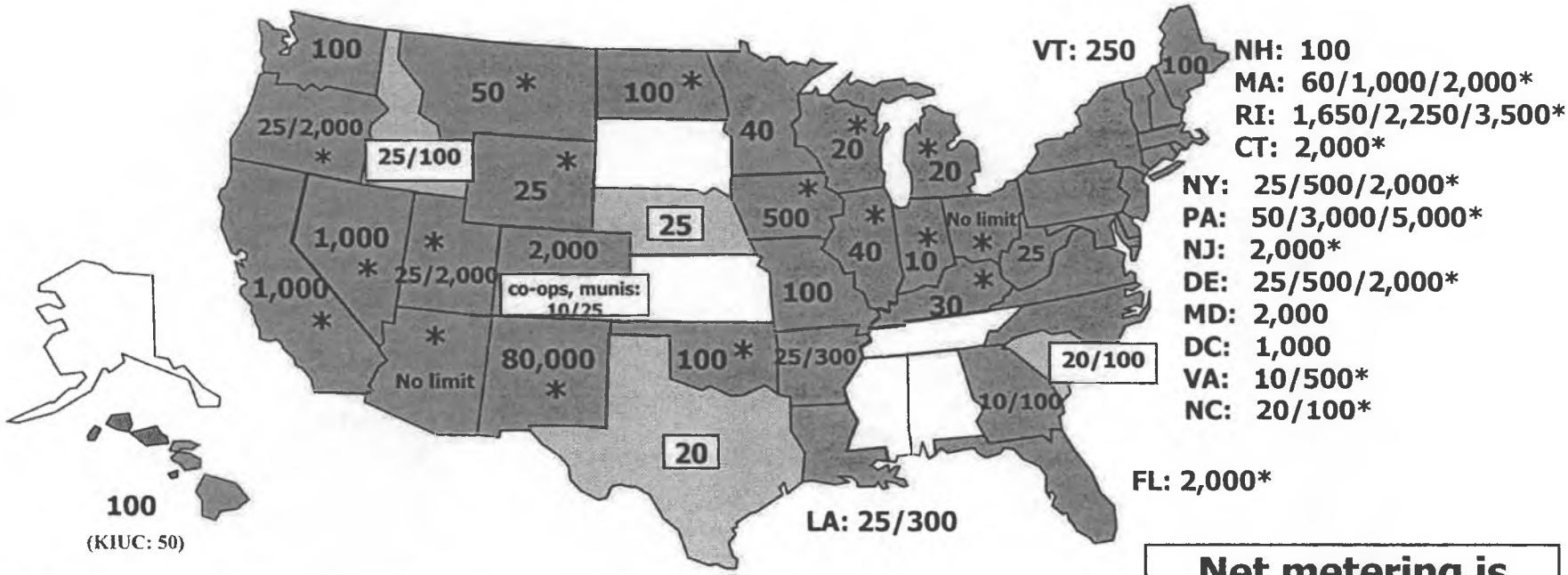


NC State University
North Carolina Solar Center

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February 2009

Net Metering



State-wide net metering for all utility types

* State-wide net metering for certain utility types only (e.g., investor-owned utilities)

Net metering offered voluntarily by one or more individual utilities

Net metering is available in 44 states + D.C.

Note: Numbers indicate individual system size limit in kilowatts (kW). Some states' limits vary by customer type, technology and/or system application; this is the case when multiple numbers appear for one state. Other limits may also apply. For complete details, see www.dsireusa.org.

IREC
INTERSTATE RENEWABLE ENERGY COUNCIL

HB

39

<TARGET><BILL>HB 39</BILL><SUBJECT>HB
39</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska State Legislature

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Toll Free: (800) 465-4939
Representative_Pete_Petersen@legis.state.ak.u

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Fax: 269-0264

Representative Pete Petersen
Serving Northeast Anchorage and Muldoon

Memorandum

March 3, 2011

To: Rep. Neal Foster and Rep. Lance Pruitt
Co-chairs, House Special Committee on Energy

From: Rep. Pete Petersen

Re: Hearing Request for House Bill 39 Draft CS Version T

Thank you for holding a hearing on House Bill 39 on February 10, 2011. Since that hearing, I have worked with Stuart Goering of the Department of Law to resolve issues that were raised during the hearing and we have prepared a new draft committee substitute (version T). I respectfully request that House Bill 79 Draft Committee Substitute Version T be scheduled for a hearing in the House Special Committee on Energy. Please feel free to contact me, or my aide David Dunsmore, at 465-4939 with any questions, thoughts, or ideas.

Attached you will find a supplemental background packet for House Bill 39 including a copy of the Draft CS, an updated sponsor statement, an updated sectional analysis, and a letter of support from the Alaska Public Interest Research Group.

Thank you for your consideration.

Alaska State Legislature

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Representative Pete Petersen

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Table of Contents: Supplemental Background Information for HB 39 Utility Refunds

1. Draft committee substitute version T
2. Summary of changes for draft CS version T
3. Updated Sponsor Statement for draft CS version T
4. Sectional analysis for draft CS version T
5. Letter of support from Alaska Public Interest Research Group

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2/25/11

CS FOR HOUSE BILL NO. 39( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - FIRST SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVE PETERSEN

A BILL

FOR AN ACT ENTITLED

"An Act requiring a utility applying to the Regulatory Commission of Alaska for a new or increased rate where a refund may be ordered by the commission to have a refund procedure in place; relating to refund procedures and orders of the commission; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* **Section 1.** AS 42.05.421 is amended by adding new subsections to read:

(e) When a tariff filing containing new or increased rates is suspended for investigation and the commission establishes an interim rate that is subject to refund, the utility shall, within 60 days after the date the suspension order is issued, notify the commission of the procedures the utility proposes to use for refunding that portion of the new or increased rates that may be found by the commission after investigation to be unreasonable or unlawful unless the utility notifies the commission that the utility intends to use procedures in

(1) a provision of the utility's tariff relating to the refund of interim

rates approved by the commission; or

(2) regulations adopted by the commission under (f) of this section.

(f) The commission shall, by order, initiate a rule-making proceeding for the purpose of adopting regulations that provide for procedures that a utility may use to make refunds of that portion of an interim rate the commission finds to be unreasonable or unlawful and that are necessary to carry out the provisions of this subsection and (e) of this section. In adopting the regulations, the commission shall consider whether the procedures adopted by regulation maximize the likelihood that refunds will be promptly paid to the customers who actually paid the interim rates, while keeping administrative costs at a reasonable level. At a minimum, the regulations adopted under this subsection must

(1) specify how refunds are to be calculated;

(2) identify post-refund reporting requirements; and

(3) establish the maximum number of days following the issuance of a final order of the commission that refunds shall be issued.

(g) If a utility does not use a refund procedure described in (e)(1) or (2) of this section, not later than the time the commission issues a final rate decision on the rate in question, the commission shall rule on whether the utility's proposed refund procedure is approved.

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

UTILITY REFUND PLAN. The Regulatory Commission of Alaska shall

(1) initiate a rule-making proceeding described in AS 42.05.421(f), as enacted by sec. 1 of this Act, within 30 days after the effective date of this section; and

(2) adopt the regulations under AS 42.05.421(f), as enacted by sec. 1 of this Act, within the time specified in AS 42.05.175(e); the regulations may not take effect until the effective date of AS 42.05.421(f).

*** Sec. 3.** Section 1 of this Act takes effect July 1, 2013.

*** Sec. 4.** Section 2 of this Act takes effect immediately under AS 01.10.070(c).

Alaska State Legislature

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Summary of Changes from Draft CS Version D to Draft CS Version T

HB 39
Utility Refunds

This version has been rewritten with advice from the Stuart Goering of the Department of Law.

Section 1 is changed, so that within 60 days after an interim and refundable rate has been authorized the utility must either submit a proposed refund plan or notify the Regulatory Commission of Alaska (RCA) that the utility will use either a standard refund procedure preapproved by the RCA or a refund procedure included in the utility's tariff. The RCA shall rule on the proposed refund plan no later than the final decision on the rate case.

A new subsection (f) is added to section one requiring the RCA to implement a rule-making process to develop regulations implementing this bill.

Section 2 now includes language requiring the RCA to commence this rule making process within 30 days after this section takes effect and establishes that these regulations cannot take effect until the effective date of section 1.

The effective date for section 1 is changed to July 1, 2013 to allow the RCA time to prepare these regulations. The effective date for section 2 remains immediate.

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Sponsor Statement

HB 39 Draft CS Version T
Utility Refunds

This bill will better protect consumers in utility rate cases, by requiring a refund procedure be in place before the Regulatory Commission of Alaska (RCA) makes a final ruling in case where a utility is allowed to charge an interim or refundable rate. When the RCA requires extended deliberation on a rate case, the commission often allows the utility to charge the proposed rate, but if they reject the rate the utility must refund customers with interest.

Currently refund procedures are only set after the RCA rejects a rate, and often legal wrangling can significantly delay the refund. In a recent high profile case, the refund was delayed for almost 9 months, even though the utility did not appeal the ruling. The interest the utilities must repay continues to accrue while the refund procedure is being adjudicated, so both the customers and the utilities would benefit from streamlining the refund process.

While the interim and refundable rate process is important for allowing utilities not to be harmed while the regulatory process plays out, when a rate is rejected the consumers should be refunded as soon as possible.

This bill allows utilities several options for how to have a refund plan approved. They can either use procedures that have been pre-approved by the RCA for all utilities, use an RCA provision in their specific tariff, or submit their own plan to the RCA. Utilities will be required to submit to the RCA how they intend to conduct a possible refund within 60 days of an interim and refundable rate being approved, and if they do not choose a pre-approved option then the RCA will rule on the refund plan before or concurrent with the final ruling in the rate case.

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Sectional Analysis

HB 39
Utility Refunds
Draft CS Version T

Section 1 adopts requirements for utilities to file refund plans when interim and refundable rates have been approved sets procedures for implementing this requirement.

Subsection (e) requires that utilities notify the RCA about how they will handle a potential refund within 60 days of an interim and refundable rate has been granted. Utilities may either use a pre-approved plan adopted by the RCA, a pre-approved plan detailed in the utility's tariff, or submit their own plan for approval.

Subsection (f) requires the RCA to adopt regulations to implement this section and describes what must be included in a pre-approved plan.

Subsection (g) requires that if a utility does not use a pre-approved option, that the RCA shall rule on the refund plan no later than when they issue their final rate decision

Section 2 requires the RCA to begin the process to enact regulations to implement section 1 within 30 days of the effective date of section 2 and that these regulations may not take effect before the effective date of section 1.

Section 3 establishes a July 1, 2013 effective date for section 1.

Section 4 establishes an immediate effective date for section 2.

AKPIRG
Alaska Public Interest Research Group
P.O. Box 101082 • Anchorage, AK 99510 • www.akpirg.org

February 10th, 2011

Dear legislator,

On behalf of the Alaska Public Interest Research Group, I'd like to express our support for House Bill 39.

As Alaska's oldest and largest consumer watchdog group, AKPIRG has been advocating for consumers and the public interest since 1974. We're a non-partisan, non-profit, citizen based grassroots organization, and we focus on research, public education and engagement, and advocacy at the state level to further our mission.

One of the issues we have consistently been concerned with is the cost and fairness of Alaskan consumers' monthly bills-- rent, mortgages, mobile phones, and of course, heat and electricity.

These Utility bills are a very significant part of the household expenses of families all over Alaska. When a utility company is compelled to refund some of the money charged to consumers, whether the amount is large or small, it should happen quickly in order to get those funds to Alaskans that need them.

HB 39 is a very simple piece of legislation that will help ensure that this is the case. By requiring utilities to outline a refund plan when they apply for a rate hike that, regardless of likelihood, there is a plan in place to make sure that the refund happens quickly and efficiently.

Alaska consumers deserve nothing less.

From our standpoint it really is as simple as that, and we believe that the bill as written provides an appropriate level of flexibility in implementation for the regulatory commission of alaska to realize the goals of this legislation.

So, on behalf of our members we urge your support and speedy action on this bill.

Sincerely,

Matt Wallace
AKPIRG Executive Director

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version
() Publish Date

Identifier (file name) HB039-CCED-RCA-02-4-11
Title: RCA utility rates; Refund procedures
Sponsor: Representative Petersen
Requester: House Energy

Dept. Affected: DCCED
Appropriation: Regulatory Commission of Alaska
Allocation: Regulatory Commission of Alaska
OMB Component Number: 399

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	167.7		167.7	167.7	167.7	167.7	167.7
Travel	10.0		0.0	0.0	0.0	0.0	0.0
Services	10.0		0.0	0.0	0.0	0.0	0.0
Commodities	4.0		4.0	4.0	4.0	4.0	4.0
Capital Outlay							
Grants							
Miscellaneous							
TOTAL OPERATING	**191.7**	**0.0**	**171.7**	**171.7**	**171.7**	**171.7**	**171.7**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES	**191.7**		**171.7**	**171.7**	**171.7**	**171.7**	**171.7**

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts	191.7		171.7	171.7	171.7	171.7	171.7
1037 GF/Mental Health							
Other (please identify)							
TOTAL	**191.7**	**0.0**	**171.7**	**171.7**	**171.7**	**171.7**	**171.7**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**	**2.0**
Part-time							
Temporary							

Why this fiscal note differs from previous version (if initial version, please note as such)

This is the initial fiscal note to HB39 from the Regulatory Commission of Alaska.

Prepared by: T.W. Patch
Division: Regulatory Commission of Alaska
Approved by: Susan K. Bell, Commissioner
Department of Commerce, Community and Economic Development

Phone: 907.276.6222
Date/Time: 02-04-2011 5:58 p.m.
Date: 2/5/2011

(Revised 1/27/2011 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** _____
2011 LEGISLATIVE SESSION

Analysis

This legislation requires a utility filing for a new or revised rate to have a refund procedure in place that is approved by the Regulatory Commission of Alaska (RCA). Regulated utilities will be required to amend their tariffs to state rate refund procedures. The RCA will be required to review those tariff filings and any subsequent tariff revision by a regulated utilities to modify its refund procedure. Should regulations be necessary to implement a standard refund procedure for regulated utilities, the RCA would be required to incur the cost of establishing those regulations. To perform these obligations, the RCA would hire a Utility Tariff Analyst I (Range 16) and a Utility Tariff Analyst II (Range 18). These employees would be dedicated full-time to processing tariff filings and possibly pursuing standards related to refund procedures.

The RCA's budget is funded through Regulatory Cost Charges (RCC) and direct charge mechanisms. The RCC is recalculated each year and allows the agency to recover its operating expenses through an assessment on the revenues of regulated utilities and pipeline carriers. Utilities exempt from economic regulation by the RCA do not pay RCCs, but may be required to pay the actual costs of services provided to the RCA.

The current RCC cap is 0.7%, and an increase to the statutory will be necessary to fund the additional positions.

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Table of Contents: Background Information for HB 39 Utility Refunds

1. Current bill language
2. Sponsor statement
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4. Summary of changes for draft CS version D
5. Sectional analysis for draft CS version D
6. Timeline of Enstar/ Fort Richardson Case
7. Enstar's Fort Richardson Billing Error Refund Plan

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Sponsor Statement

HB 39
Utility Refunds

This bill will better protect consumers in utility rate cases, by requiring a refund procedure be in place before the Regulatory Commission of Alaska (RCA) may allow a utility to charge an interim or refundable rate. When the RCA requires extended deliberation on a rate case, the commission often allows the utility to charge the proposed rate, but if they reject the rate the utility must refund customers with interest.

Currently refund procedures are only set after the RCA rejects a rate, and often legal wrangling can significantly delay the refund. In a recent high profile case, the refund was delayed for almost 9 months, even though the utility did not appeal the ruling. The interest the utilities must repay continues to accrue while the refund procedure is being adjudicated, so both the customers and the utilities would benefit from streamlining the refund process.

While the interim and refundable rate process is important for allowing utilities not to be harmed while the regulatory process plays out, when a rate is rejected the consumers should be refunded as soon as possible.

This bill leaves it to the discretion of the RCA whether to adopt standard refund procedures for all utilities, or whether to let each utility submit its own refund procedure.

27-LS0228\D
Kane
2/9/11

CS FOR HOUSE BILL NO. 39( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - FIRST SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVE PETERSEN

A BILL

FOR AN ACT ENTITLED

"An Act requiring a utility applying to the Regulatory Commission of Alaska for a new or increased rate where a refund may be ordered by the commission to have a refund procedure in place; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 42.05.421 is amended by adding a new subsection to read:

(e) Before a utility may apply for a new or increased rate where a refund may be ordered by the commission under (c) of this section, the utility shall have a refund procedure in place that is approved by the commission or agree to follow regulations relating to refund procedures adopted by the commission. The procedures under this subsection must, at a minimum, specify how refunds are to be calculated, identify post-refund reporting requirements, and establish the maximum number of days following the issuance of a final order of the commission that refunds shall be issued.

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

UTILITY REFUND PLAN GUIDELINES. The Regulatory Commission of Alaska, in consultation with regulated utilities and other interested parties, shall, before January 1, 2012, develop procedures and guidelines for an acceptable utility refund plan required by sec. 1 of this Act that will allow a utility to have a refund plan approved in the most efficient manner possible.

* **Sec. 3.** Section 1 of this Act takes effect January 1, 2012.

* **Sec. 4.** Except as provided in sec. 3 of this Act, this Act takes effect immediately under AS 01.10.070(c).

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Summary of Changes from the Original to Draft CS Version D

HB 39
Utility Refunds

The wording of the title and section 1 (the only section in the original) have been changed to make it explicitly clear that this bill would only apply to refundable rate request. Section 1 also includes an option for utilities to follow a refund plan pre-approved by the RCA and establishes factors that must be addressed in the pre-approved plan.

A new section 2 is included, requiring the RCA to consult with utilities and other interested parties in developing procedures to implement this bill and adopt guidelines for acceptable refund plans to enable utilities to have their refund plans approved in the most efficient manner possible.

The draft CS adds two effective date provisions. Section 1 would become effective January 1, 2010 and section 2 would become effective immediately.

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Sectional Analysis

HB 39
Utility Refunds
Draft CS Version D

Section 1 requires that utilities have an approved refund procedure in place before they can apply to the RCA for and interim and refundable rate or agree to follow a refund plan that was pre-approved by the Commission. Section 1 also establishes factors that must be addressed by the pre-approved plan.

Section 2 requires that the RCA develop guidelines for implementing section 1, in consultation with utilities and other interested parties, that will allow for refund plans to be approved in the most efficient manner possible before section 1 takes effect.

Section 3 establishes a January 1, 2012 effective date for section 1.

Section 4 establishes an immediate effective date for section 2.

Timeline of Enstar/ Fort Richardson Case

Prepared by David Dunsmore, Office of Rep. Pete Petersen

Please note that the purpose of timeline is to show the length of the process, and that some procedural events and filings have been omitted.

October 31, 2008- Enstar requests to recover costs from Fort Richardson error

December 22, 2008- RCA allows Enstar to charge customers for Fort Richardson error on a refundable basis

January through December, 2009- Enstar customers pay approximately $5.7 million to cover the Fort Richardson issue

October 6-8, 2009- RCA hold hearing on the issue

January 7, 2010- RCA extends the statutory deadline for decision from 1/8/2010 to 3/1/2010 with the consent of all parties

March 1, 2010- RCA denies Enstar's request and orders Enstar to submit a refund plan by April 20, 2010.

April 20, 2010- Enstar submits proposed refund plan including three options

July 7, 2010- RCA tentatively approves a refund procedure and seeks comments from the parties

July 12, 2010- Attorney General requests changes to the refund plan

October 28, 2010- RCA approves final refund plan

November 2010- Enstar customers receive refunds on their monthly bills

RECEIVED
By the Regulatory Commission of Alaska on Apr 20, 2010

STATE OF ALASKA

BEFORE THE REGULATORY COMMISSION OF ALASKA

Before Commissioners: Robert M. Pickett, Chairman
Kate Giard
Paul F. Lisankie
T. W. Patch
Janis W. Wilson

In the Matter of the Tariff Revision Designated as TA172-4, Regarding a Proposed Gas Cost Adjustment for 2009 Filed by ENSTAR NATURAL GAS COMPANY, A DIVISION OF SEMCO ENERGY, INC.	Docket No. U-08-142

ENSTAR'S FORT RICHARDSON BILLING ERROR REFUND PLAN

In Order No. U-08-142(14), the Commission required ENSTAR Natural Gas Company to "refund the amount overpaid by gas sales customers" and to "file a plan for the disbursement of refunds"[1] which returns the $5,710,270 included in the 2009 gas cost adjustment (GCA)[2] related to the Fort Richardson billing error that occurred between July 2002 and October 2007, plus accrued interest. The average refund for current residential customers will be approximately $35, including interest at 10.5 percent per annum. The average refund per residential customer who has left the system will be less than $20, including interest at 10.5 percent per annum.

This filing describes three alternative refund methods. Placing the refund in the Gas Cost Balance Account and refunding it as a credit on customers' bills for the rest of 2010 is the

[1] U-08-142(14), issued March 1, 2010, page 23.

[2] U-08-142(3), issued December 22, 2008.

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preferred method because it can be quickly accomplished, is consistent with Commission and Alaska Supreme Court precedents on refunds, and avoids the significant administrative burdens of the alternatives.

The second option would be to issue individual refunds to each customer from whom amounts were collected in 2009 in the precise amount collected, plus interest. This is administratively burdensome for the reasons detailed below.

The third option would be to issue direct refunds to current customers only. The refunds owing to customers who have left the system would be deposited with the State of Alaska as unclaimed property under AS 34.45.150.

GAS COST BALANCE ACCOUNT OPTION

ENSTAR proposes to reduce the cost of gas for its gas sales customers for the remainder of 2010 by removing the disallowed refund payments (totaling $5,710,270 to Aurora Power and Marathon Oil Company) and accrued interest from the GCA in a revised GCA filing. Interest would be calculated from January 1, 2009, the date ENSTAR's customers began paying the 2009 GCA rate. Interest would continue to accrue until the Commission approves this refund method. As of April 1, 2010, ENSTAR calculates the total refund to be $6,067,948.[3]

Under this plan, ENSTAR estimates that the total refund would reduce the 2010 GCA by $0.40 per Mcf. An average residential customer will receive a refund totaling $35 over the

[3] Reduction in 2009 GCA amount of $0.1872 per Mcf (as shown on the Appendix to U-08-142(14)) multiplied by the gas sales volumes billed in 2009 of 31,128,917 Mcf equals $5,827,333 + $240.615 (Simple interest at .875% per month from January 1, 2009 through April 1, 2010). Using simple interest, any additional month prior to completion of the refund will increase the total refund by $25,495. Attachment A shows these calculations.

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last six months of 2010. All of the large volume commercial customers in 2009 are still customers on the system; therefore, those gas sales customers who paid the highest percentage of the amounts collected in 2009 would all benefit if the refunds were processed through the GCA. ENSTAR is prepared to file a revised GCA within five days after the RCA approves this refund method.

The Commission has a long and consistent history of passing customer refunds through the Gas Cost Balance Account. The Moquawkie settlement of $10.1 million, for example, was passed through to customers in 2009 in this manner. U-08-078 Other examples include the Marathon severance tax payment, $9.7 million, in 1998 (TA107-4); the BRU balancing dispute, $2.0 million, in 2007 (TA147-4); the Union severance tax reimbursement, $1.15 million, in 2007 (TA160-4); and the Marathon severance tax reimbursement, $1.3 million, in 2007 (also TA160-4).

This refund method meets the test described by the Alaska Supreme Court in *United States v. RCA Alaska Communications, Inc.*, 597 P.2d 489 (Alaska 1978); overruled on other grounds in *Owischek v. Guide Licensing & Control Bd.*, 627 P.2d 616 (Alaska 1981). In that case, the court noted that the relevant precedents " . . . do not require a perfect correlation between interim ratepayers and potential refund recipients as long as the consumers who are not adequately protected by the refund procedure constitute a relatively small group which neither bears a discriminatory burden nor suffers a substantial harm." *Id.* at 511. The only customers who would not benefit from this refund plan are those who are no longer ENSTAR's customers. No large volume customers are affected and the average refund for the customers who have left the system is less than $20.

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DIRECT CUSTOMER REFUND OPTION

Although more time-consuming and cumbersome, an alternative method for ENSTAR to refund the $6,067,948 to its customers would be to directly refund the exact amount collected from each customer in 2009. Each individual refund would be calculated by multiplying the customer's monthly volumes by the difference ($.1872 per Mcf) between ENSTAR's proposed 2009 GCA and the GCA ordered by the Commission in Order No. U-08-142(14). Interest would be calculated for each customer at a rate of .875% per month based on actual monthly usage for 2009. The total refund under this methodology at April 1, 2010 is the same as noted above, $6,067,948.

This refund option would be administratively burdensome to execute because ENSTAR's customer base constantly changes. ENSTAR had 130,757 gas sales customers on April 1, 2010. On the last day of 2009, ENSTAR had a similar number of gas sales customers, 130,491, but 13,303 of them were not the same customers who purchased services in 2009 during the period of time that the 2009 GCA was collected.

Almost ninety percent of ENSTAR's current customers were also customers when the funds were collected in 2009. Those customers' refunds could appear as a credit on the individual customer's bill after the amount of individual customer refunds was calculated and verified, and all variances were researched. ENSTAR estimates that it will take over 400 hours of time for its staff to process these refunds. To issue refunds to current customers, ENSTAR would need thirty days' notice to write and test the programs necessary to issue the refunds as credits on customers' bills.

Refunding the 13,303 customers who were customers in 2009 but who are no longer on the ENSTAR system would be extremely complicated and time-consuming. ENSTAR may not

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have current addresses for these customers. They may have moved out of ENSTAR's service area or have had service terminated for another reason, including nonpayment. Since these customers no longer have an ENSTAR account, refunds would need to be issued as individual checks. ENSTAR's personnel would first have to identify the last address ENSTAR has for the former customers, and update its billing system.[4] The refund amount would need to be entered manually into the check printing system. At ten minutes per customer, this task would take more than 2,000 hours to complete. Verifying and printing the checks is estimated to take two work weeks, or 80 hours. In addition to the cost of staff time to issue refunds, ENSTAR would also incur the costs to print the checks and the postage to mail them. If any checks are returned with forwarding addresses that have expired, ENSTAR will resend the check to that new address, incurring additional handling, printing and mailing costs. Refund checks returned without a valid forwarding address would be delivered to the State of Alaska as unclaimed property under AS 34.45.150.

Of the 13,303 customers no longer on the system, 2,300 customer accounts were sent to Collections. For this customer subset, ENSTAR would apply the refund as a credit on the customers' account. This process would take an estimated 400 hours of labor. These time estimates are based on the time it took to accomplish the B to A settlement (U-08-025); three employees spent three months adjusting customers' accounts.

[4] This could be a forwarding address, if the customer provided one to ENSTAR, or the last billing address provided.

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DIRECT CUSTOMER REFUND OPTION (CURRENT CUSTOMERS ONLY)

A third option for Commission consideration is to require ENSTAR to refund current customers, as described above. Customers who have left ENSTAR's system would not receive a direct refund. The monies representing those refunds would be deposited with the State as unclaimed property. This method would mitigate the substantial investment in time and monies required under the previous option to issue refunds to local customers who have left ENSTAR's system, but would still require considerable effort to calculate and verify additional refunds. ENSTAR estimates that $265,156 would be delivered to the state as unclaimed property if the Commission ordered this refund option.

CONCLUSION

ENSTAR offers these three alternative refund plans and asks the Commission to designate the one it wants ENSTAR to implement. ENSTAR's preference is to refund through the GCA account, consistent with the Commission's practice and Supreme Court guidance on refunds. Issuing the refunds through an amended GCA filing would allow customers to receive the refund benefit more quickly. The refund would also be complete by the end of the year, and incur significantly less administrative costs than the other two options. If the Commission determines that individual accounts should be credited with refunds, ENSTAR urges the Commission to allow it to issue the refunds owing to customers who are no longer on ENSTAR's system to the State of Alaska as unclaimed property. These refunds average less than $20 per customer, and the administrative burdens associated with locating the customers and issuing individual checks outweigh that nominal benefit.

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By: Robert A. Royce

Robert A. Royce
Alaska Bar No. 8511193
rar@anchorlaw.com

DATED: April 20, 2010

Attachment A - Refund Calculation Schedule
Attachment B - U-08-142(14) Appendix

CERTIFICATE OF SERVICE

I certify that a copy of the foregoing was served electronically and by U.S. Mail on the 20th day of April 2010, on:

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Date: 2010.04.20 16:03:31 -08'00'

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HB

46

<TARGET><BILL>HB 46</BILL><SUBJECT>HB
46</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska House of Representatives

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House Special Committee on Energy

Friday, May 6, 2011 — House Finance Committee Room, Room 519

\+ Review of energy projects in CSSB 46 Version T, Section 4, page 98, line 1, through page 101, line 27

10:00 a.m. to noon:
Alaska Energy Authority requests submitted by the administration

2:00 p.m. to 4:00 p.m.:
Gas, geothermal, wind, coal-to-liquids, and other projects

Saturday, May 7, 2011 — House Finance Committee Room, Room 519

\+ Review of energy projects in CSSB 46 Version T, Section 4, page 98, line 1, through page 101, line 27

10:00 a.m. to noon:
Hydroelectric projects

2:00 p.m. to 4:00 p.m.:
ARCTEC (Alaska Railbelt Cooperative Transmission and Electric Company) projects

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\+ Teleconferenced * First Hearing = Previously Heard

For more information, contact committee aide, Christopher Clark, 465-3789.

Alaska House of Representatives

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House Special Committee on Energy

House Committees Schedule Energy Projects Review

House Special Committee on Energy and House Resources Committee to meet Friday and Saturday

For immediate release **May 4, 2011**

Juneau, Alaska – The House Special Committee on Energy, in conjunction with the House Resources Committee, has scheduled two days of hearings on energy projects in the most recent draft capital budget bill.

The committee will review various hydroelectric, gas, geothermal, wind, coal-to-liquids, and other energy projects **from 10 a.m. to noon and 2 p.m. to 4 p.m., Friday, May 6, and Saturday, May 7,** in the House Finance Committee Room, Room 519, of the Alaska State Capitol. The meetings will be teleconferenced statewide at Legislative Information Offices.

Anticipating the Senate sending the capital budget before the end of the 30-day special session on May 17, the House committees have invited state officials and utility representatives to provide details on their projects. Committee members want to hear about each proposal's benefits and costs and how each one will lower Alaskans' energy expenses. Project proponents also are encouraged to explain how their requests fit into the state energy policy approved last year by the legislature.

House Energy Co-chair Lance Pruitt (R-Anchorage) said the hearings will focus on 28 projects that add up to more than $310 million. These do not include items reviewed last week by the House Finance Committee such as energy rebates and the state weatherization program or those that have been vetted by the Alaska Energy Authority through its renewable energy grant guidelines.

"Although the Senate hasn't yet passed its capital budget to the House, time is running short in the special session and the House is adamant that we have a chance to review the plan thoroughly," he said. "We can begin that process now, with the understanding that these projects are important to communities statewide."

"Our goal is to help make energy more affordable for all Alaskans while allowing the State of Alaska to get a bigger bang for its buck," House Energy Co-chair Rep. Neal Foster (D-Nome) said.

Attached to the electronic version of this press release are:

- Energy projects in CSSB 46 Version T, page 98, line 1, through page 101, line 27
- A one-page spreadsheet of those projects
- The House Special Committee on Energy schedule
- Alaska Statute 44.99.115, the state energy policy

For more information, contact Christopher Clark, Rep. Neal Foster's office: (907) 465-3789.

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Alaska Statute 44.99.115. Declaration of state energy policy.

The State of Alaska recognizes that the state's economic prosperity is dependent on available, reliable, and affordable residential, commercial, and industrial energy to supply the state's electric, heating, and transportation needs. The state also recognizes that worldwide supply and demand for fossil fuels and concerns about global climate change will affect the price of fossil fuels consumed by Alaskans and exported from the state to other markets. In establishing a state energy policy, the state further recognizes the immense diversity of the state's geography, cultures, and resource availability. Therefore, it is the policy of the state to

(1) institute a comprehensive and coordinated approach to supporting energy efficiency and conservation by

(A) encouraging statewide energy efficiency codes for new and renovated residential, commercial, and public buildings;

(B) decreasing public building energy consumption through conservation measures and energy-efficient technologies; and

(C) initiating and supporting a program to educate state residents on the benefits of energy efficiency and conservation, including dissemination of information on state and federal programs that reward energy efficiency;

(2) encourage economic development by

(A) promoting the development of renewable and alternative energy resources, including geothermal, wind, solar, hydroelectric, hydrokinetic, tidal, and biomass energy, for use by Alaskans;

(B) promoting the development, transport, and efficient use of nonrenewable and alternative energy resources, including natural gas, coal, oil, gas hydrates, heavy oil, and nuclear energy, for use by Alaskans and for export;

(C) working to identify and assist with development of the most cost-effective, long-term sources of energy for each community statewide;

(D) creating and maintaining a state fiscal regime and permitting and regulatory processes that encourage private sector development of the state's energy resources; and

(E) promoting the efficiency of energy used for transportation;

(3) support energy research, education, and workforce development by investing in

(A) training and education programs that will help create jobs for Alaskans and that address energy conservation, efficiency, and availability, including programs that address workforce development and workforce transition; and

(B) applied energy research and development of alternative and emerging technologies, including university programs, to achieve reductions in state energy costs and stimulate industry investment in the state;

(4) coordinate governmental functions

(A) by reviewing and streamlining regulatory processes and balancing the economic costs of review with the level of regulation necessary to protect the public interest;

(B) by using one office or agency, as may be specified by law, to serve as a clearinghouse in managing the state's energy-related functions to avoid fragmentation and duplication and to increase effectiveness; and

(C) by actively collaborating with federal agencies to achieve the state's energy goals and to meet emissions, renewable and alternative energy, and energy production targets.

History -
(Sec. 2 ch 82 SLA 2010)
Cross References -

For statement of legislative intent related to implementation of state energy policy, see Sec. 1, ch. 82, SLA 2010, in the 2010 Temporary and Special Acts.

Effective Date Notes -

Section 2, ch. 82, SLA 2010, which enacted this section, is effective September 14, 2010.

Energy projects in CSSB 46 Version T, Section 4

Page 98, line 1, through page 101, line 27

Updated: 5 May 2011, 1:18 p.m.

Alaska Energy Authority requests submitted by the administration		
Southeast Energy Fund	Page 98	$10,000,000
Susitna Hydroelectric Energy Plan	Pages 98, 99	$65,700,000
Alaska Energy Plan Implementation	Page 99	$1,000,000
Bulk Fuel Upgrades	Page 99	$5,000,000
Electrical Emergencies Program	Page 99	$330,000
Rural Power System Upgrades	Page 99	$10,000,000
Subtotal		$92,030,000
Gas, geothermal, wind, coal-to-liquids, and other projects		
AIDEA coal-to-liquids certification project	Page 98	$500,000
Akiak Community Electrical Generation System Upgrade	Page 99	$4,000,000
Golden Valley Electric Association Eva Creek Wind Farm	Page 100	$10,000,000
Homer Area Natural Gas Pipeline	Page 100	$10,053,000
Homer Electric Association Soldotna to Nikiski Transmission Upgrade	Page 100	$25,000,000
Mount Spurr Geothermal Project Development	Page 101	$18,000,000
Subtotal		$67,553,000
Hydroelectric projects		
Nuvista Light & Power Chikuminuk Hydroelectric & Alternative Energy Project	Page 98	$17,630,000
Copper Valley Electric Association Allison Creek Hydroelectric Project	Page 100	$10,000,000
Gustavus Electric Company Falls Creek Hydroelectric Debt Reimbursement	Page 100	$1,300,000
Ketchikan Whitman Lake Hydroelectric Project	Page 100	$8,025,000
Kodiak Electric Association Terror Lake Hydroelectric Facility Expansion	Page 100, 101	$3,750,000
Metlakatla Indian Community Metlakatla-Ketchikan Intertie	Page 101	$10,500,000
Sitka Blue Lake Hydroelectric Project Expansion	Page 101	$28,500,000
Subtotal		$79,705,000
ARCTEC (Alaska Railbelt Cooperative Transmission and Electric Company) projects		
Anchorage to Quartz Creek Transmission Line Maintenance and Repair	Page 99	$25,000,000
Battle Creek Diversion	Page 99	$15,000,000
Cook Inlet Gas Gathering System Remodel	Page 100	$2,000,000
Daves Creek to Seward Transmission Line Completion	Page 100	$1,500,000
Girdwood and Substation Improvements	Page 100	$4,000,000
Quartz Creek to Soldotna Transmission Maintenance and Repair	Page 101	$10,000,000
Seward Power Plant Integration	Page 101	$4,000,000
Soldotna to Quartz Creek Transmission Study Design and Permitting	Page 101	$5,000,000
Teeland to Healy Substation Improvements and Repair	Page 101	$5,000,000
Subtotal		$71,500,000
Total		$310,788,000

* **Sec. 4.** The following appropriation items are for capital projects and grants from the general fund or other funds as set out in section 5 of this Act by funding source to the agencies named for the purposes expressed and lapse under AS 37.25.020, unless otherwise noted.

It is the intent of the legislature that the following appropriations and projects are needed to carry out the state's energy policy described in AS 44.99.115. As the energy policy states, the legislature recognizes the immense diversity of the state's geography, cultures, and resource availability and the need to identify and assist with development of the most cost-effective, long-term sources of energy for each community statewide. Therefore, the legislature intends that the package of appropriations and projects listed below are all necessary to achieve a statewide balance in addressing the state's diverse energy needs.

	Allocations	Appropriation Items	General Funds	Other Funds
* * * * *			* * * * *	
* * * * * **Department of Commerce, Community and Economic Development** * * * * *				
* * * * *			* * * * *	
Alaska Industrial Development & Export Authority - Coal to Liquids Certification Project (HD 1-40)		500,000	500,000	
Alaska Energy Authority - Nuvista Light & Power Chikuminuk Hydroelectric and Alternative Energy Project (HD 36-38)		17,630,000	17,630,000	
Alaska Energy Authority - Southeast Energy Fund (HD 1-5)		10,000,000	10,000,000	
Alaska Energy Authority -		65,700,000	65,700,000	

	Allocations	Appropriation Items	General Funds	Other Funds
Susitna Hydroelectric Energy Plan (HD 12-35)				
Alaska Energy Authority - Energy Programs		**16,330,000**	**10,330,000**	**6,000,000**
Alaska Energy Plan Implementation (HD 1-40)	1,000,000			
Bulk Fuel Upgrades (HD 1-40)	5,000,000			
Electrical Emergencies Program (HD 1-40)	330,000			
Rural Power System Upgrades (HD 1-40)	10,000,000			
Alaska Energy Authority - Energy Projects				

It is the intent of the Legislature that the state's capital investment into any of these energy projects not exceed 50% of the total investment required to fully complete each project. The Alaska Energy Authority (AEA) should evaluate each of the energy projects in this section using criteria similar to that established for the renewable energy grant fund (AS 42.45.045) by the Renewable Energy Fund Advisory committee. If during their evaluation, AEA determines that an appropriation below exceeds the 50% state funding threshold, the authority shall submit to the legislature recommendations for reductions or reappropriation by February 1, 2012.

AEA - Akiak Community Electrical Generation System Upgrade (HD 38)	4,000,000	4,000,000	
AEA - Anchorage to Quartz Creek Transmission Line Maintenance and Repair (HD 17-32)	25,000,000	25,000,000	
AEA - Battle Creek Diversion (HD 33-35)	15,000,000	15,000,000	

	Allocations	Appropriation Items	General Funds	Other Funds
AEA - Cook Inlet Gas Gathering System Remodel (HD 12-35)		2,000,000	2,000,000	
AEA - Copper Valley Electric Association Allison Creek Hydroelectric Project (HD 12-35)		10,000,000	10,000,000	
AEA - Daves Creek to Seward Transmission Line Completion (HD 33-35)		1,500,000	1,500,000	
AEA - Girdwood and Substation Improvements (HD 17-32)		4,000,000	4,000,000	
AEA - Golden Valley Electric Association Eva Creek Wind Farm (HD 7-11)		10,000,000	10,000,000	
AEA - Gustavus Electric Company Falls Creek Hydroelectric Debt Reimbursement (HD 5)		1,300,000	1,300,000	
AEA - Homer Area Natural Gas Pipeline (HD 33-35)		10,053,000	10,053,000	
AEA - Homer Electric Association Soldotna to Nikiski Transmission Upgrade (HD 33-35)		25,000,000	25,000,000	
AEA - Ketchikan Whitman Lake Hydroelectric Project (HD 1)		8,025,000	8,025,000	
AEA - Kodiak Electric Association Terror Lake		3,750,000	3,750,000	

	Allocations	Appropriation Items	General Funds	Other Funds
Hydroelectric Facility Expansion (HD 36)				
AEA - Metlakatla Indian Community Metlakatla-Ketchikan Intertie (HD 1-5)		10,500,000	10,500,000	
AEA - Mount Spurr Geothermal Project Development (HD 12-35)		18,000,000	18,000,000	
AEA - Quartz Creek to Soldotna Transmission Maintenance and Repair (HD 33-35)		10,000,000	10,000,000	
AEA - Seward Power Plant Integration (HD 33-35)		4,000,000	4,000,000	
AEA - Sitka Blue Lake Hydroelectric Project Expansion (HD 2)		28,500,000	28,500,000	
AEA - Soldotna to Quartz Creek Transmission Study, Design and Permitting (HD 33-35)		5,000,000	5,000,000	
AEA - Teeland to Healy Substation Improvements and Repair (HD 7-11)		5,000,000	5,000,000	
Alaska Energy Authority - Round IV Renewable Energy Project Grants (AS 42.45.045)		**36,620,231**	**36,620,231**	
Inside Passage Electric Cooperative, Inc. - Hoonah	475,000			

	Allocations	Appropriation Items	General Funds	Other Funds
Heat Recovery Project (HD 5)				
University of Alaska Center for Energy and Power - Pilgrim Hot Springs Geothermal Assessment (HD 39)	1,330,467			
Northwest Inupiat Housing Authority - Upper Kobuk River Biomass (HD 40)	250,000			
Southeast Island School District - Thorne Bay School Wood Fired Boiler Project (HD 1)	300,000			
G&K, Inc. - Cold Bay Electric Utility Wind Energy Project (HD 37)	99,075			
Kodiak Electric Association, Inc. - Terror Lake Hydroelectric Project (HD 36)	3,751,840			
Kootznoowoo, Inc. - Thayer Lake Hydroelectric Project (HD 5)	1,060,500			
Alaska Power & Telephone Company - Upper Tanana Biomass CHP Project (HD 6)	380,000			
TDX Power, Inc. - Bethel Renewable Energy Project (HD 38)	213,690			

	Allocations	Appropriation Items	General Funds	Other Funds
Chugach Electric Association, Inc. - Battle Creek Diversion Project (HD 33-35)	500,000			
Alaska Village Electric Cooperative, Inc. - Old Harbor Hydroelectric (HD 36)	237,500			
Lake & Peninsula Borough - Port Heiden Wind Turbine Project (HD 37)	250,000			
Golden Valley Electric Association - Eva Creek Wind Turbine Purchase (HD 7-11)	1,463,200			
Alaska Electric Light & Power Company - Snettisham Transmission Line Avalanche Mitigation (HD 3-4)	2,000,000			
Pelican - Hydroelectric Upgrade Project (HD 2)	1,896,836			
Tenakee Springs - Indian River Hydroelectric Project (HD 5)	203,000			
University of Alaska Center for Energy and Power - Organic Rankine Cycle Field Testing (HD 6)	472,787			
Lake & Peninsula Borough - Wood Boilers (HD 36)	369,900			

	Allocations	Appropriation Items	General Funds	Other Funds
Chitina Electric, Inc. - Fivemile Creek Hydroelectric Project (HD 6)	277,000			
Ormat Nevada, Inc. - Mount Spurr Geothermal Project (HD 33-35)	1,999,972			
Napaskiak Electric Utility - Wind Power and Heat Recovery (HD 38)	61,225			
Alaska Village Electric Cooperative - St. Marys/ Pitkas Point Wind Construction (HD 39)	275,554			
Louden Tribal Council - Renewable Energy Feasibility Study (HD 6)	100,000			
Chugach Electric Association, Inc. - Transmission to Renewable Energy Resources (HD 33-35)	600,000			
Interior Regional Housing Authority - Wood Heating Feasibility Assessments (HD 6)	154,477			
Lime Village Traditional Council - Photovoltaic System Retrofit (HD 6)	25,000			
Craig - Biomass Fuel Dryer Project (HD 5)	350,000			

	Allocations	Appropriation Items	General Funds	Other Funds
Independence Power, LLC - Fourth of July Creek Hydroelectric Project (HD 33-35)	136,500			
Kotzebue - Paper and Wood Waste to Energy (HD 40)	85,000			
Village of Atmautluak - Wind Renewable Energy (HD 38)	100,000			
Alaska Village Electric Cooperative, Inc. - Stebbins Wind Feasibility (HD 39)	137,750			
Elfin Cove - Hydroelectric Project (HD 2)	347,000			
Ketchikan - Whitman Lake Hydroelectric Project (HD 1)	700,000			
Alaska Village Electric Cooperative, Inc. - Eek Wind Feasibility (HD 38)	142,500			
Organized Village of Kwethluk - Wind Feasibility (HD 38)	145,000			
Sitka - Japonski Island Boathouse Heat Pump (HD 2)	125,000			
Alaska Village Electric Cooperative, Inc. - Marshall Wind Feasibility (HD 6)	111,150			

	Allocations	Appropriation Items	General Funds	Other Funds
Nelson Lagoon Electrical Cooperative - Wind Energy Project (HD 37)	99,075			
North Slope Borough - Atqasuk Transmission Line (HD 40)	210,000			
Alaska Village Electric Cooperative, Inc. - Kaltag Solar Construction (HD 6)	90,000			
Alaska Village Electric Cooperative, Inc. - Scammon Bay Wind Feasibility (HD 39)	142,500			
Chugach Electric Association, Inc. - Stetson Creek Diversion and Cooper Lake Dam Facilities (HD 33-35)	576,080			
New Koliganek Village Council - Wind and Heat Recovery Feasibility Study (HD 37)	105,050			
North Slope Borough - Wainwright Wind Turbine Design (HD 40)	298,000			
North Slope Borough - Kaktovik Wind Diesel (HD 40)	132,000			
North Slope Borough - Point Hope Wind Turbine Design (HD 40)	298,000			

	Allocations	Appropriation Items	General Funds	Other Funds
North Slope Borough - Point Lay Wind Generation Design (HD 40)	298,000			
Kenai Hydro, LLC - Grant Lake Hydroelectric Facility (HD 33-35)	1,184,000			
Alaska Village Electric Cooperative, Inc. - Selawik Hybrid Wind Diesel System Turbine Upgrade (HD 40)	85,000			
Alaska Power Company - Reynolds Creek Hydroelectric Project (HD 5)	2,000,000			
AVTEC - Hydroelectric Training Facility (HD 33-35)	67,500			
Alaska Village Electric Cooperative, Inc. - Koyuk Wind Feasibility (HD 39)	142,500			
Chefornak - Wind Feasibility (HD 38)	136,750			
Alaska Village Electric Cooperative, Inc. - Elim Wind Feasibility (HD 39)	142,500			
Akutan - Geothermal Development Project (HD 37)	2,695,000			
Akiachak Native Community - Wind Feasibility and Conceptual Design (HD 38)	110,000			

	Allocations	Appropriation Items	General Funds	Other Funds
ORPC Alaska, LLC - Cook Inlet Tidal Generation Project (HD 33-35)	2,000,000			
Alaska Power Company - Connelly Lake Hydroelectric Project (HD 5)	468,000			
False Pass - Wind Energy Project (HD 37)	69,075			
Native Village of Eyak - Biomass Feasibility Study (HD 5)	75,000			
Eklutna, Inc. - Hunter Creek Hydroelectric Project (HD 13-16)	84,000			
Port Graham Village Council - Biomass Waste Heat Demonstration Project (HD 33-35)	75,000			
Matanuska-Susitna Borough - Susitna Valley High School Wood Heat (HD 13-16)	750,000			
Copper River School District - Kenny Lake School Wood Fired Boiler (HD 6)	565,485			
Alaska Power Company - Schubee Lake Hydroelectric Project (HD 5)	80,000			
Bering Pacific Engineering - Eska Creek Hydroelectric Project (HD 12)	37,000			

	Allocations	Appropriation Items	General Funds	Other Funds
Metlakatla Indian Community - Metlakatla-Ketchikan Intertie (HD 1-5)	1,180,000			
Haines - Excursion Inlet Hydro Project (HD 5)	93,593			
Native Village of Cantwell - Jack River Hydro Project (HD 7-11)	30,000			
Wrangell - Electric Vehicle Feasibility Study (HD 2)	25,000			
Sitka - Centennial Hall and Library Renewable Energy Feasibility Study (HD 2)	30,000			
Sitka - Wastewater Treatment Plant Renewable Energy Feasibility Study (HD 2)	20,000			
Inside Passage Electric Cooperative - Tenakee Inlet Geothermal Resource Study (HD 5)	599,200			
Metlakatla Indian Community - Triangle Lake Hydroelectric Project (HD 5)	500,000			
* * * * *		* * * * *		
* * * * * **Department of Revenue** * * * * *				
* * * * *		* * * * *		
Alaska Housing Finance Corporation				

	Allocations	Appropriation Items	General Funds	Other Funds
Alaska Gasline Development Corporation - Year 2 In-State Gas Project (HD 12-35)		5,500,000	5,500,000	
AHFC Weatherization and Home Energy Rebate Programs		**51,500,000**	**50,000,000**	**1,500,000**
AHFC Weatherization Program (HD 1-40)	31,500,000			
AHFC Home Energy Rebate Program (HD 1-40)	20,000,000			

(SECTION 5 OF THIS ACT BEGINS ON THE NEXT PAGE)

Alaska Energy Authority - Energy Projects **FY2012 Request: $16,000,000**
Reference No: 38950

AP/AL: Appropriation **Project Type:** Energy
Category: Development
Location: Statewide **Contact:** Sara Fisher-Goad
House District: Statewide (HD 1-40) **Contact Phone:** (907)771-3000
Estimated Project Dates: 07/01/2011 - 06/30/2016

Brief Summary and Statement of Need:
This request addresses multiple federally funded energy programs, including Bulk Fuel Upgrades, Rural Power Systems Upgrades, and the state funded energy planning project. This program contributes to the Department's mission of promoting a healthy economy and strong communities by providing economic growth in the communities it serves.

Funding:	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	Total
AIDEA Div	$10,000,000						$10,000,000
AK Cap Inc		$10,000,000	$10,000,000	$10,000,000	$10,000,000		$40,000,000
Fed Rcpts	$6,000,000	$20,000,000	$20,000,000	$20,000,000	$20,000,000		$86,000,000
I/A Rcpts		$500,000	$500,000	$500,000	$500,000		$2,000,000
Stat Desig		$500,000	$500,000	$500,000	$500,000		$2,000,000
Total:	$16,000,000	$31,000,000	$31,000,000	$31,000,000	$31,000,000	$0	$140,000,000

☐ State Match Required ☐ One-Time Project ☐ Phased - new ☐ Phased - underway ☑ On-Going
0% = Minimum State Match % Required ☐ Amendment ☐ Mental Health Bill

Operating & Maintenance Costs:

	Amount	Staff
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Additional Information / Prior Funding History:
Refer to the funding matrix in the detailed description.

Project Description/Justification:

This request addresses the long-standing federally funded energy programs of Bulk Fuel Upgrades and Rural Power System Upgrades (RPSU), and the state funded energy plan implementation. The specifics are:

(1) Bulk Fuel Upgrades: When Alaska Energy Authority (AEA) began upgrading bulk fuel tank farms, there were approximately 1100 above-ground tank farms in 171 remote villages in rural Alaska. Most of these tank farms had serious deficiencies that typically included:

- Inadequate dikes to contain fuel spills
- Inadequate foundations, which could cause gradual tank movement and fuel leakage
- Improper piping systems and joints - the most common source of fuel leaks
- Improper siting near wells, beaches, and buildings, or within a flood plain

- Tanks that are rusted or damaged beyond repair
- Electrical code violations
- Inadequate security

This program's mission is to replace these tank farms with new or refurbished facilities that meet all applicable safety and environmental codes. $20 million is the estimated need to complete the bulk fuel upgrades for the remaining nine communities identified on the Bulk Fuel Deficiency list.

This program began in approximately 1997 and has expanded since fiscal year 1999 with federal funding from the Denali Commission. In fiscal year 2012 AEA anticipates $2 million in federal funds. AEA anticipates using approximately $3 million in state funds for Bulk Fuel Upgrades.

(2) Rural Power System Upgrades (RPSU): The electric utility systems are part of the basic infrastructure of rural communities. The power plant and distribution systems in rural communities may not meet accepted utility standards for safety, reliability, and environmental protection. Due to high costs and limited economies of scale, most local communities cannot make the capital investments needed to meet accepted utility standards.

AEA gives priority to electric utility systems that have the highest need. AEA has built a detailed database of electric utility conditions and characteristics. Deficiencies of each utility have been scored with respect to generating equipment, distribution systems, powerhouse structures, and other major physical components. Rural systems are then ranked according to the level of these deficiencies. Additional criteria that are applied to the project selection process include:

- Imminent threat to health and safety
- Imminent threat of system failure during winter conditions
- Financial need based on the level of existing rates, average income, availability of other financing, and project cost compared with utility revenue
- The utility's ability to operate and maintain the facility without future state assistance or the community's willingness to join an established qualified regional utility
- Projects needed in order to meet efficiency guidelines under the Power Cost Equalization Program

Once upgraded, to ensure a thirty-year plus useful asset life, the rural utility is required to employ a qualified operator to ensure that the system is properly operated and maintained.

$112 million is the estimated need to complete the Rural Power System Upgrades for the remaining 47 communities identified on the deficiency list. This is a long standing energy program that has expanded since fiscal year 1999 with federal funding from the Denali Commission. In fiscal year 2012 AEA anticipates $4 million in federal funds. AEA anticipates using approximately $6 million in state funds for RPSU projects.

(3) Alaska Energy Plan Implementation:
The objective is to develop a statewide Alaska energy plan. An estimated $1 million of general funds is required for the continued development of the energy plan, in particular AEA will work with regional organizations to further refine regional resource assessments and project development plans. The completion of the following activities and work tasks are required:

1) determination of fuel usage by community for electricity, space heating and transportation
2) determination of locally available energy sources
3) evaluation of existing technology
4) evaluation of energy delivery systems
5) evaluation and rank of energy sources
6) deployment to the private sector by providing business plan to existing or new enterprises, and
7) organization of public workshops to assist in the communication of the plan by gathering feedback and providing periodic updates.

Summary of Anticipated Funding:

AGENCY	FEDERAL	GENERAL FUNDS	TOTAL
Denali Comm	$ 6,000,000	$ 9,000,000	$ 15,000,000
Energy Plan		$ 1,000,000	$ 1,000,000
Total	$ 6,000,000	$ 10,000,000	$ 16,000,000

Funding History (includes both State and Federal funding)

YEAR	AMOUNT	LEGISLATION
FY11	$24,500,000	SLA 10, Ch 43, Sec 7, Pg 20, Ln 22
FY10	$25,500,000	SLA 09, Ch 15, Sec 1, Pg 2, Ln 30
FY09	$41,000,000	SLA 08, Ch 29, Pg 87, Ln 18
FY08	$31,700,000	SLA 07, Ch 30, Pg 84, Ln 22
FY07	$15,200,000	SLA 06, Ch 82, Pg 2, Ln 29
FY06	$23,220,000	FSSLA 05, Ch 3, Pg 3, Ln 26
FY05	$35,750,000	SLA 04, Ch, 159, Pg 3, Ln 7
FY04	$35,100,000	SLA 03, Ch 82, Pg 3, Ln 10, 13
FY03	$31,600,000	SSLA 02, Ch 1, Pg 3, Ln 15, 32
FY02	$20,437,000	SLA 01, Ch 61, Pg 3, Ln 13, 15, 177
FY01	$32,050,000	SLA 00, Ch 135, Pg 3, Ln 6, 9
FY00	$ 1,600,000	SSLA 99, Ch 2, Pg 84, Ln 27
FY99	$31,600,000	SLA 98, Ch 139, Pg 40, Ln 14, 21
FY98	$12,200,000	SLA 97, Ch 100, Pg 42, Ln 20, 21, and 27
FY97	$ 22,00,000	SLA 96, Ch 123, Pg 45, Ln 25, 31 and 37

Alaska Energy Authority - Southeast Energy Fund **FY2012 Request: $10,000,000**
Reference No: 51767

AP/AL: Appropriation **Project Type:** Research / Studies / Planning
Category: Development
Location: Southeast Alaska **Contact:** Sara Fisher-Goad
House District: Southeast Areawide (HD 1-5) **Contact Phone:** (907)771-3000
Estimated Project Dates: 07/01/2011 - 06/30/2016

Brief Summary and Statement of Need:
This project provides fund capitalization of the Alaska Energy Authority Energy Fund. This project contributes to the Department mission by promoting strong economies and healthy communities in Southeast Alaska.

Funding:	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	Total
AHCC Rcpts	$10,000,000						$10,000,000
Total:	$10,000,000	$0	$0	$0	$0	$0	$10,000,000

☐ State Match Required ☐ One-Time Project ☐ Phased - new ☐ Phased - underway ☑ On-Going
0% = Minimum State Match % Required ☐ Amendment ☐ Mental Health Bill

Operating & Maintenance Costs:

	Amount	Staff
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Additional Information / Prior Funding History:

Project Description/Justification:
This request is for fund capitalization for future Southeast Alaska energy projects to be granted by the Alaska Energy Authority under AS 42.45.040. The Southeast energy fund is established as a separate fund. The fund consists of money transferred to it under former AS 42.45.050.

Alaska Energy Authority - Susitna Railbelt Energy Plan **FY2012 Request: $65,731,063**
Reference No: 45811

AP/AL: Appropriation
Project Type: Energy
Category: Development
Location: Statewide
Contact: Sarah Fisher-Goad
House District: Statewide (HD 1-40)
Contact Phone: (907)771-3000
Estimated Project Dates: 07/01/2011 - 06/30/2016

Brief Summary and Statement of Need:
This request is for environmental permitting and necessary field work for large scale hydroelectric projects. This project contributes to the Department mission of reducing the cost of energy in Alaska.

Funding:	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	Total
Rail Enrgy	$65,731,063	$32,600,000	$33,800,000	$20,100,000	$10,400,000		$162,631,063
Total:	$65,731,063	$32,600,000	$33,800,000	$20,100,000	$10,400,000	$0	$162,631,063

☐ State Match Required ☐ One-Time Project ☐ Phased - new ☐ Phased - underway ☑ On-Going
0% = Minimum State Match % Required ☐ Amendment ☐ Mental Health Bill

Operating & Maintenance Costs:

	Amount	Staff
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Additional Information / Prior Funding History:
Refer to the funding matrix in the detailed description.

Project Description/Justification:
This request is for environmental permitting and necessary fieldwork for large-scale hydroelectric projects. Large hydroelectric projects are the only way for the state to become electrical energy secure, provide long term predictable costs of energy and obtain the goal of 50% renewable energy by 2025. These funds will enable Alaska Energy Authority to carry out preparation and filing of Federal Energy Regulatory Commission (FERC) Preliminary Permit, begin work on a FERC license application, required engineering design, environmental studies, financing, and regulatory and resource agency coordination for Susitna and other hydroelectric projects.

Funding History:

YEAR	AMOUNT	LEGISLATION
FY11	$ 10,000,000	SLA 10 Ch 43 Sec 7 Pg 19 Ln 16
FY09	$ 2,500,000	SLA 08 Ch 29 Sec 13 Pg 87 Ln 14

Alaska Energy Authority - Electrical Emergencies Program **FY2012 Request: $330,000**
Reference No: 32950

AP/AL: Appropriation
Project Type: Energy
Category: Development
Location: Statewide
Contact: Sara Fisher-Goad
House District: Statewide (HD 1-40)
Contact Phone: (907)771-3000
Estimated Project Dates: 07/01/2011 - 06/30/2016

Brief Summary and Statement of Need:
The Electrical Emergencies Program provides technical support when an electric utility has lost, or will lose, the ability to generate or transmit power to its customers and the condition is a threat to life, health, and/or property. This program contributes to the Department mission of promoting a healthy economy and strong communities as electricity is considered essential for both community development and economic growth.

Funding:	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	Total
Gen Fund	$330,000	$330,000	$330,000	$330,000	$330,000	$330,000	$1,980,000
Total:	$330,000	$330,000	$330,000	$330,000	$330,000	$330,000	$1,980,000

☐ State Match Required ☐ One-Time Project ☐ Phased - new ☐ Phased - underway ☑ On-Going
0% = Minimum State Match % Required ☐ Amendment ☐ Mental Health Bill

Operating & Maintenance Costs:

	Amount	Staff
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Additional Information / Prior Funding History:
Please refer to the funding matrix in the detailed description.

Project Description/Justification:
The Electrical Emergencies Program provides funds and technical support when an electric utility has lost, or will lose, the ability to generate or transmit power to its customers and the condition is a threat to life, health, and/or property.

Emergencies of this type result in the loss of communications, lights, refrigeration systems, washeterias, water and sewer systems, and the use of other basic infrastructure and equipment.

Extended power outages during the winter months can be expensive and they compromise public safety:

- Water and sewer systems are subject to freezing and bursting
- Fire hazards increase
- Medical clinics and other public facilities may close

These emergencies may involve power plant failures and/or distribution system failures.

Funding History:

YEAR	AMOUNT	LEGISLATION
FY11	$ 330,400	SLA 10, Ch 43, Sec 7, Pg 19, Ln 13
FY10	$ 330,400	SLA 09, Ch 15, Sec 1, Pg 2, Ln 20
FY09	$ 330,400	SLA 08, Ch 29, Sec 39(a) & (b), Pg 213, Ln 22
FY08	$ 337,400	SLA 07, Ch 30, Pg 156-157, Ln 28 & Ln 2
FY07	$ 349,100	SLA 06, Ch 82 Pg 146, Ln 20 & Ln 25
FY06	$ 333,100	FSSLA 05, Ch 3, Pg 102, Ln 8
FY05	$ 331,900	SLA 04, Ch 159, Pg 58, Ln 14
FY04	$ 349,500	SLA 03, Ch 82, Pg 87, Ln 10
FY03	$ 378,000	SLA 02, Ch 1, Pg 110, Ln 14
FY02	$ 425,200	SLA 01, Ch 61, Pg 75, Ln 22
FY01	$ 603,000	SLA 00, Ch 135, Pg 66, Ln 30
FY00	$ 351,500	SLA 99, Ch 2, Pg 5, Ln 20
FY99	$ 392,700	SLA 98, Ch 139, Pg 3, Ln 13
FY98	$ 375,400	SLA 97, Ch 100, Pg 21, Ln 19

Questions for Energy Project Supporters
Who Come Before
The House Special Committee on Energy and the House Resources Committee

May 6 and 7, 2011

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1. How much local support do you have for your project? For example, do you have a resolution from a city council?
2. How much local matching funds or other funds do you have, expect to have, or might be available for your project?
3. What are the total costs of your project?
4. What are all funding sources for it?
5. What is the entire funding plan over the next five years? What might you need after five years? How many years of work are funded in this appropriation and how many years remain after this funding is approved?
6. What phase is your project in now and what phase or phases would be addressed by this appropriation? For example, does the funding apply to design, permitting, or construction?
7. Upon completion of your project, what are the expected costs to rate payers compared with current costs?
8. Where is your project on the priority list of the area's regional energy plan?
9. Has your project been vetted by the Alaska Energy Authority? If so, how? For example, has it received state funding through the renewable energy fund grant program? Has it received state or federal funding in the past? Has the agency worked with you on a conceptual design of your project? Is your request part of a state integrated resource plan? Have you received state leases or permits for it?
10. For those who have projects to which the intent language relating to a 50 percent state investment applies (see page 99, lines 15 through 24 of the attached document), how does this provision affect your project?

DENALI BOROUGH, ALASKA
RESOLUTION NO. 11-03

A RESOLUTION OF THE DENALI BOROUGH ASSEMBLY SUPPORTING THE GOLDEN VALLEY ELECTRIC ASSOCIATION EVA CREEK WIND PROJECT AND REQUESTING STATE ASSISTANCE IN LAND RIGHTS AND PERMITTING

WHEREAS, the State has established a goal of achieving 50 percent of Alaska's energy needs from renewable sources by 2025; and

WHEREAS, renewable resource development can be vital to the economy of the Denali Borough and the Interior of Alaska; and

WHEREAS, Golden Valley Electric Association proposes to build a utility-scale 24MW wind farm, called Eva Creek, north of Healy Alaska in the Denali Borough; and

WHEREAS, the Eva Creek Wind Project will be capable of producing electric energy to meet approximately 10% of the renewable energy needs of the Interior; and

WHEREAS, the Eva Creek Wind Project is proposed to be strategically located on land owned by the State of Alaska, Department of Natural Resources; and

WHEREAS, Golden Valley Electric Association's Northern Intertie transmission line crosses through a portion of this land and will connect the Eva Creek wind project to the Railbelt grid; and

WHEREAS, Golden Valley Electric Association must secure various land rights from the State of Alaska, Department of Natural Resources, including a land lease, material sales contract, and various rights-of way and permits for the wind project.

NOW THEREFORE BE IT RESOLVED: that the Denali Borough Assembly supports the Golden Valley Electric Association Eva Creek wind project.

NOW THEREFORE BE IT RESOLVED: that the Denali Borough Assembly encourages the State of Alaska and specifically the Department of Natural Resources to work expeditiously with Golden Valley Electric Association in securing land rights and permitting for the Eva Creek wind project.

BE IT FURTHER RESOLVED: that the Denali Borough Assembly asks Governor Parnell and the Alaska State Legislature to support Golden Valley Electric Association's Eva Creek wind project by encouraging the Administration and State Officials to provide the resources necessary to aid in securing land rights and permitting in a timely manner.

AND BE IT FURTHER RESOLVED, that this resolution be distributed to:
Governor Sean Parnell
Acting Commissioner John Cramer, Administration
Commissioner Susan Bell, Department of Commerce, Community & Economic Development
Commissioner Larry Hartig, Alaska Department of Environmental Conservation
Commissioner Click Bishop, Alaska Department of Labor & Workforce Development
Commissioner Daniel Sullivan, Alaska Department of Natural Resources
Commissioner Bryan Butcher, Alaska Department of Revenue
Commissioner Marc Luiken, Alaska Department of Transportation & Public Facilities
Alaska Attorney General, John Burns

PASSED AND APPROVED by the Denali Borough Assembly this 12TH day of JANUARY, 2011.

Mayor David M. Talerico

ATTEST: _____
Gail Pieknik, Borough Clerk

AYES: PASSED UNANIMOUSLY
ABSENT: HOLMES and COOPER

Greater Fairbanks Chamber of Commerce

A RESOLUTION IN SUPPORT OF THE GOLDEN VALLEY ELECTRIC ASSOCIATION EVA CREEK WIND PROJECT AND REQUESTING A CAPITAL APPROPRIATION AND STATE ASSISTANCE IN LAND RIGHTS AND PERMITTING

WHEREAS, the State has established a goal of achieving 50 percent of Alaska's energy needs from renewable sources by 2025; and

WHEREAS, renewable resource development can be vital to the economy of Fairbanks and the Interior of Alaska; and

WHEREAS, Golden Valley Electric Association proposes to build a utility-scale 24MW wind farm, called Eva Creek, north of Healy Alaska in the Denali Borough; and

WHEREAS, the Eva Creek Wind Project will be capable of producing electric energy to meet approximately 10% of the renewable energy needs of the Interior; and

WHEREAS, the Eva Creek Wind Project is proposed to be strategically located on land owned by the State of Alaska, Department of Natural Resources; and

WHEREAS, Golden Valley Electric Association's Northern Intertie transmission line crosses through a portion of this land and will connect the Eva Creek wind project to the Railbelt grid; and

WHEREAS, Golden Valley Electric Association is seeking a $10 million capital appropriation for a portion of the infrastructure costs, similar to the funds appropriated to AEA for CIRI's Fire Island Wind project; and

WHEREAS, Golden Valley Electric Association must secure various land rights from the State of Alaska, Department of Natural Resources, including a land lease, material sales contract, and various rights-of way and permits for the wind project.

NOW THEREFORE BE IT RESOLVED: that the Greater Fairbanks Chamber of Commerce supports the Golden Valley Electric Association Eva Creek wind project.

NOW THEREFORE BE IT RESOLVED: that the Greater Fairbanks Chamber of Commerce encourages the State of Alaska and specifically the Department of Natural Resources to work expeditiously with Golden Valley Electric Association in securing land rights and permitting for the Eva Creek wind project.

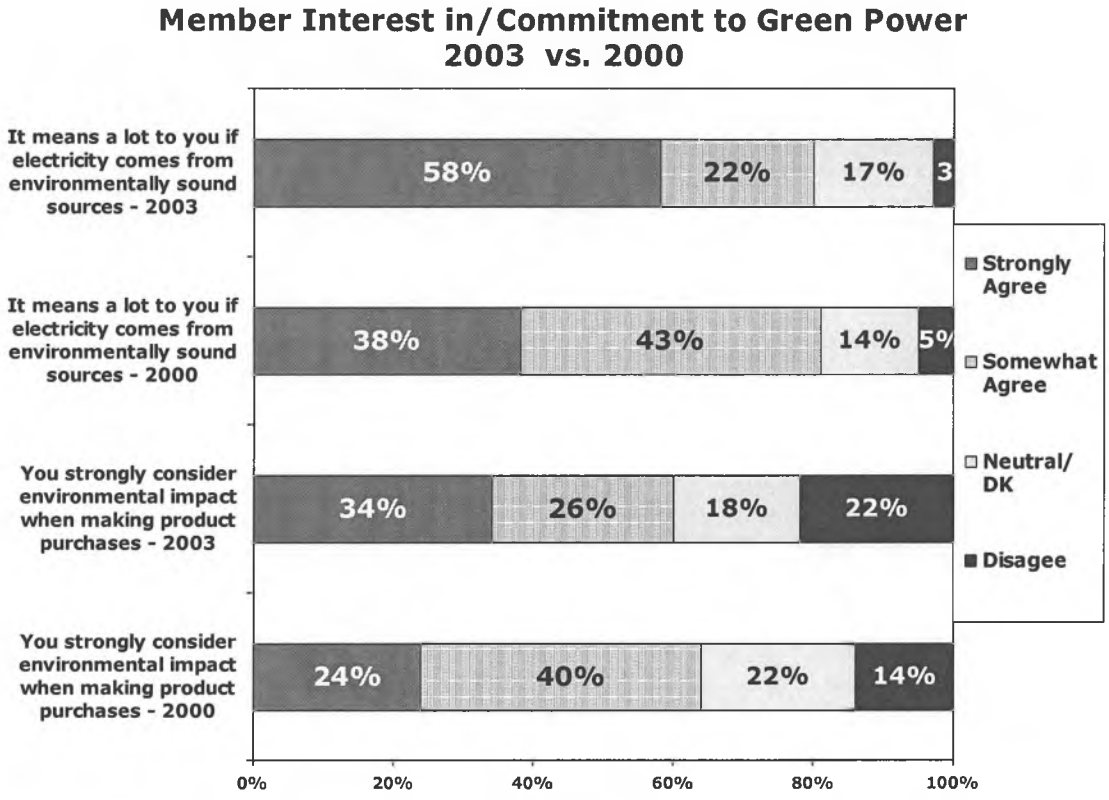
BE IT FURTHER RESOLVED: that the Greater Fairbanks Chamber of Commerce asks Governor Parnell and the Alaska State Legislature to support Golden Valley Electric Association's Eva Creek wind project by appropriating $10 million of capital funds to the project and by encouraging the Administration and State Officials to provide the resources necessary to aid in securing land rights and permitting in a timely manner.

AND BE IT FURTHER RESOLVED, that this resolution be distributed to:
Governor Sean Parnell
Interior Legislative Delegation:
Senators Thomas, Paskvan, and Coghill
Representatives: Thompson, Miller, Kawasaki, Guttenberg, Wilson, and Feige
Acting Commissioner John Cramer, Administration
Commissioner Susan Bell, Department of Commerce, Community & Economic Development
Commissioner Larry Hartig, Alaska Department of Environmental Conservation
Commissioner Click Bishop, Alaska Department of Labor & Workforce Development
Commissioner Daniel Sullivan, Alaska Department of Natural Resources
Commissioner Bryan Butcher, Alaska Department of Revenue
Commissioner Marc Luiken, Alaska Department of Transportation & Public Facilities
Alaska Attorney General, John Burns

SECTION 8– LOCAL SUPORT

Discuss what local support or possible opposition there may be regarding your project. Include letters of support from the community that would benefit from this project.

GVEA has regularly monitored the interest of its members to green power. The following table from our latest survey identifies an increased commitment to power generated from environmentally sound sources:



The Eva Creek Project will be constructed in a remote area. The nearest community of about a dozen families is Ferry. We have met twice with the local residents of Ferry to share what is going on with this project. There have been no complaints at this time. There will be a public process as part of the permit process where we will gain any further questions and mitigate any of their concerns.

Representative Bob Herron

Rep.Bob.Herron@legis.state.ak.us

State Capitol • Juneau, Alaska 99801-1182
Phone: (907) 465-4942 • Fax: (907) 465-4589

House District 38
Kuskokwim & Johnson Rivers
Kuskokwim Bay & Nelson Island

Akiachak
Akiak
Atmautluak
Bethel
Chefornak
Eek
Goodnews Bay
Kasigluk
Kipnuk
Kongiganak
Kwethluk
Kwigillingok
Lower Kalskag
Mekoryuk
Mertarvik
Napakiak
Napaskiak
Newtok
Nightmute
Nunapitchuk
Oscarville
Platinum
Quinhagak
Toksook Bay
Tuluksak
Tununak
Tuntutuliak
Upper Kalskag

TO: Members of the House Special Committee on Energy
Members of the House Resources Committee

DATE: May 6, 2011

RE: SB 46: City of Akiak's $4 Million electrical generation system upgrade request

Colleagues,

Unfortunately, I am unable attend this afternoon's hearing. I wanted to leave you with some thoughts on the importance of this project, and I am confident that City of Akiak Mayor Debra Jackson, Administrator Ivan M. Ivan (a former member of the House of Representatives), and others will be able to speak well to any questions you might have.

Akiak is a remote village located on the west bank of the Kuskokwim River, 42 air miles northeast of Bethel. By 2010 U.S. Census figures, it is home to 342 Alaskans. The community enjoys strong leaders who for years have worked tirelessly to upkeep a failing electrical system. The current system is clearly beyond its useful life. Year round, frequent power outages and surges spoil food supplies, destroy appliances, and interrupt business operations, outside communication, and students' education at the school. In the winter, when temperatures frequently drop below zero, the outages are outright dangerous.

To date, the City and Akiak Native Community, working together, have dedicated countless hours and at least $1.25 Million of funding received through federal Indian Community Development and Community Development Block Grant programs to this project. Other community partners have also shown support.

The Alaska Energy Authority has been involved with this project for quite some time. You heard from Executive Director Sara Fisher-Goad this morning that this is AEA priority, and funding given through the FY 2012 capital budget will free up Rural Power Systems Upgrade funding for other projects needed by the communities of Fort Yukon and Atmautluak. It is also important that the 50% non-State match required of the project due to its placement in the bill not be kept – as this is a regular RPSU project and the match requirement has not been present through the planning process up to this point.

To clarify an issue raised at the post-Floor Session continuation of this morning's meeting: Over time, Akiak's upgrade has worked its way to the top of AEA's RPSU priority list - but last winter, when CAPSIS opened for FY12 requests, we still did not know how much money would be made available to the RPSU program, or when Akiak would rank high enough to receive funds. Under considerable pressure to complete this critical upgrade to protect the residents' welfare, the community independently requested this $4M. This was not an attempt on the part of either the community or AEA to indirectly draw more money to either project or program but, if both are funded, it will have that effect - and will enable AEA to serve two additional priority communities in need this year.

Thank you for your consideration. Please feel free to contact me any time at (907) 465-4942.

Cc: The Honorable Debra Jackson, Mayor, City of Akiak
Ivan M. Ivan, City Administrator, City of Akiak
Sara Fisher-Goad, Executive Director, Alaska Energy Authority

HOMER AREA NATURAL GAS PIPELINE

JOINT HEARING HOUSE RESOURCES COMMITTEE AND HOUSE SPECIAL COMMITTEE ON ENERGY

Testimony by Walt Wrede / Homer City Manager

May 6, 2011

Thank you Co-Chairs Seaton, Feige, Foster and Pruitt and members of the House Resources Committee and House Special Committee on Energy. For the record, my name is Walt Wrede and I am the City Manager of the City of Homer. The City deeply appreciates the opportunity to discuss the Homer Area Natural Gas Pipeline project with you today.

Background:

The City of Homer is located within the Enstar Natural Gas Service Area but is not connected to the Southcentral gas distribution system. The City has been trying to get connected for decades but has been unsuccessful. Lack of access to this clean, affordable, locally produced and reliable energy source has driven up the cost of living and served as a barrier to economic development and job creation. New gas discoveries and production along the North Fork Road, less than twenty miles from Homer, have heightened the community's resolve to make natural gas available. Gas is now flowing from the new field to Anchor Point and north along the Sterling Highway to a connection with the existing infrastructure at Ninilckik.

Project Phasing:

Phase I of the project was funded by the Legislature last year and construction is now complete. Phase I consisted of building a new pressure reducing station in Anchor Point and the first 3,200 of 8 inch transmission pipe south in the direction of Homer. The project was completed with $525,000 from the legislature and a significant contribution from Enstar Natural Gas Company. The Capital Budget approved by the Legislature contained $4.8 Million for this project which would have brought the transmission line all the way to the Homer City Limits. The project was partially vetoed by the Governor.

Scope of Work:

The legislative capital request before you is for Phase II of the project. Phase II would bring natural gas into downtown Homer and the surrounding area. The project consists of constructing approximately 23 miles of 8 inch gas transmission line from the Chapman School in Anchor Point to Kachemak City on the eastern edge of Homer.

Total Project Cost: This request is for $10, 053,000. It is important to note that the State is being asked to fund only the large transmission line that would bring gas to the Homer area. The gas distribution system that would transport the gas to local homes and businesses would be paid for entirely by local sources. Based upon estimates provided by Enstar Natural Gas Company, the City anticipates that 110 miles of 2 inch main line (lines in the street) will have to be constructed within the Homer City limits at a cost of about $10,000,000. 'Build-out" within the Homer City Limits is likely to take up to 10 years depending up economic conditions and the financing mechanisms used. The City of Homer would convert its facilities to natural gas as soon as possible and has already planned for the conversion as part of the City Hall renovation project. The local contribution to the total project cost is even larger than 50% when the distribution system outside of the Homer City limits and the cost to build service lines to homes and businesses from the street is taken into consideration.

Changes in Project Cost: Some legislators have inquired as to why the project cost went from $4.8 million to just over $10 Million. There are two parts to the answer. First, Enstar has chosen a different route since the first cost estimate was provided, going along the Old Sterling Highway instead of the New Sterling Highway. This route is longer but it takes the line closer to many more potential customers and presents a better permitting environment. Second, the Legislature added intent language to the appropriation last year. One of the things included in the language was that Homer make provisions to extend the transmission line through Homer and beyond its City limits. This request complies with the intent language by extending the line from Homer's western boundary, through the heart of Homer, and on to Kachemak City to the east. This added approximately 8 miles of transmission line.

Homer is Ready for Natural Gas: The capital budget last year contained legislative intent language inserted by the House Finance Committee which was referenced by the Governor when he vetoed part of the funding. In essence, the Governor said he would look at this project again if Homer did a bit more planning in preparation for the arrival of natural gas. The intent language included four points. The first three points addressed supply and cost impacts for other consumers already connected to the distribution system. These points have all been addressed by Enstar, the RCA, and the Legislature and I would be happy to address them if the members wish. Point four is directly related to the City and stated stated that "the City of Homer develop a plan (A) for a distribution system that identifies residential users, commercial users, public facility users, and industrial users within its municipal boundary (B) that provides access to the pipeline along the route of the pipeline for potential users who are outside of the municipal boundary; and (C) that provides extension of the pipeline beyond the municipal boundary." The City has complied fully with the intent of the Legislature and is prepared for the arrival of natural gas. The City Council formed a task force which has advised it on matters like distribution system build-out and financing. Potential customers have been identified, including large customers most likely to hook up first. The City staff has prepared draft code amendments related to project financing and regulations governing the insertion of gas lines in public rights-of way. Enstar designed the project with low pressure 8 inch plastic pipe so that stub-outs and take-off points could occur anywhere along the line between Anchor Point and Homer. Finally, the project has been expanded to include areas outside of the Homer City Limits to the East.

Project Benefits: The benefits associated with this project are substantial. Benefits include, but are not limited to, a lower cost of living, a lower cost of doing business, energy security, economic development including more local jobs, increased in-state demand for Alaska's natural gas, and less carbon pollution.

Consumer Savings: I have provided the Committee members with several spread sheets which demonstrate projected savings in energy costs for local residents, businesses, and government institutions at today's prices. These spreadsheets were prepared by Bill Smith, a local heating and mechanical contractor and member of the Kenai Peninsula Borough Assembly. Mr. Smith is also scheduled to testify at this hearing. You can very quickly see that for a typical single family home, natural gas used for heating would cost 70% less than fuel oil, 82% less than propane, and 75% less than electricity. The savings for government institutions (the taxpayers) is substantial. The City of Homer anticipates that it will save at least $175,000 per year. The Kenai Peninsula Borough School District will save $367,225 for schools within the Homer city limits. The estimated annual savings realized by listed public facilities in Homer alone is $1,119,811. It is important to point out that many of these institutions are State facilities including the airport complex, the courthouse, the Fish and Game office, the Division of Forestry, the Kenai Peninsula College, and the Kachemak Bay Research Reserve, to name a few.

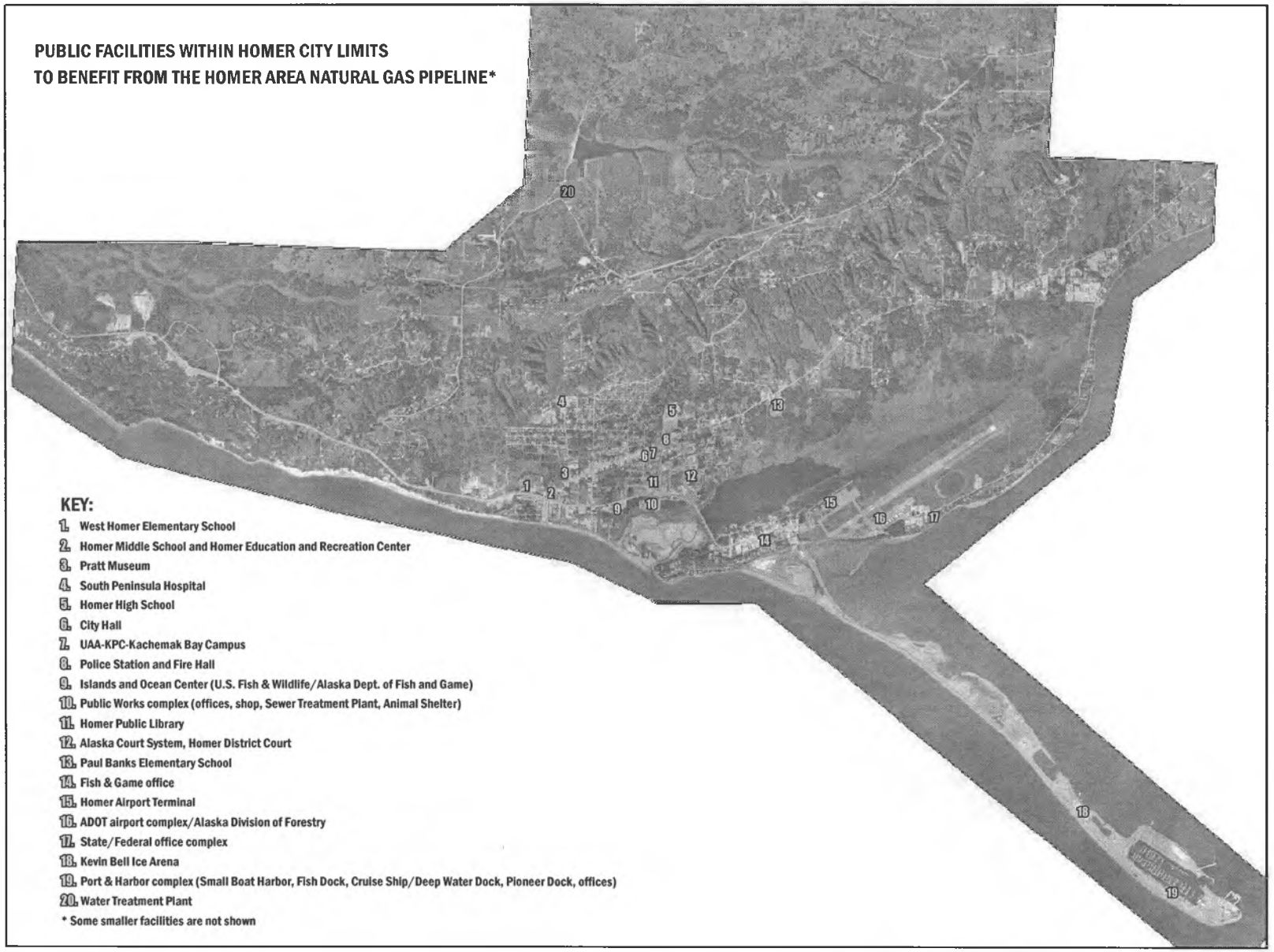
Community Support:

Even though this project has the word "Homer" on it, it is very important to recognize that this is a regional project that will benefit the entire southern Kenai Peninsula. The Homer City Council has adopted multiple resolutions in favor of bringing natural gas to Homer and this project specifically. This project enjoys very broad support from the entire Homer area. It is Number 2 on the adopted CIP Lists of both the City of Homer and the Kenai Peninsula Borough. In the past few months resolutions and/or letters of support have been generated by a diverse set of organizations including the Kenai Peninsula Borough School District, the Kenai Peninsula Economic Development District, South Peninsula Hospital, Kachemak City, the Homer Chamber of Commerce, the Kachemak Board of Realtors, and many businesses and individuals.

Funding Pipelines: The State has a long history of funding a variety of energy projects (including pipelines) and will likely continue to do so in the future. One of the roles of government is to provide for the basic infrastructure that is needed to support health, safety, and a thriving economy, especially when the private sector cannot justify doing so on its own. The community is simply asking for state assistance to get natural gas into the area. Local government, businesses, and residents will do the rest.

Enstar Natural Gas Company: Some have questioned why the state should give funding to a private company to help expand its infrastructure. The City's position is that this is appropriate because even though Enstar is privately owned and is organized differently from a cooperative, it essentially operates in most respects like a public utility. It is the only gas utility sanctioned and regulated by the RCA in our area. Further, the state has already provided funding for other Enstar projects.

PUBLIC FACILITIES WITHIN HOMER CITY LIMITS
TO BENEFIT FROM THE HOMER AREA NATURAL GAS PIPELINE*



KEY:

1. West Homer Elementary School
2. Homer Middle School and Homer Education and Recreation Center
3. Pratt Museum
4. South Peninsula Hospital
5. Homer High School
6. City Hall
7. UAA-KPC-Kachemak Bay Campus
8. Police Station and Fire Hall
9. Islands and Ocean Center (U.S. Fish & Wildlife/Alaska Dept. of Fish and Game)
10. Public Works complex (offices, shop, Sewer Treatment Plant, Animal Shelter)
11. Homer Public Library
12. Alaska Court System, Homer District Court
13. Paul Banks Elementary School
14. Fish & Game office
15. Homer Airport Terminal
16. ADOT airport complex/Alaska Division of Forestry
17. State/Federal office complex
18. Kevin Bell Ice Arena
19. Port & Harbor complex (Small Boat Harbor, Fish Dock, Cruise Ship/Deep Water Dock, Pioneer Dock, offices)
20. Water Treatment Plant

* Some smaller facilities are not shown

Soldotna – Nikiski Transmission Line Upgrade

Homer Electric Association, Inc.

Executive Summary

The proposed upgrade of the existing 69 kV transmission line between Nikiski and Soldotna to 115 kV is critically important in preserving the ability to move energy off the Kenai Peninsula and ensuring reliable service to some of the State's largest industrial facilities. This upgrade benefits not only the residents on the Kenai Peninsula, but also provides benefits to the entire Railbelt region.

The upgrade will replace an aging transmission line with older poles and smaller wire with new pole structures and a larger conductor. The new construction will allow operation of the line at 115 kV, creating a second looped path between Nikiski and Soldotna. Benefits include additional electrical capacity, increased transmission system reliability, and improved operational flexibility.

Near-term generation changes by several of the Railbelt utilities, and a potential upgrade at the Bradley Lake Hydroelectric Project will increase the amount of low cost energy available on the Kenai Peninsula. Operation of the single transmission tie-line between Soldotna and Anchorage is sensitive to the amount of high-inertia generation operating on the Kenai during energy transfers to the north. Much of the high inertia on the Kenai is presently connected to the Railbelt grid by a single 115 kV between the two generation plants in Nikiski, and Soldotna. Any outage of the single line means Nikiski generation facilities are unavailable to support energy transfers to the north. This results in islanding of some inexpensive energy, and reduced transfer capability for Bradley Lake Power. In addition, industrial energy customers in Nikiski are also isolated from the Railbelt grid and operate with a reduced amount of electrical reliability. Future development of renewable energy sources in Nikiski (wind, and more recently tidal) may also be impacted by the limited transfer capability from Nikiski to the rest of the Railbelt.

An upgrade of an older 69 kV transmission line to 115 kV will provide a second transfer path between Nikiski and Soldotna. During a planned or unplanned outage on either line, the Nikiski based generation will be able to stay online to provide energy and improve system stability for all Railbelt utilities. Bradley Lake energy will be able to be transferred off the Kenai to the utilities in a highly reliable manner. Existing and future industrial development in the Nikiski area and potential renewable energy projects will be supported by this transmission grid improvement. Since both substations serving the City of Kenai are connected to the older line, the upgrade will improve reliability to this area as well.

Overview

Today, a significant portion of the output from the Bradley Lake Hydroelectric Project (Bradley Lake) flows across Homer Electric Association's (HEA) transmission system en route to the rest of the Railbelt utilities via a single transmission line that traverses from Soldotna to Anchorage, adjacent to the Sterling Hwy / Seward Hwy corridor. Although the 140 mile transmission line between Soldotna and Anchorage was appropriately sized several decades ago, the construction of Bradley Lake has greatly increased the original performance expectations. The ability for Bradley Lake energy to flow off the Peninsula has been very good, particularly since HEA's 40 MW Frame VI combustion turbine was placed into base-load operation in 2001, adjacent to the Agrium facility in Nikiski. Industrial "frame" turbines like those at Nikiski and the nearby Bernice Lake Power Plant provide substantial "inertia" to the system which helps keep the bulk transmission system stable during grid disturbances. This "grid stability" is something very difficult to do on long transmission lines commonly found on the Railbelt system.

Recently, plans have been made by HEA to construct additional natural gas-fired generation in the Nikiski area, and near Soldotna. The decision to add new generation was based on several factors including access to key natural gas fuel supply infrastructure, and the ability to increase the efficiency of HEA's existing 40 MW combustion turbine in Nikiski. HEA will improve the efficiency at this location by roughly 45% through the installation of a steam turbine. The new "combined-cycle" generation plant will produce additional electrical energy with no additional fuel costs, and it will further improve grid stability by contributing its inertia to the system. There is also a plan in place to increase water, and electrical energy available, from Bradley Lake by adding a new diversion at Battle Creek. The addition of HEA's new steam turbine, and the addition of additional capacity at Bradley Lake, means the Kenai Peninsula becomes a larger source of less expensive electrical energy for all of the Railbelt utilities. Access to this inexpensive energy will place more emphasis on operating the Soldotna – Anchorage transmission line in a high capacity, highly reliable manner.

There are several potential solutions to improving the capabilities of the transmission system, but in all cases, keeping the southern grid stable while exporting power is highly dependent on keeping high inertia generation connected on the Kenai. Today, high inertia generation assets in Nikiski are connected to the Railbelt transmission system through a single 115 kV transmission line between Nikiski and Soldotna (see Figure 1 below). A second, smaller 69 kV line between Nikiski and Soldotna cannot be operated in parallel with this line due to several technical issues. Increased circulating currents and gross overloading in the event of an outage of the existing 115 kV line are two of the numerous technical challenges. In addition, the 69 kV line is older and near the end of its useful service life.

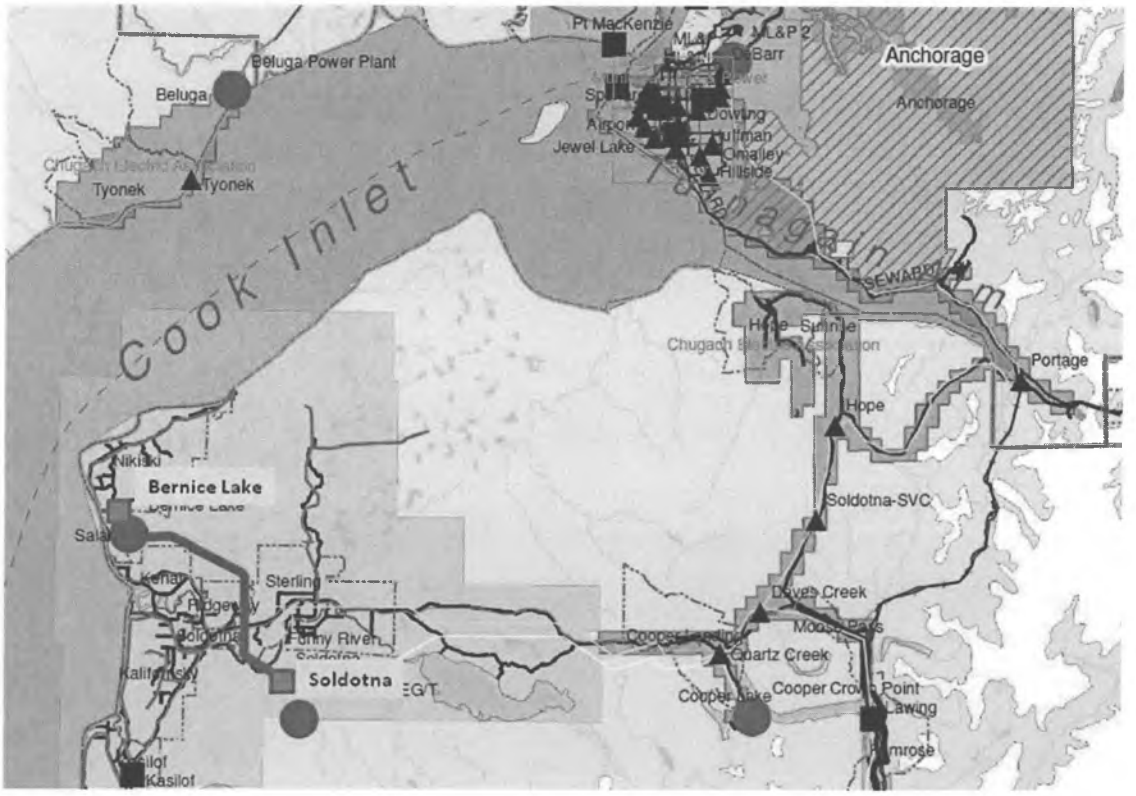


Figure 1 – Proposed Soldotna – Nikiski Line Upgrade Overview[1]

Maintenance on the existing 115 kV line or unscheduled outages (equipment failures, trees, etc.) require the Nikiski based generation units to be shut down and replaced by power from lower inertia generation which will greatly reduce the ability to export Bradley power. This shut down not only impacts the ability to get Bradley Lake produced energy off the Kenai, but impacts electric service to two of the State's largest industrial customers. Tesoro's Nikiski refinery and Chevron's Swanson River oil and gas field are both served from resources in the Nikiski area, and are backed up from Soldotna and the rest of the Railbelt grid. Finally, the two substations that provide electrical energy for the City of Kenai are both located on the older 69 kV line.

In addition to being an attractive location for future industrial development, Nikiski has been identified as a potential location for future wind resources. The Forelands area in Nikiski has been identified as one of the most attractive locations for tidal power in Alaska and North America. The upgrade project was also identified in the Alaska Energy Authority's (AEA) recently completed Railbelt Integrated Resource Plan.

The proposed upgrade of the existing 69 kV system to 115 kV between Nikiski and Soldotna will replace the older poles and smaller wire with a larger conductor. The new construction will allow operation of the line at 115 kV, creating a second looped path between Nikiski and Soldotna. Benefits include additional electrical capacity, increased transmission system reliability, and improved operational flexibility. During a planned or unplanned outage on either line, the Nikiski based generation will be able to stay online to provide energy and system stability to the Railbelt utilities. Bradley Lake energy will be able to be transferred off the Kenai to all of the utilities in a highly reliable manner. Existing and future industrial development in the Nikiski area and potential renewable energy projects will be supported by this transmission grid improvement.

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[1] Figure taken from Railbelt Integrated Resource Plan (Final Report), by Black & Veatch, February 2011.

"Village with a Past, City with a Future"

210 Fidalgo Avenue, Kenai, Alaska 99611-7794
Telephone: (907) 283-7535 / FAX: (907) 283-3014
www.ci.kenai.ak.us

January 27, 2011

To whom it may concern:

The City of Kenai fully supports Homer Electric Association's project to upgrade the 69 kV transmission line between Nikiski and Soldotna to a 115 kV line.

Currently, the City of Kenai is served by two substations that are connected to the transmission line that is being upgraded. The successful completion of this project will result in dual 115 kV transmission lines between Nikiski and Soldotna. The end result of the project will be improved reliability for the City of Kenai in the event a problem occurs on one of the transmission lines.

The City of Kenai has seen a surge of economic activity in recent years. Companies such as Home Depot, Lowes, and Wal Mart have all chosen to locate their business here in Kenai. As we continue to actively market our town, it is imperative that we are able to assure prospective businesses that there will continue to be a reliable source of power available in the community.

An interruption of power creates a series of very expensive problems for local businesses and any steps HEA can take to improve reliability is supported by the City of Kenai. Thank you for considering this request.

Sincerely,

CITY OF KENAI

Rick Koch,

City Manager

City of Soldotna

177 North Birch • Soldotna Alaska 99669 • Phone (907) 262-9107

Office of the Mayor

Date: January 5, 2011

To whom it may concern:

I am writing to express strong support for Homer Electric Association's project to upgrade the 69 kV transmission line between Nikiski and Soldotna to a 115 kV line.

As Mayor of Soldotna, I have made it a priority to support existing and attract new businesses to our community. The issue of electric service reliability is one of the first questions raised by companies interested in locating businesses in our community. We are fortunate to be able to demonstrate that Homer Electric provides an excellent level of service reliability.

Yet, the key to reliable infrastructure includes a consistent level of maintenance and upgrading to new technology and greater reliability. In the case of Soldotna's service from HEA, it is clear that in order to maintain and improve that reliability, the transmission line between Soldotna and Nikiski requires upgrading from the 69 kV service.

The successful completion of this project will result in dual 115 kV transmission lines between Nikiski and Soldotna. The end result of the project will be improved reliability for the City of Soldotna in the event a problem occurs on one of the transmission lines.

Economic development is critically important to the City of Soldotna. We have been very successful in achieving a unique blend of quality residential developments, small, local businesses and larger retail facilities in our city. Regardless of the size of a home or business, it is important that they all have access to reliable and affordable power. Homer Electric should be commended for seeking to upgrade and improve the overall level of reliability. As the Mayor of the City of Soldotna, I want to state that the project that has our full support.

Thank you for considering this request.

Sincerely,

Mayor Peter A. Micciche

City of Soldotna, Alaska



TESORO

Tesoro Alaska Company
P.O. Box 3369
Kenai, Alaska 99611-3369
907 776 8191
907 776 5546 Fax

January 24, 2011

To whom it may concern:

Tesoro Alaska Company fully supports Homer Electric Association's request for funding to upgrade the transmission line between Nikiski and Soldotna. The importance of having a dual 115 kV system in place cannot be overstated from Tesoro's point of view.

The Tesoro refinery is a complex industrial facility and it is of paramount importance that there is a reliable source of power available at all times. The current situation leaves the refinery and other industrial facilities in the Nikiski area at risk should there be a problem on the single 115kV line currently serving the Tesoro plant.

This important upgrade will not only improve reliability for the State's largest refinery, but it will also benefit the entire Railbelt by improving stability on the existing transmission line that connects Soldotna to Anchorage.

Tesoro Alaska appreciates your consideration of this request.

Sincerely,

Stephen W. Hansen
Vice President, Kenai Refinery
Tesoro Alaska Company

Chevron

Kevin A. Tabler, Manager
Land/Governmental Affairs
MidContinent/Alaska BU

Union Oil Company of California
3800 Centerpoint Dr., Suite 100
Anchorage, AK 99503
Tel 907 263 7600
Fax 907 263 7698
Email tablerk@chevron.com

January 25, 2011

To whom it may concern:

Homer Electric Association's request for funding to upgrade the transmission line between Nikiski and Soldotna has the full support of Union Oil Company of California (Union Oil).

As the owner and operator of the Swanson River Oil Field on the Kenai Peninsula, Union Oil is fully aware of the importance of a reliable source of power. Union Oil has recently installed large electric pumps in the Swanson Field. Any interruption of power creates a series of very expensive problems for these new pumps and it is our goal to work with Homer Electric to devise a system that can provide the best service possible.

The construction of a dual 115kV line will provide much needed redundancy in the system and allow Union Oil to continue producing oil in the Swanson River Oil Field in the most efficient way possible.

The Swanson River Oil Field has been producing oil and providing jobs for Alaska residents since 1961. Union Oil is working hard to continue that legacy and secure a bright future for the Swanson River field. Homer Electric's proposal to upgrade the transmission line between Nikiski and Soldotna will help us move in that direction.

While we are most concerned about our needs at Swanson River, this project will also benefit the entire Railbelt and have a positive impact on the transmission line to Anchorage.

Thank you for considering this request.

Sincerely,

Kevin A. Tabler

Mount Spurr Geothermal Project Development

8 reasons for the State of Alaska to provide Ormat with an $18 million grant in support of Mt Spurr geothermal drilling:

1. **Because it is not State money going to the pockets of a private developer. It is a Public –Private-Partnership.** It is State money, controlled and administered by the State (by AEA), with all geological data co-owned by the State (administered by both AEA and DNR), and with every State dollar invested in the project passed-through transparently to the ratepayers in the form of lower power prices (supervised by the RCA or AEA). Additional details:
    - The State investment of $18 million, in addition to the $2 million Ormat is expected to receive through round IV of the AEA Renewable Energy Fund Grant (REFG), will be transparently conveyed to ratepayers in the form of an approximate reduction of 0.3~0.5 c/kWh in the price of energy sold from the project to Railbelt utilities. This will be verified by RCA or by AEA.
    - Grant funds will not be upfront cash payments to Ormat but rather cost reimbursements through the AEA REFG mechanism. Judging from the process Ormat experienced with the previous $2 million grant currently in the process of reimbursement through round III of the REFG, AEA's reimbursement mechanism is meticulous, with every line item in every receipt checked to the last cent and with AEA's ability to audit any part of the process, e.g. vendor selection. Therefore, the State has full control on how money is spent and reimbursed.
    - The $20 million (with Ormat's match of at least $5 million) will be spent only if results of the 2011 core exploration drilling are encouraging, and will be done wisely and gradually, with multiple scientific go/no-go decision points. Investment will be stopped should scientific evidence gathered throughout the 2012-2013 drilling season is not encouraging as to the potential existence of a commercially viable resource. This will be controlled and verified by AEA and DNR.

2. **Because it is a win-win investment by the State.** If the 2012-2013 drilling season is successful and a geothermal power plant is eventually built, the State will enjoy clean, reliable and affordable baseload power for decades, with every State dollar invested passed-through to ratepayers thorough lower power prices. If drilling proves there's no commercial geothermal resource, the State wins by knowing that it used best available science to explore Mt Spurr's geothermal potential; State geological institutions (e.g. DNR's Division of Geological and Geophysical Survey and the Alaska Volcano Observatory) will benefit from the new geological data to be gathered, that will help the State estimate geothermal potential in other Greenfield areas throughout the State beyond Mt Spurr, e.g. other Aleutian Chain volcanoes (Mt. Iliamna, Mt. Augustine, etc.).

3. **Because it is the only way to break the current energy development dead-lock.** While Alaska's policy makers realize the need to diversify its energy mix with at least 50% coming from renewable resources by 2025, Railbelt utilities refuse to offer private developers, like Ormat, power prices that are higher than their current low avoided costs, that are derived from a mix of unsustainably low gas prices from depleting Cook Inlet resources and the State subsidized Bradley Lake Hydro plant. By supporting further geothermal resource confirmation at Mt Spurr, the legislature can show forward-looking vision and kick-start this project that could have a significant impact on energy diversification. Without this State support, the project will not be able to move forward beyond the 2011 core exploration drilling (cost shared by AEA's round III REFG grant).

4. **Because if built, the Mt Spurr geothermal power plant will relieve the demand pressure on Cook Inlet Natural Gas.** 100 MW of basedload geothermal generation at Mt Spurr will save approximately

Provided by: Ormat Technologies

6,000,000 MMBTUs of natural gas each year[1], enough to heat around 80,000[2] homes each year, roughly equivalent to the entire residential heating consumption of the city of Anchorage.

5. **Because the Mt Spurr geothermal power plant could be on line in the next 5-6 years**, sooner than other energy alternatives, e.g. the bullet natural gas line or Suisitna/Watana hydro.

6. **Because Mt Spurr can offer affordable power prices, competitive with Suisitna/Watana hydro and other future alternative/ renewable energy projects.** Absent any additional State support[3], estimated power prices from Mt Spurr are in the 12-13 c/kWh range, which is competitive to Suisitna/Watana hydro and other potential alternative, on a non-subsidized "apples-to-apples" basis. From this reason, the AEA-sponsored 2010 Railbelt Integrated Resource Plan identified the Mt. Spurr geothermal project as a beneficial component in the Railbelt's generation portfolio.

7. **Because it will create substantial green jobs.** The Mt Spurr project could provide approximately 50 full-time jobs, over 100 construction jobs, and benefit over 200 mostly local vendors through spending over $850 million in the next 30 years

8. **Because that is the most effective tool countries and States have been implementing in order to promote geothermal development**. Some examples:

    - In 2009 the US DOE, as part of the ARRA, awarded $338 million to private geothermal developers in order to boost geothermal exploration and drilling in multiple projects throughout the country[4]. Unfortunately that program has ended and is therefore not a potential source of funding for the Mt Spurr project
    - ARRA Section 1603, Cash Grant in lieu of the Investment Tax Credits, provides a cash grant equaling almost 30% of total capital investment in renewable energy projects, where for geothermal development that's primarily full-size production and injection drilling. As an example, in 2010 Ormat received a $108 million cash grant from this program, for its North Brawley geothermal plant recently placed in service in California[5]. A significant portion of that grant went to cover geothermal production and injection drilling. Unfortunately this program only supports geothermal power plants to be placed in service by the end of 2013 and is therefore not applicable to the Mt Spurr project, whose target in-service date is 2016.

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[1] Assuming this 100 MW would have otherwise been generated via modern combined cycle natural gas plants, with an assumed heat rate of 7,000 BTU/kWh (California Energy Commission Report from August 2009, http://www.energy.ca.gov/2009publications/CEC-200-2009-017/CEC-200-2009-017-SD.PDF)

[2] Assuming average annual consumption of 72 MMBTU per home, as per the US Energy Information Agency (http://www.eia.gov/emeu/recs/byfuels/2001/byfuel_ng.pdf)

[3] Other than building a transmission line to Beluga and an access road, estimated at $70 million, to be addressed at a later stage

[4] http://www.energy.gov/8233.htm

[5] http://www.ormat.com/news/latest-items/ormat-technologies-inc-received-108-million-cash-grant-under-1603-program

- From 1975 to 1986 the US DOE invested $827 million, equivalent to more than $1.7 billion in today's dollars, in geothermal exploration across the continental US. Some of this investment was in the form of "industry coupled" drilling, where private developers enjoyed cost sharing by the DOE.
- Multiple counties around the worlds offer a variety incentives (cash grants, feed-in tariff's, renewable portfolio standards that force utilities to pay a premium for renewable power, tax break, etc) incentives to private developers, in order to attract private capital investments and boost geothermal development. Success stories of countries that incentivized and attracted private geothermal developers and ultimately benefit from utility-scale privately owned geothermal power plants include the Philippines, Indonesia, Germany, Turkey, Guatemala and Kenya. Though still to see its first geothermal power plant developed, Chile has recently succeeded in attracting multiple international geothermal developers, in part due to incentive policies, e.g. a cash grant program.

Chikuminuk Lake Hydropower

House Energy & Resources

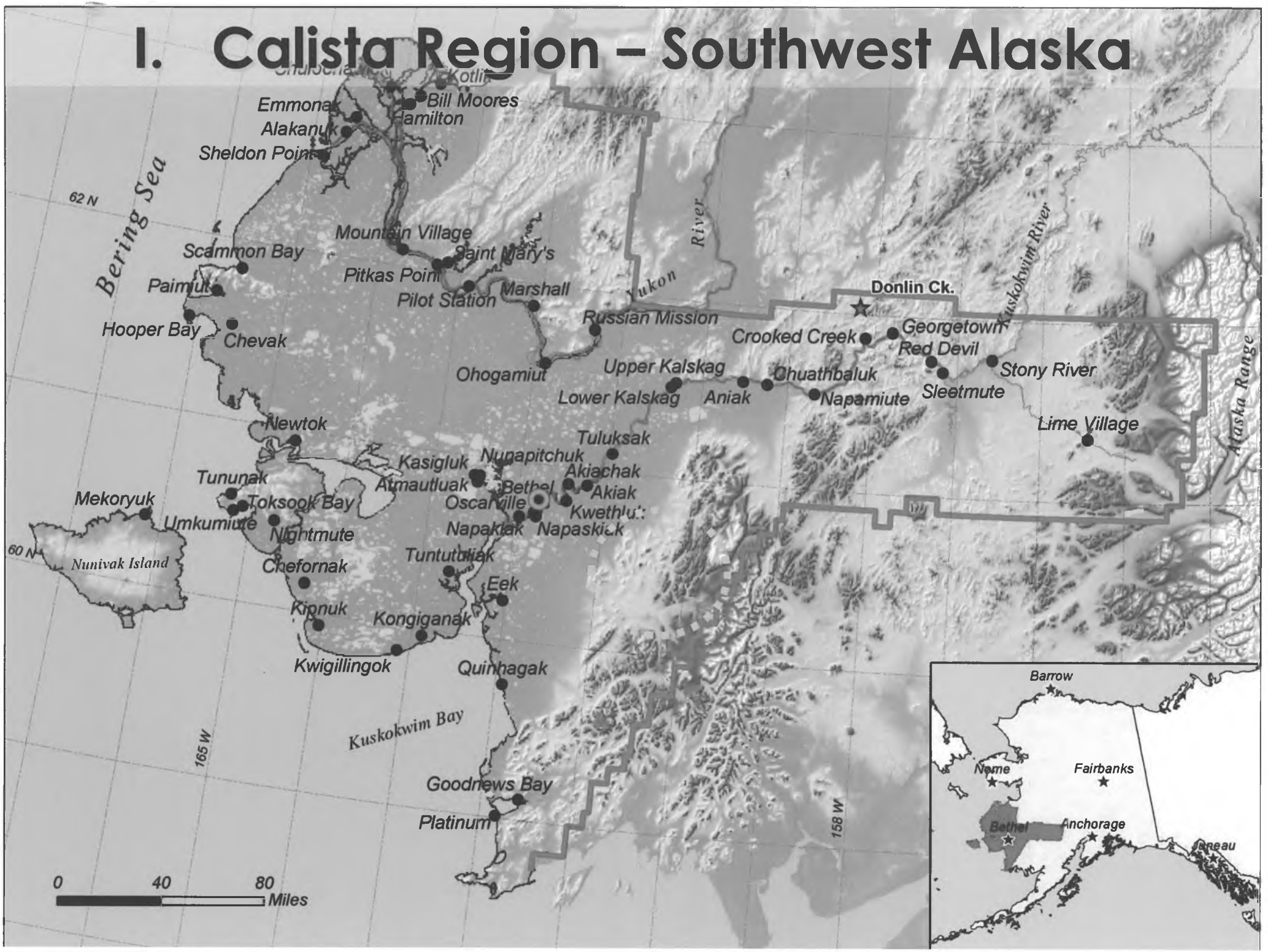
Committee Hearing

May 7, 2011

Nuvista Light & Electric Cooperative

Christine Klein, Calista EVP/COO




I. Calista Region – Southwest Alaska
Kotlik
Bill Moores
Hamilton
Emmonak
Alakanuk
Sheldon Point
Bering Sea
62 N
Mountain Village
Scammon Bay
Saint Mary's
Pitkas Point
Paimiut
Marshall
Pilot Station
Yukon River
Kuskokwim River
Donlin Ck.
Russian Mission
Hooper Bay
Chevak
Crooked Creek
Georgetown
Red Devil
Stony River
Ohogamiut
Upper Kalskag
Chuathbaluk
Lower Kalskag
Aniak
Napamiute
Sleetmute
Alaska Range
Lime Village
Newtok
Tuluksak
Nunapitchuk
Kasigluk
Akiachak
Tununak
Atmautluak
Bethel
Akiak
Mekoryuk
Toksook Bay
Oscarville
Kwethluk
Umkumiute
Napaskiak
Napaskiak
Nightmute
60 N
Nunivak Island
Tuntutuliak
Chefornak
Eek
Kipnuk
Kongiganak
Kwigillingok
Quinhagak
Kuskokwim Bay
165 W
Goodnews Bay
Platinum
158 W
0
40
80
Miles
Barrow
Nome
Fairbanks
Bethel
Anchorage
Juneau

I. Nuvista Electric Cooperative

Non-profit utility established '95:

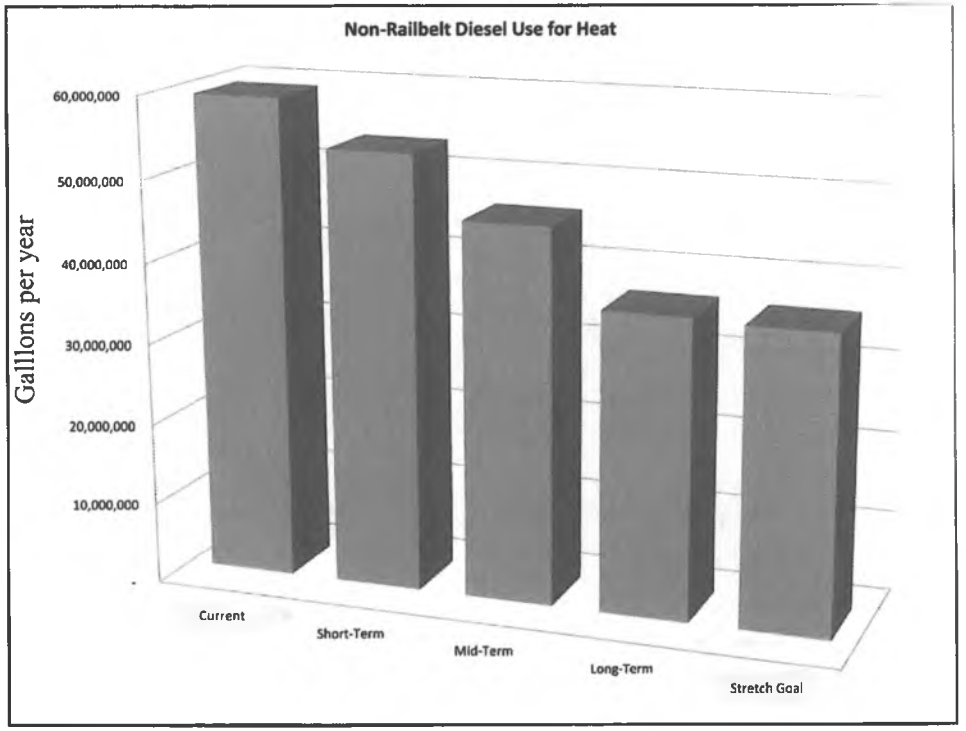
- An Electric Utility Cooperative
- Common Goal: deliver and reduce electrical costs to residents
- Assess high cost of power, demands and find stable alternatives
- Organized as a cooperative to function as a future region-wide Generation & Transmission utility
- Includes region major stakeholders

Board Members:

- Association Village Council Presidents
- Yukon Kuskokwim Health Corporation
- AVCP Regional Housing Authority
- Alaska Village Electric Cooperative
- Chaninik Wind Group
- Middle Kuskokwim Electric Coop.
- Lower Yukon Representative
- Calista Regional Corporation



I. Y-K Region Energy Situation



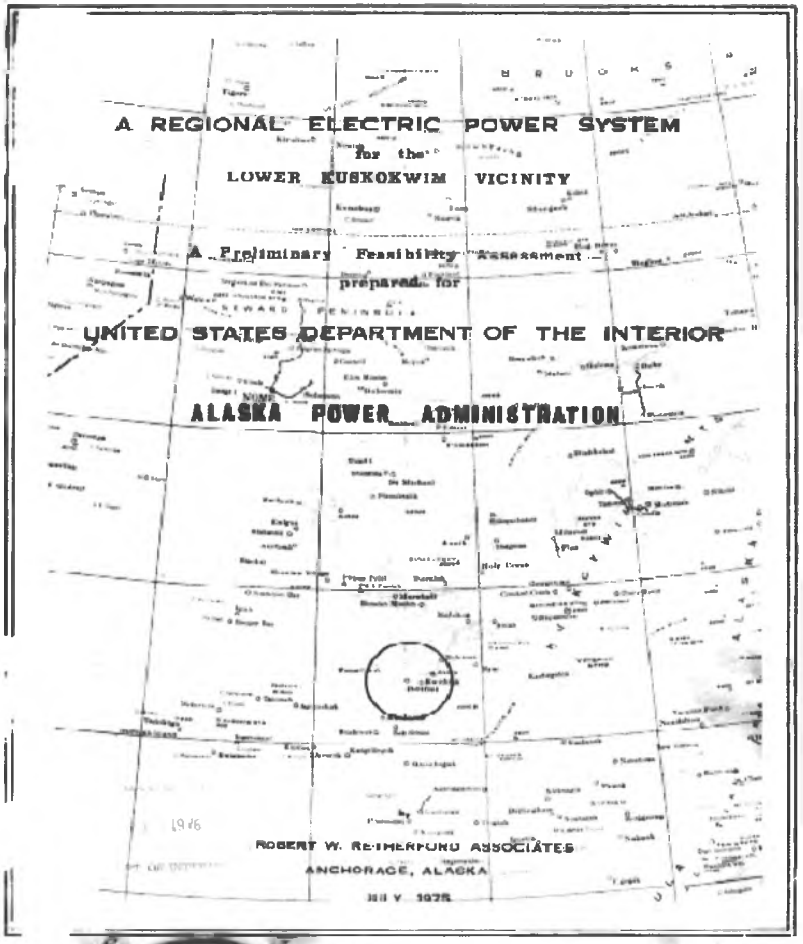
Diesel

- Primary home heating ranged $6.14 to $9.50/gallon in 2010 (barged in yearly)
- Expect $7.34 to $10.70 gallon this year
- 50% of family income goes to heating, now grown to 65 to 75% income
- Families choosing food vs. heating

Electricity

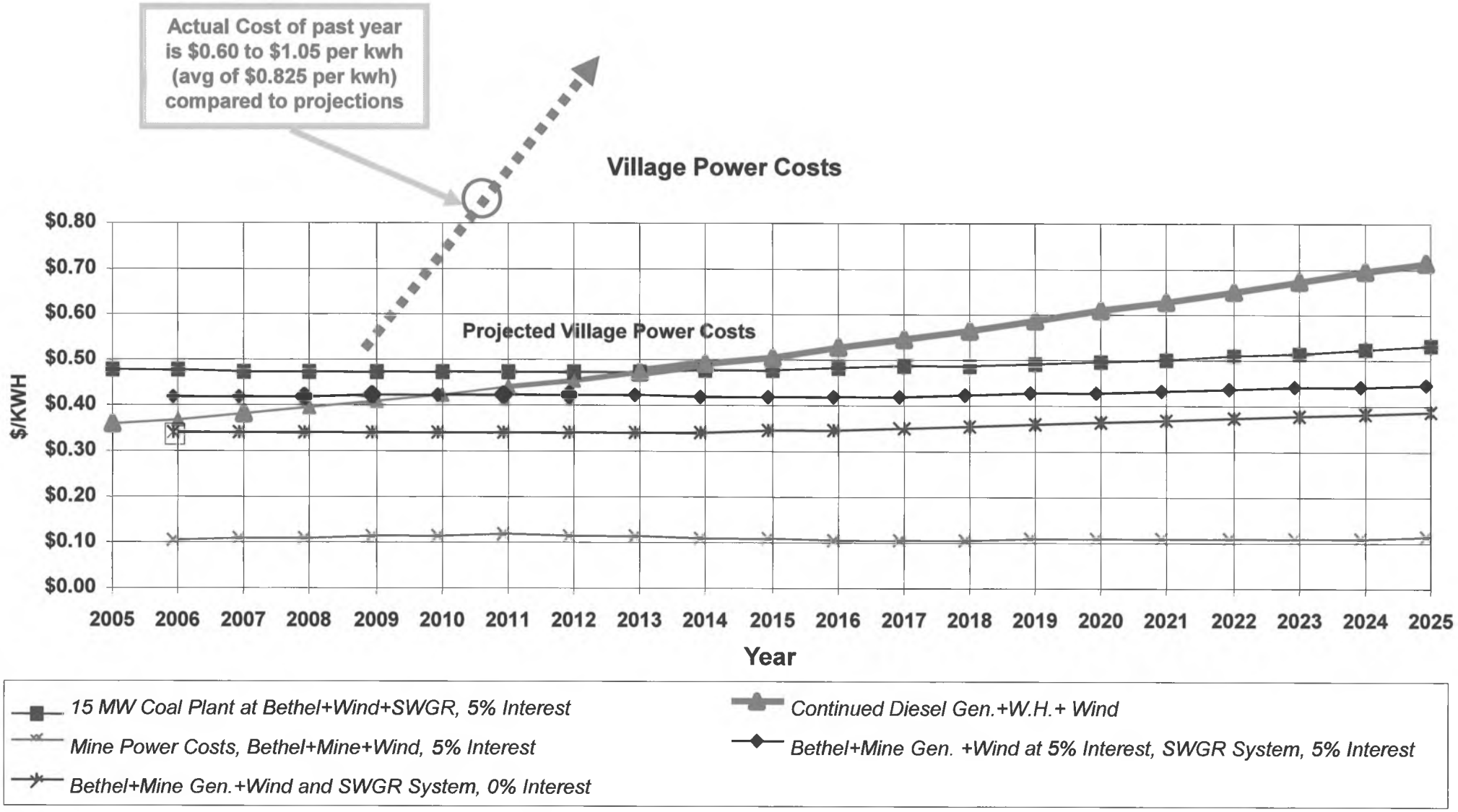
- Many small village diesel generators
- Home use is less than 50% Natl Average
- Cost = $0.52 to $1.00 kilowatt hour 2010
- Escalating cost of energy
- PCE cannot keep up

II. Where We've Been



- **Over 21** Energy Studies, Data, and Reports since '75.
- > 41 largely independent aged diesel power generator plants
- Village generators use >20 million gallons of diesel year
- Transmission lines needed
- 65Mw electrical demand for Bethel +14 villages by 2020
- Coal and Hydropower listed repeatedly as feasible options
- Energy costs escalating

II. Electrical Cost Projections 2002



II. Found Energy Needs Varied

Region Villages Vary:

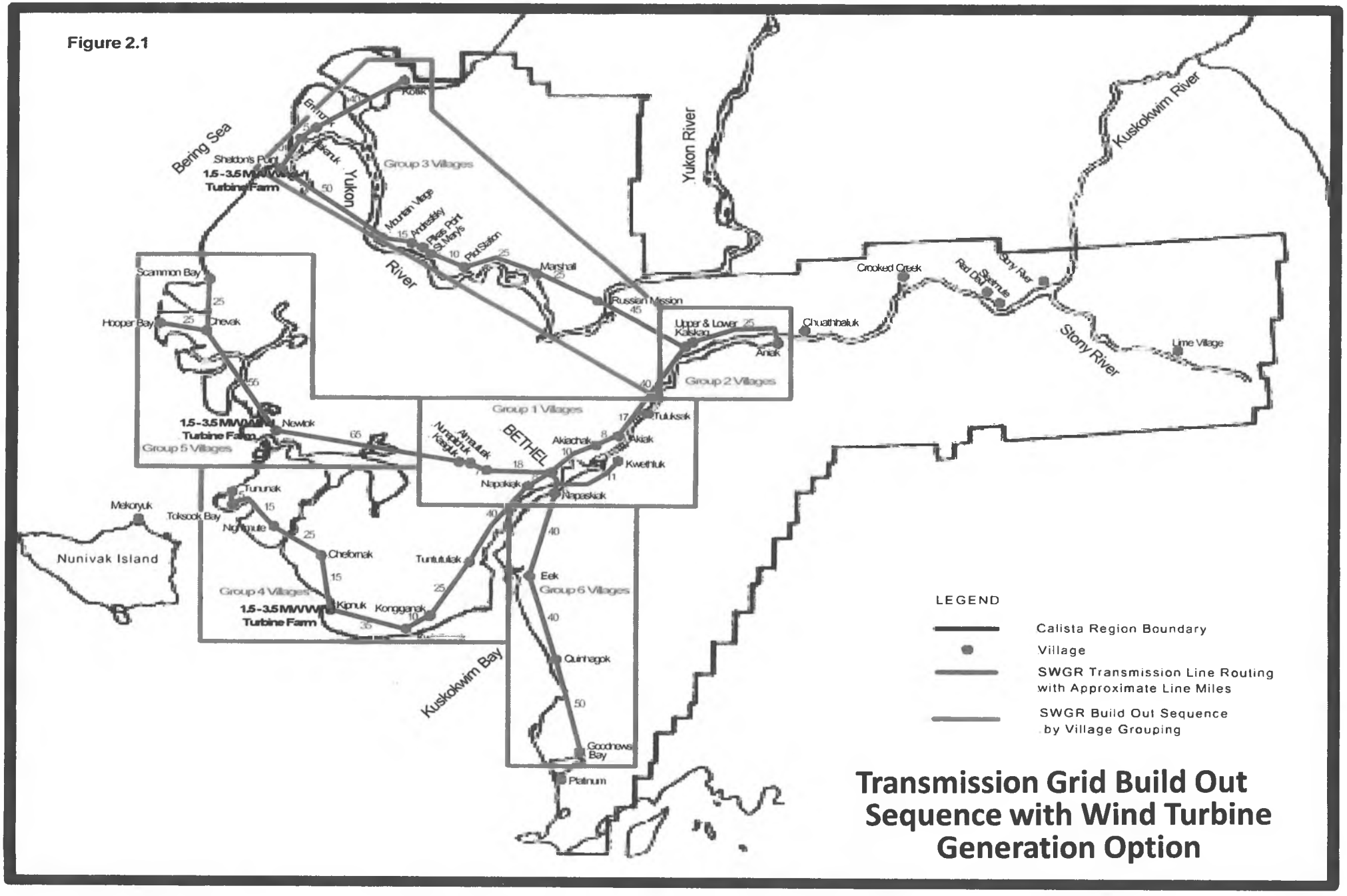
- Diverse Village options
- Conservation Underway but not the complete solutions
- Some Coastal Villages proceed w/wind generation but there's limited application in region
- Some villages have small needs
- ***One size doesn't fit all!***
- Sub-region Bethel +13 villages 65Mw electrical need by 2020





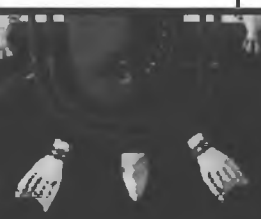
II. Transmission System Needed

Figure 2.1



II. Previous Alternatives Considered

Alt. Energy Type	*Cost to Construct*	*Cost to Operate*	*Use Cost per Kw*	*Capacity to Demand 65kw*	*Public Perception*	*Likelihood or Feasibility*
Diesel	Existing	High	High	Same	-	Existing
Geothermal	High	Low	-	None	Positive	Small
Wind Power	Medium	High	Low	Low	**Positive**	**Limited**
Hydropower	High	**Low**	**Medium**	**High**	**Positive**	**High**
Coal Power Plant	High	Medium	Low	**High**	**Negative**	**Medium to Low**
Nuclear Power	Low	Low	Low	High	**Very Negative**	**Poor to None**



III. Future - Remaining Candidates

- **Wind Turbines**

  Variable – region precedent, low power production capacity, augments needs, does not work for all areas of region.

- **Coal Power Plant**

  Bethel 15-60 Mw Plant - negative public perception, would provide the cheapest and greatest energy capacity.

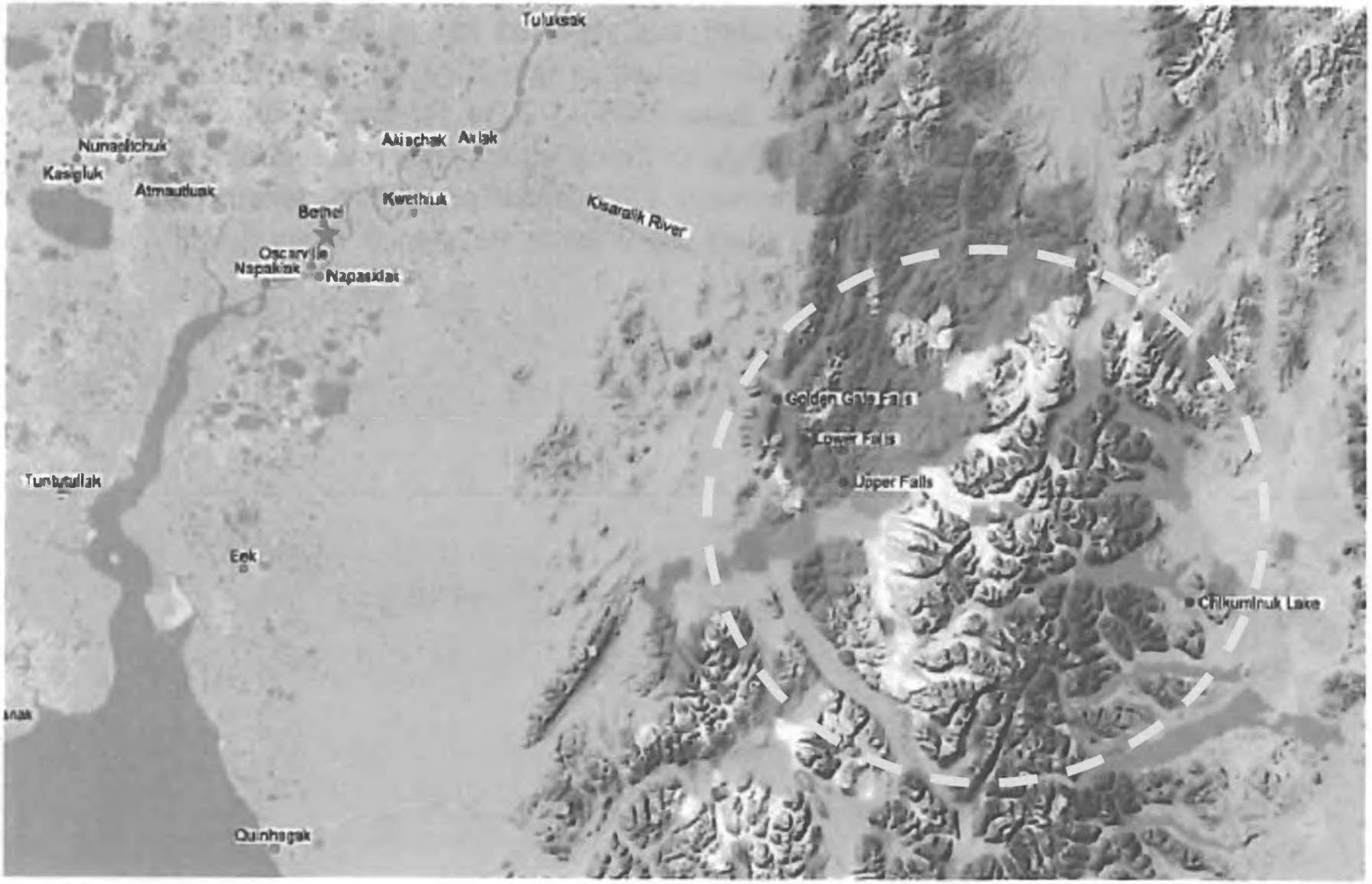
- **Hydroelectric Power**

  Kisaralik River – 3 sites Yukon Delta National Wildlife Refuge

  Chikuminuk Lake - in Wood Tikchik State Wilderness park, could provide clean, mid cost, proven alternative energy.



III. Remaining Hydroelectric Sites



III. Hydroelectric Feasibility Findings

Site	*Distance miles*	*Head ft*	*Generating Capacity (MW)*	*Year Around Seasonal*	*Average Annual Energy (GWh)*	*Projected 2022 Demand GWh*	*Useable Energy 2022 GWh*
Chikuminuk Lake Allen River Outfall	118	91	13.4	**Y**	**89.3**	**64.9**	**65+**
Kisaralik River Upper Falls	70	149	27.7	S	89.5		39.7
Kisaralik River Lower Falls	62	122	34.1	S	128.3		46.9
Kisaralik River Golden Gate	57	78	27.0	S	95.3		38.8



IV. Moving Forward & Ahead

Selection of Option(s):

- Nuvista Team & Stakeholders Reviewed latest Findings
- Public Meetings found Chikuminuk Site Positive and Preferred
- Board Unanimous Decision to move ahead with Hydropower Design Feasibility
- Chikuminuk Lake has year around capability to supply ½ region's population, 13+ villages, and displace 10M gallons diesel

A. Bethel Area Sub-Region

Complete plan and project(s) underway to stabilize and reduce energy costs, and integrate with Region-Wide plan

B. Region-Wide Alternative Energy Plan

Beginning a comprehensive region wide alternative energy plan that integrates work done and underway to guide future development



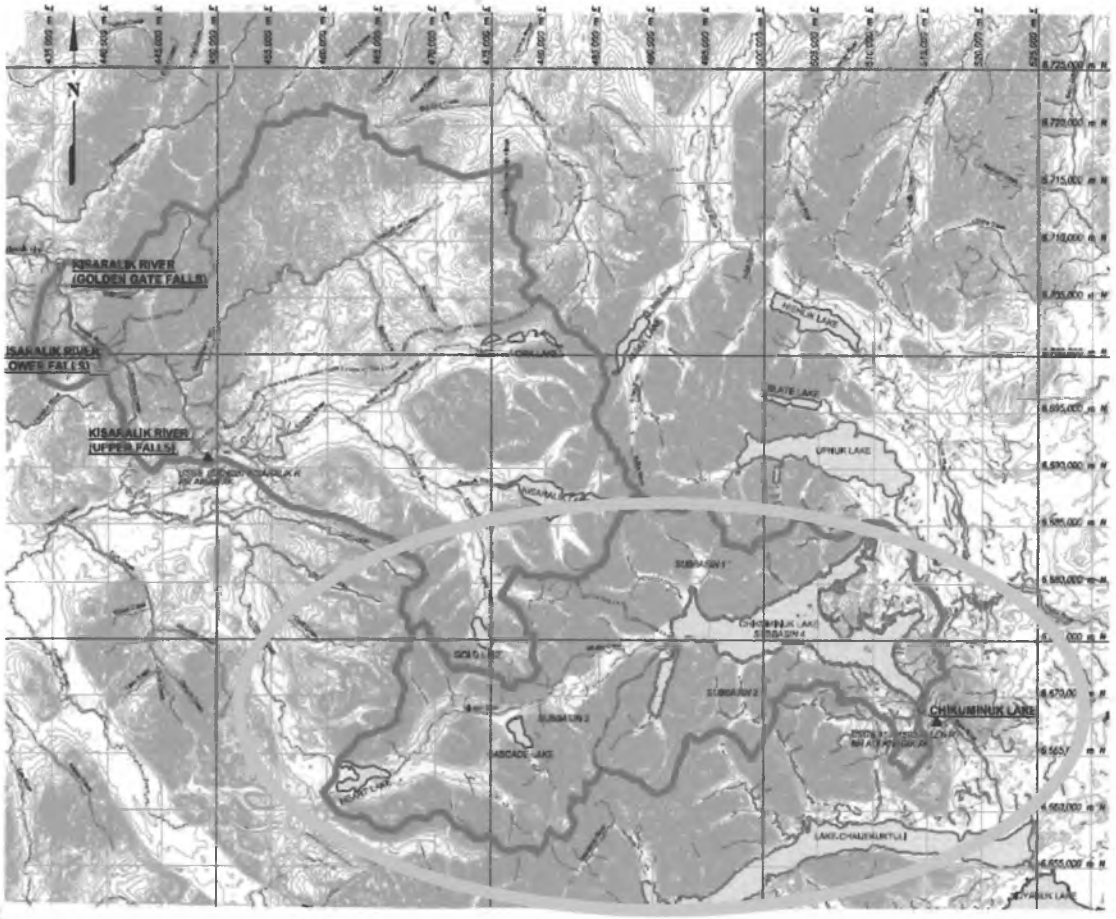
IV. Preferred Alternative

Site	*Construction Cost w Transmission in 2010 dollars*	*Design Cost*	*Total Project Cost*	*Estimated 20 year Cost/Kwh*	*Meets Bethel Sub-Region 2020+ Demand?*
Chikuminuk Lake Outfall	**$391.7 M**	**$91.3 M**	**$483 M**	**$0.70-0.58**	**Yes**
Kisaralik River Upper Falls	$386.4 M	$92.6 M	$479 M	$0.70-0.65	No
Kisaralik River Lower Falls	$329.5 M	$78.5 M	$408 M	$0.70-0.65	No
Kisaralik River Golden Gate	$305.5 M	$72.5 M	$378 M	$0.70-0.65	No



IV. Current and Next Tasks

- Completed Phase I- Hydro Reconnaissance & Feasibility Study - 1/2011
- Public and Nuvista Board Decision to Proceed Ahead
- Hiring Project Manager to develop scope, oversee work, lead process - 5/2011
- Initiate Federal FERC preliminary licensing and ROW Processes
- Begin standard AEA project Phase II process: Detailed Feasibility & Design



IV. Next Steps: Capital Request

Hydroelectric Energy Tasks	Lead Agency	Schedule	Funding	Cost (millions)
1a Detailed Feasibility, Geotech, FERC Licensing (PAD), Surveying, Engineering Plans…	Nuvista, FERC	2011 2014	State Private	$5.88M
1b Preliminary Engineering Design, Site Field Investigations, Specs	Nuvista AEA	2011 2016	State	$11.75M **$17.6M**
2. Transmission rights-of-ways, and land easements	Nuvista DOI/BLM	2012- 2015	DOI	$7.83M
3. Final Designs, Permitting, Modifications, and Bidding	Nuvista AEA	2016 2018+	AIDEA, BIA Bonds	$35.25M
4. Hydropower and transmission system project Construction	TBD	2018 2022	Mix, DOE Bonds	$391.7 M
(Range of -10 to +25%) Total Project Estimated Cost:	TBD	2012 2022	Mixture	*$460M to $630M* **$483M**

IV. FY2012 Capital Request

Region: Calista/AVCP Southwest Alaska

Project: Chikuminuk Hydroelectric Alternative Energy

Scope: Complete Detailed Feasibility Report, Site Field Investigations, Hydrologic Monitoring, Surveys, Permitting, Engineering Plans, FERC Licensing, and 35% Design Specifications (Standard AEA Phasing)

Cost: **$17,630,000.**



Chikuminuk Questions Answered

- How much local support do you have for your project?
  - Region wide support represents 56 villages, and numerous stakeholder letters to legislature.
- How much local matching funds/other do you have, expect, or may be available for project?
  - TBD with BIA, DOE, BLM, AIDEA, others. Nuvista invested >$650,000. private funds since '02
- What are the total costs of your project?
  - $483 Million is the engineering estimate, over the period of 2012 to 2022
- What is the funding plan over next five years? *See formal presentation*
- How many years work is funded in this appropriation and how many years remain?
  - Request is 2 years due to legislative approval timelines & seasonal work sequencing. Further fund requests in 3 parts noted in presentation (ROW acquisitions, final design, construction)
- What phase is project in now and what phase or phases addressed by this appropriation?
  - Phase II Feasibility and 35% Design
- Upon completion, what are expected costs to rate payers compared with current cost?
  - Anticipated conservative (high end) cost (without use for heat) = $0.58-$0.70 kwh;
  - Compared to current electrical costs = $0.60-$1.05 per kwh.
- Where is your project on the priority list of the area's regional energy plan?
  - Highest priority or #1 for region as a whole, documented option since 1975
- Has your project been vetted by AEA? If so, how?
  - AEA has funded approx. $2.28 million since '96, and been a partner on conceptual design.

City of Gustavus
P.O. Box 1
Gustavus, AK 99826
Phone: (907) 697-2451

May 5, 2011

Representative Bill Thomas

Subject: City of Gustavus Support for Debt Relief for Gustavus Electric Company

Reference: Capital Improvement Project Funding

By this letter the Gustavus City Council wishes to reiterate its policy of record in support of debt relief funding as proposed in the amount of $1.3 million for Gustavus Electric Company for the Falls Creek Hydroelectric Project. The policy for the City of Gustavus was set in Resolution 2008-12, which remains the policy of record in this matter. As a new resolution would require Council action at a later meeting, we hope you will accept this confirmation of our continued support.

Sincerely,

James Mackovjak
Mayor, City of Gustavus

Agenda Item 7/10/2008 – Motion passed to postpone until August 14, 2008 General Meeting
Agenda Item 8/14/2008 – Motion passed to postpone until August 21, 2008 Work Session
Agenda Item 9/11/2008 -

CITY OF GUSTAVUS, ALASKA

RESOLUTION No. 2008-12

A RESOLUTION BY THE CITY OF GUSTAVUS SUPPORTING GUSTAVUS ELECTRIC COMPANY'S APPLICATION FOR AVAILABLE GRANTS TO COMPLETE CONSTRUCTION OF AND PROVIDE DEBT RELIEF FOR THE FALLS CREEK HYDROELECTRIC PROJECT

WHEREAS, The Gustavus Strategic Plan lists reduction of electrical rates as a number one priority, and

WHEREAS, the citizens of Gustavus have pursued renewable energy resource development since 1980, and

WHEREAS the Regulatory Commission of Alaska requires all such grant money be used for the purpose of reducing electrical rates produced by the Falls Creek hydroelectric project, and

WHEREAS, all grant funding for the Falls Creek Hydroelectric project will be used for final construction and debt relief to reduce the high cost of electricity for Gustavus Citizens,

AND NOW THEREFORE BE IT RESOLVED, the City of Gustavus supports the application for and the use of grants for funding final construction of the Falls Creek Hydroelectric project and for funding all debts accrued during project completion.

PASSED and APPROVED by the Gustavus City Council this 11th day of September, 2008.

Kenneth L. Klawunder, Mayor

Sandi Marchbanks, Vice Mayor

Wayne Howell, Council Member

John Nixon, Council Member

Mike Atkins, Council Member

William Unkel, Council Member

Paul Berry, Council Member

Attest:
Kapryce Manchester, City Clerk

SYNOPSIS OF THE FALLS HYDROELECTRIC PROJECT

GUSTAVUS ELECTRIC COMPANY
GUSTAVUS, ALASKA

The Falls Creek Hydroelectric Project was completed and went online in July 2009. Since then, it has provided 96% of all electrical requirements for Gustavus. Since the project is complete, no additional funds are required to complete the project.

The project cost $8,400,000 to construct. Funding for the project consisted of:

Denali Commission	**$2,800,000**
USDA Rural Utility Service	**1,500,000**
State of Alaska Capitol Appropriations	**1,450,000**
Renewable Energy Fund Grant Program	**750,000**
Alaska Energy Authority Loans	**1,000,000**
Private Investor Loans	**300,000**
Equity	**400,000**

Previous to the completion of the Hydroelectric Project, Gustavus relied solely on diesel for electric generation. At the present cost of diesel fuel, the electric rate in Gustavus is now $.30/ per kWhr less than they would be if still on diesel. This reduction in the electric rates is handled through the Cost of Power Adjustment section of the Tariff. This is filed quarterly with the Regulatory Commission of Alaska.

The debt relief being sought here will repay $1,300,000 in outstanding loans for the project. The Alaska Energy Authority Loans have payments of $80,000 per year. The $300,000 in private loans are payments of $20,000 a year. Gustavus Electric Company at present sells 1,650,000 kWhr per year. This equals just over $.06 per kWhr to repay the debt. These loans are for 30 years and $100,000 per year would be leaving Gustavus for 30 years. At present this debt service is not included in the electric rate. Should the debt relief not be forthcoming, a new revenue requirement will have to be filed with the Regulatory Commission of Alaska to raise the rates by $.06 per kWhr to repay the loans.

This completed project has a Federal Energy Regulatory Commission License has received all permits and licenses required to be completed. This was a long arduous process. Gustavus is fortunate to reaping the benefits of its labor. The present cost of electricity in Gustavus is $.26 a kWhr with hydro power. With the dept relief requested here, the price would remain stable and not have to go to $.32 per kWhr.

This request for debt relief has the support of the Gustavus City Council per resolution #2008-12. This support is reiterated in a letter from the Mayor of Gustavus dated May 5, 2011.

House Energy Project Testimony – Whitman Lake Hydro

Mike Kline: Electric Division Manager for Ketchikan Public Utilities

My name is Mike Kline. I am the Electric Division Manager for Ketchikan Public Utilities and I am here to provide testimony regarding the Whitman Hydro Electric project.

Ketchikan Public Utilities (KPU) serves 7,600 electric residential, commercial and industrial accounts supporting a population of approximately 13,000 people. KPU generates approximately 40% of its own electrical energy and purchases 60% from the Southeast Alaska Power Agency (SEAPA). Both KPU and SEAPA generation is hydro electric with KPU diesel being used when hydro energy runs short.

Current and planned development in Ketchikan as well as heating conversions, driven by the rising cost of oil, results in a projection that Ketchikan may need as much as 30 million kilowatt-hours (kwh) of additional energy beyond the current consumption level in the next several years. This is an 18% increase over the 170,000 million kwh generated and purchased in 2010. Significant components of this increase are expansions and processing changes of fish processors, business expansion by Alaska Ship and Dry Dock, large heating conversions by the school district, a new community pool, and new AMHS admin and yard facility at Ward Cove as examples.

Efforts have begun to encourage other heating technologies to reduce this demand projection. Conservation and demand response mechanisms are being considered but additional generation is still needed.

The Whitman Hydro project will help address this supply need. Whitman is a 4.6 megawatt project that will supply an average 16 million kwh annually.

In 2011 to date, in spite of KPU and SEAPA starting with full hydro reservoirs ahead of the winter heating season, KPU and SEAPA were short of hydro energy by mid-April requiring 3.1 million kwh of diesel generation support to date. Ketchikan Public Utilities has just completed three weeks of diesel generation to meet local power consumption.

Whitman will displace over 1 million gallons of diesel annually. Just the fuel cost of producing this 16 million kwh with diesel would be 26 cents/kwh, to be passed to customers, at the current price of $3.93/gallon.

If constructed with the funding as currently proposed, the cost of production from Whitman would be in the 6 to 7 cents/kwh range. This is similar to KPU's current purchased power rate and would be neutral in terms of pressure on customer rates.

Total project cost is $19.4 million. Approximately $2.7 million has been spent to date to permit, license and develop the project. Of this, approximately $1 million has been local funds while $1.7 million have been from AEA Renewable Energy Fund Grants.

Pending approval of Whitman within the Capital Budget under consideration, the City will bond for the balance needed to complete the project and satisfy the 50% maximum State investment criteria of SB 46, version T. This funding will complete the project by 2016 and no further funding requests are anticipated.

The amount of $2.3 million has been granted to the project to date by the AEA Renewable Energy Grant Fund. Another $700K is under consideration from this fund in this budget cycle. On this basis, this project has been vetted by AEA.

Efforts to build this project started prior to 1997. As is typical with almost all hydro projects, the licensing process took well beyond the five year process defined. The FERC license was finally issued in February 2009 starting the 2 year clock to begin construction. An extension was requested by Ketchikan and granted by the FERC in late 2010 such that construction must now start by February of 2013. Only one such extension is granted by the FERC. Failure to start construction will result in loss of the license. Should construction not start by February, 2013, the only potential remedy would be a stay of the license by the United States Congress.

The license now requires completion of the project in early 2016. Assuming construction starts in 2013, operation is anticipated in late 2015.

The Whitman hydro plant will be constructed using an existing dam.

The transmission corridor requirements are minimal due to the plant location being less than ½ mile to KPU's transmission which also provides interconnection to the other SEAPA interconnected communities.

The Whitman project is near shovel ready. Engineering is nearly complete. The FERC license is in place. The equipment specifications are ready. KPU will initiate contracting efforts when funding is finalized.

This project is supported by the Ketchikan City Council and Ketchikan Gateway Borough and is the number one priority project for the Community of Ketchikan as agreed upon by the Ketchikan Gateway Borough, the City of Ketchikan, and the City of Saxman. Letters of support have also been issued by the

Ketchikan School District and OceansAlaska, a marine science center under development in Ketchikan.

Whitman has been identified by the IRP Working Group as one of the projects that should move forward ahead of completion of the IRP and is identified in that Resolution.

City of Ketchikan, Alaska d/b/a Ketchikan Public Utilities
Whitman Lake Hydroelectric Project
(FERC Project No. 11841)

Owner: **Ketchikan Public Utilities**
334 Front Street
Ketchikan, Alaska 99901

Contact: **Karl R. Amylon, General Manager**
(907) 228-5603
karla@city.ketchikan.ak.us



Whitman Lake Dam

Start of Construction:	**2011**
On-Line Date:	**2013**
Estimated Cost:	**$19,050,000**
Funding Request:	**$15,680,000**
Priority Ranking:	**1**

Project Description

The Whitman Lake Hydroelectric Project will be located approximately four miles from the City of Ketchikan. Ketchikan Public Utilities (KPU) proposes to install 4.6 MW of hydropower generating capacity at an existing dam, producing an estimated 16,000,000 kWh annually. Pipelines will lead to a new powerhouse containing two hydro generating units: Unit 1 will generate power with water that would otherwise be spilled; Unit 2 will generate power from water delivered to a fish hatchery located adjacent to the hydroelectric project.

The project will operate in cooperation with the Whitman Lake Hatchery, which is owned and operated by the Southern Southeast Regional Aquaculture Association (SSRAA).

Project Benefits

Development of the Whitman Lake Hydroelectric Project is critical to Ketchikan's continued economic sustainability as it provides the community with a source of reliable and reasonably priced hydroelectric power. The project will:

- Displace an estimated average of 1,100,000 gallons of diesel fuel annually, which equates to over $3,000,000 per year at today's price of $2.81 per gallon.
- Replace and improve the water supply system for the SSRAA Whitman Lake Hatchery, helping SSRAA to fulfill its mission of enhancing salmon fisheries, supporting $46 million in economic output and an estimated 420 jobs in Southeast Alaska. (McDowell Group, 2008)
- Provide increased capacity to support new construction and customer conversions from oil to electric heat.
- Provide a more reliable source of water for the Ketchikan Gateway Borough's Mountain Point Water Utility through improved water management in the watershed.
- Reduce reliance on diesel fuel to generate electric power, resulting in less greenhouse gas emissions
- Serve as an additional generating resource to the Ketchikan/Wrangell/Petersburg interconnected system (Southeast Alaska Power Agency, SEAPA)

The Need for Power

KPU is near-term capacity short and anticipates being energy short within four to seven years (excluding diesel generation). Assuming a five percent (5%) growth rate, it is anticipated that excess energy available from the Southeast Alaska Power Agency (SEAPA) will be fully subscribed in 2015. There are no other shovel-ready generation projects identified in the SEAPA region to supply additional energy and capacity to Ketchikan within this time frame. Any other new generation project is reasonably more than ten years away.

Ketchikan's load growth has increased over the last five years. In the last two years, KPU has experienced a three percent (3%) growth rate, normalized against temperature variation. Preliminary energy data from just two planned projects - the Ketchikan Gateway Borough Aquatic Center and the Alaska Ship and Drydock Assembly Building - indicate that these projects alone may require 2 million kWh annually, adding more than one percent (1%) to Ketchikan's current annual energy demand. Based on these and other identified projects, as well as routine construction and heating conversions, KPU anticipates a four to five percent (4%-5%) energy consumption growth rate through 2011.

Demand peaked at 30.5 megawatts in December 2009. KPU's available capacity at the time, less diesel, was 32 megawatts due to low hydro reservoir elevations. Whitman Lake's hydrology fits well with Ketchikan's winter peaking needs and the Whitman Lake Hydroelectric Project will add approximately four megawatts of capacity during these critical cold periods.

Construction of the Whitman Lake Hydroelectric Project will support the projected energy growth and peaking demand of Ketchikan, as well as being an added resource connected to SEAPA's Intertie with Wrangell and Petersburg.

Schedule and Cost Estimate

The Federal Energy Regulatory Commission (FERC) issued a license for the Whitman Lake Hydroelectric Project on March 17, 2009, and has granted KPU a two-year extension to commence construction. Project construction must begin no later than March 16, 2013 and be completed by March 16, 2016.

Phase	Description	Schedule	Cost Estimate
I	Reconnaissance studies	Completed	$ 470,000
II	Licensing & feasibility studies	Completed	$ 600,000
III	Final design and permitting	2008 – 2011	$ 1,760,000
IV	Construction and project startup	2011 – 2013	$16,220,000
Total			$19,050,000

Approval has been granted by the Forest Service for construction of project facilities within an inventoried roadless area. Final design drawings are being prepared for FERC and agency approval. Construction is expected to begin in 2011, with the project coming on-line in 2013.

Funding Request

In 2009, the Alaska Energy Authority approved a $1,300,000 grant for the project design. Although the Alaska Legislature approved a $16,680,000 appropriation as part of the 2011 state capital budget, Governor Parnell vetoed all but $1,000,000 of the construction funding. The City of Ketchikan d/b/a Ketchikan Public Utilities is again seeking an additional $15,680,000 to fund the remainder of the project.

Whitman vs. Other Alternatives

There are no other projects that may be added to the SEAPA interconnected system that are licensed and as near to shovel-ready as the Whitman Lake Hydroelectric Project. The environmental studies, permitting and licensing process for Whitman took twelve years. Even after identification of the next FERC jurisdictional resource, it will be at least ten years before another project would be operational. Ketchikan's and SEAPA's available renewable energy resources will be exceeded before that time.

While KPU fully supports the creation of an Integrated Resource Plan (IRP) for Southeast Alaska, Ketchikan cannot wait for completion of the IRP before moving ahead with construction of the Whitman Lake Hydroelectric Project. If construction does not begin by March 2013, Ketchikan loses its FERC license, many years of planning and a valuable renewable energy resource for Southeast Alaska.

The alternative to construction of the Whitman Lake Hydroelectric Project is increased operation of KPU's diesel generators. Not only are the emissions harmful to the environment, but also the cost of diesel generation is likely to remain high in comparison with hydroelectric generation. In addition, new National Emissions Standards for Hazardous Air Pollutants issued by the EPA have the potential to greatly increase the cost of diesel generation.

OceansAlaska MARINE SCIENCE CENTER

October 28, 2009

Mr. Karl Amylon
General Manager
Ketchikan Public Utitities
2930 Tongass Avenue
Ketchikan, AK 99901

Mr. Amylon,

Ketchikan Public Utilities (KPU) Whitman Lake Hydroelectric Project would benefit OceansAlaska in several aspects in the development of a Marine Science Center in Ketchikan. KPU shares OceansAlaska's vision for sustainable economic growth and the development of renewable energy resources, and the Whitman Project would support OceansAlaska's operations in marine research, education, exhibition, and shellfish development. OceansAlaska strongly supports and advocates the Whitman Lake Hydroelectric Project.

The Whitman Project would enable OceansAlaska to be powered by a clean, renewable energy source. While OceansAlaska envisions conducting research into alternative energy resources such as tidal and wave generation in the future, hydroelectric power is a proven, reliable, efficient, and renewable energy source. The additional capacity from the Whitman Project will help meet our energy demands and allow the Marine Science Center to be powered by clean, renewable energy sources- reducing our greenhouse emissions and assisting the Center in becoming a beacon of sustainable growth and resource stewardship.

The cost of energy is critical to the success of the Marine Science Center and the growth in the shellfish industry. Decreased electric costs will help attract private investment and new economic development in the shellfish industry, which has the potential to produce 400 jobs and $50M annually. The Whitman Project and decreased reliance on expensive diesel will be a critical component in the success of that industry in Ketchikan.

Sincerely,

David Mitchel
General Manager

P.O. BOX 6383 • KETCHIKAN, ALASKA 99901 • PH. (907) 225-7900 • FAX. (907) 247-7900

- Use existing infrastructure, resulting in a smaller environmental footprint vs. constructing infrastructure for another energy source.
- Provide local jobs during construction.
- Increase electrical system reliability.

The Project will operate in conjunction with the Whitman Lake Hatchery, and will improve the reliability and longevity of its water supply. The hatchery is owned and operated by the Southeast Regional Aquaculture Association (SSRAA). An economic impact study reports that, in 2007, SSRAA was responsible for producing $47 million in economic output in Southern Southeast Alaska.

The Borough's Mountain Point water utility system, which draws its source water from Whitman Creek, will also benefit from construction of the hydroelectric project. Its operation includes year-round instream flow releases and a monitoring program that will enable KPU to observe and manage the water in the Whitman Creek watershed on a real-time basis. This will ensure a more steady and predictable flow to the Mountain Point water utility. The utility provides potable water for 286 homes, and is expected to increase to approximately 350 homes upon completion of an unrelated project now underway.

In light of the many benefits this project brings to the residents of the Ketchikan Gateway Borough, the Assembly has expressed its strong support for the efforts of Ketchikan Public Utilities to fund and construct a hydroelectric power facility at Whitman Creek.

Sincerely,

Michael J. Painter for Mayor Kiffer

Dave Kiffer
Mayor
Ketchikan Gateway Borough

KETCHIKAN GATEWAY BOROUGH
1900 First Ave Suite 115 • KETCHIKAN, ALASKA 99901
• 907/228-6605 • Fax 907/228-6697
www.borough.ketchikan.ak.us

OFFICE OF THE BOROUGH MAYOR

November 3, 2009

Mr. Butch White
Grants Administrator
Alaska Energy Authority
813 West Northern Lights Blvd
Anchorage, Alaska 99503

Dear Mr. White:

In March 2009, the Federal Energy Regulatory Commission issued a license to Ketchikan Public Utilities (KPU) for development of a hydroelectric power facility at Whitman Lake. The proposed Whitman Lake Hydroelectric Project (Project) utilizes an existing dam and will generate power with water that would otherwise be spilled. It will have a capacity of 4.6 megawatts and produce an estimated 16,000,000 kilowatt-hours annually.

Development of the Project will provide a long-term source of clean renewable energy and will provide numerous other benefits to the Ketchikan Gateway Borough and its residents. It will:

- Provide additional capacity to meet peak energy demand as customers convert from oil to electric heat. For example, the Ketchikan Gateway Borough School District has notified KPU of plans to convert its existing oil heating systems to electric boilers. This conversion alone will add as much as 6 megawatts of load to KPU's system, a nearly 20% increase over the 2008 cold weather peak load of 30.4 megawatts. The added capacity provided by the Project will help support this significant increase and avoid the need for diesel generation to meet peak loads.

- Provide a clean, renewable source of energy and reduce greenhouse gas emissions. It is estimated that the Project will displace an estimated average of 1,080,000 gallons of diesel fuel annually, over the lifetime of the project.

- Reduce the cost of energy, attracting new economic development and supporting existing industry, improving quality of life for customers facing high energy costs from diesel generation.

Ketchikan Gateway Borough School District
Robert Boyle, Superintendent
333 Schoenbar Road
Ketchikan, AK 99901
phone 907-247-2109; fax 907-225-3870
boyler@kgbsd.org

October 27, 2009

To Whom It May Concern,

Operational costs for the Ketchikan Gateway Borough School District comprise a hefty part of our annual budget. In a typical winter we consume 260,000 gallons of diesel to heat 7 buildings in educating 2,130 students. The cost of fuel varies from $520,000 to over $1,016,000. That equates to approximately 4% of our total budget.

Cost estimates indicate that duel-burning electric/ diesel heaters could save the District as much as $400,000 annually, saving a potential of 250,000 gallons of diesel. Funding patterns for schools suggest that as energy costs rise, failure to convert to the lower cost electric burners may cost the District five teaching positions.

Disregarding the cost of diesel, the possibility of exchanging a carbon-based fuel for a clean energy like hydro-produced electricity is a goal of the District. It is our wish to reduce our consumption of fuels that add to environmental concerns.

The Ketchikan Public Utilities is a very reliable provider of energy. They have a vision of the future that supports the school district and will provide us with a stable source of clean energy well into the future. We are strongly in support of the Whitman Hydroelectric Project. It may well be essential to our continued level of performance in providing the community an educational program of high quality.

Sincerely,

Robert Boyle
Superintendent

Resolution No. 2011-01

Advisory Work Group for the Southeast Alaska Integrated Resource Plan

Whereas: The Alaska Energy Authority is conducting a Southeast Integrated Resource Plan as directed by the 26th Alaska State Legislature.

Whereas: The Southeast Integrated Resource Plan will not be completed until January 2012.

Whereas: Many citizens and businesses in the Southeast are suffering severe economic impact from the high cost of oil contributing to very high electricity and space heating costs.

Whereas: The following list of projects will help alleviate the impacts of the high cost of oil on citizens and businesses in the Southeast.

Whereas: The following list of projects have been under development for many years, have completed or nearly completed exhaustive FERC licensing or similar process, and have broad public support.

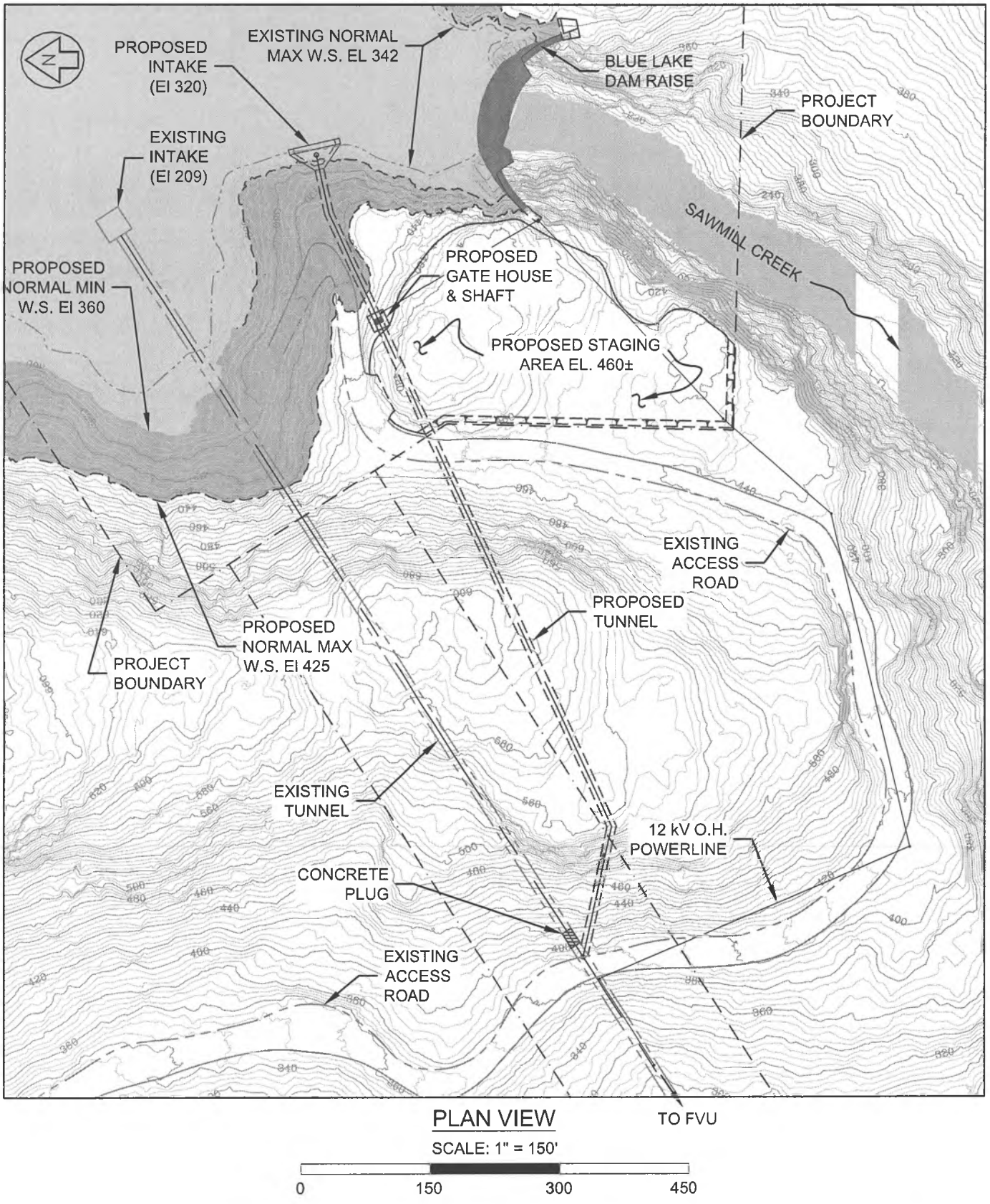
NOW THEREFORE BE IT RESOLVED THAT The Advisory Work Group for the Southeast Alaska Integrated Resource Plan unanimously requests that AEA accelerate consideration of the below listed projects and that they not be delayed as AEA conducts the SE Integrated Resource Plan project.

NOW THEREFORE BE IT FURTHER RESOLVED THAT The Advisory Work Group for the Southeast Alaska Integrated Resource Plan unanimously requests that the 27th Alaska State Legislature provide funding for the continued development of the following projects in alphabetical order to provide relief to the citizens and businesses in Southeast Alaska from the high cost of electricity and space heating.

- Blue Lake Hydro
- Kake to Petersburg Intertie
- Metlakatla to Ketchikan Intertie
- Reynolds Creek Hydro
- Thayer Creek Hydro
- Whitman Lake Hydro

By: _____ Date: March 21, 2011

Rick Harris, Executive Vice President, Sealaska Corporation
Chairman, Southeast Alaska Integrated Resource Plan Advisory Work Group



PLAN VIEW

SCALE: 1" = 150'

0 150 300 450

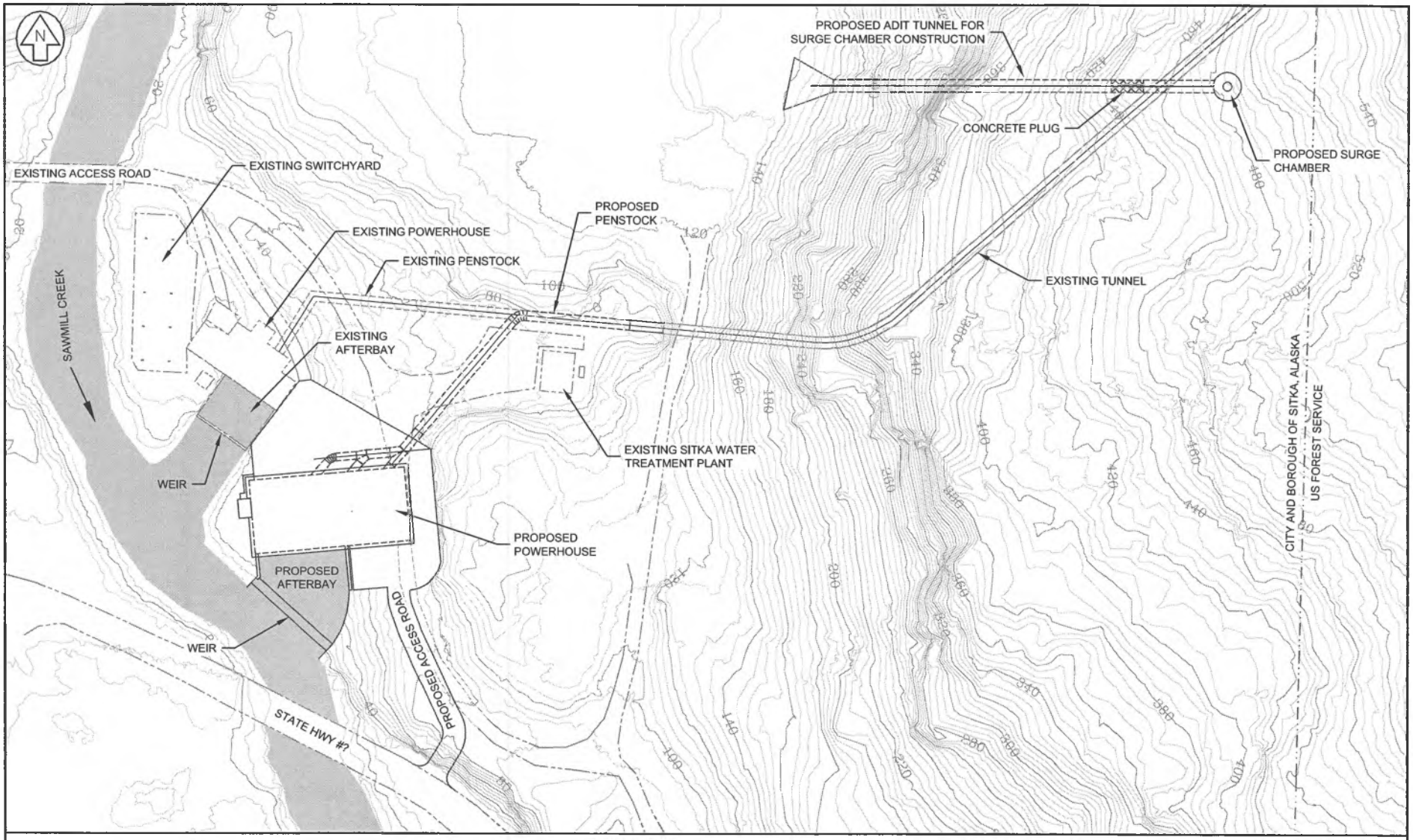
Dam Intake Area Plan

BLUE LAKE EXPANSION PROJECT

CITY AND BOROUGH OF SITKA, ALASKA

FIGURE XX

HATCH ACRES



Powerhouse Site Plan
BLUE LAKE EXPANSION PROJECT
CITY AND BOROUGH OF SITKA, ALASKA

FIGURE XX
HATCH ACRES

Kodiak Electric Association, Inc.

Terror Lake Unit 3 Hydroelectric Project – Facility Expansion

Kodiak Electric Association, Inc (KEA) Vision Statement: ***Endeavor to produce 95% of energy sales with cost effective renewable power solutions by the year 2020.***

Project Description

The Terror Lake Unit 3 Hydroelectric Project – Facility Expansion consists of the installation of a third hydroelectric turbine and related infrastructure capable of producing and transmitting an additional 11.25 Megawatts (MW) in the existing Terror Lake Hydroelectric Facility. Terror Lake Hydroelectric Facility is KEA's existing hydroelectric power plant with two turbine units that supply about 80% of KEA's power. The original engineers of the Terror Lake facility had the foresight to design the facility for the expansion to three turbines. The original design assumed the day would arrive when additional capacity would be required. That day has arrived. Kodiak's growing electric demand has surpassed the current capacity of Terror Lake Hydroelectric Facility. Expanding the capacity by adding another 11.25 MW turbine generator will enhance the stability of KEA's isolated grid system, allowing additional forms of renewable energy to be integrated and Kodiak's dependence on diesel fuel to be minimized. The third hydroelectric turbine at Terror Lake is the cornerstone necessary for KEA to achieve its renewable energy vision.

Project Benefit

As KEA strives to implement more renewable resources, the future must include a generation source that increases our capacity and system stability. Hydroelectric power is a unique form of renewable energy in that it is a dispatchable base load that can respond quickly to system demand. It is this key attribute of hydropower that would allow KEA to integrate more variable sources of renewable energy, like wind, onto its isolated grid.

The Terror Lake reservoir acts like a battery for KEA's Pillar Mountain Wind Project Phase I, as well as for future renewable energy projects like Pillar Mountain Wind Project Phase II. An energy storage system is necessary for the variability of wind energy. The reliability of wind energy on a minute-to-minute basis is uncertain because winds could be gusting one minute and then suddenly calm. This unpredictability requires KEA to have sufficient capacity available to meet load requirements. Currently, diesel generation is utilized to meet KEA's increased load demand, which is neither economical nor environmentally friendly.

Due to grid stability under KEA's current configuration, the contribution of renewable energy resources has reached its maximum. An additional 11.25 MW of power provided by a third hydroelectric turbine would supply the necessary capacity and enhanced frequency stability to assist in supporting additional sources of variable renewable power, like Pillar Mountain Phase II, which is the addition of three more

1.5 MW wind turbines. Thus, Terror Lake Hydroelectric Facility is the cornerstone for additional renewable energy. Without the expanded hydro capacity, the addition of future variable renewable energy on KEA's system will not be feasible.

The third hydroelectric turbine has many other straight forward benefits which are as follows:

- Peak Load Capability – Currently, KEA's peak load is over 26 MW, which cannot be met with the two Terror Lake hydroelectric units. An additional unit will allow KEA to cover peak loads without utilizing diesel fuel.
- System Redundancy – The current Terror Lake hydroelectric units are over 27 years old. They require more maintenance time to keep them reliable. The third hydroelectric turbine would bring redundancy to allow KEA time to properly maintain the units during low electric load seasons and not operate with diesel power.
- Greater Efficiency – Operating with a brand new hydroelectric turbine, along with operational efficiencies, will allow Terror Lake to produce an estimated additional 2.9 million kWh per year.
- Grid Stability –Three Terror Lake hydroelectric turbines enhances KEA's grid stability, saves future distribution costs, and allows KEA to add more variable wind power to the system, thereby providing better quality electricity.

Alaska Energy Authority (AEA) Review

This project is part of the Alaska Renewable Energy Fund Round IV. It was ranked #6 by AEA and had a very positive benefit to cost ratio of 2.21.

Economic Analysis

The Terror Lake Unit 3 Hydroelectric Project has a great economic benefit to the community of Kodiak, and that benefit continues to grow as the price of diesel rises. As stated above, the benefit to cost ratio is 2.21. The benefit to cost ratio is calculated on only the direct benefits of the project. The greatest benefits are what it brings in the future to our community. As stated earlier, this project will allow for the expansion of wind power on KEA's generation system. Once Pillar Mountain Phase II is added, the combined savings at today's fuel price of the third hydroelectric turbine at Terror Lake with the additional wind power would be almost 17 cents per kilo-watt hour (kWh) for 16.7 million kWh per year. At the current fuel price of $3.51 per gallon, the net savings to Kodiak would be approximately $2.8 million in the first year.

Community Support

After KEA's great success with Pillar Mountain Phase I, the community is very excited about the installation of Pillar Mountain Phase II. To accomplish this, the third hydroelectric turbine is integral. AEA gave the maximum score to KEA for community support during their evaluation. KEA has general community support as well as resolutions of support from the Kodiak Island Borough, the City of Kodiak, the U.S. Coast Guard Base, and the Kodiak Chamber of Commerce.

Current Status and Schedule

The project is currently underway. The system substation upgrade necessary for this project is in the construction phase. The design engineering for the turbine generator is underway with a purchase scheduled for this year in early fall. Due to long lead times for these types of units (16 months), the actual installation will be completed during the summer of 2013. KEA has received waivers from the U.S. Fish and Wildlife Service (USFWS), specifically their Endangered Species Act (ESA) Branch, National Marine Fisheries Service (NMFS), US Army Corps of Engineers (USACE), Alaska Department of Fish and Game (ADF&G), State Historic Preservation Officer (SHPO), and the Alaska Department of Natural Resources (DNR) Water Resources Division stating that there are no environmental concerns for the project. This allows KEA to move forward with the application for the FERC permit. FERC has seen no issues with the project and estimates a permit should be finalized by early 2012.

Funding Source and Cost

The funding for this project will be a combination of grants from the Alaska Renewable Energy Fund, General State Appropriation Grant, and KEA. KEA has secured low interest financing through a federal clean renewable energy bond program for the remainder of the funding. From the current cost estimates, KEA costs and state funding are at approximately 50/50. The total cost of the project is estimated at $15,274,550.

Conclusion

KEA is excited about this project and all the benefits that it will bring our community. The third hydroelectric turbine at Terror Lake will bring efficiency, redundancy, peak load capability, and a platform to build off of for expanding wind generation on Pillar Mountain. The benefits to the community will be lower costs, renewable power, and a stable cost platform for the future. Terror Lake Hydroelectric Facility was built with this project in mind, and the time is now to add it to the system to achieve KEA's vision: "Endeavor to produce 95% of energy sales with cost effective renewable power solutions by the year 2020."

FY2012 CBS LEGISLATIVE CAPITAL PROJECT REQUEST

Project Title: EXPANSION TO MAXIMUM CAPACITY OF THE BLUE LAKE HYDROELECTRIC PROJECT

Total Project Cost:	**$100,000,000 (100%)**
Funding already secured:	**$20,500,000 State FY2009/2010 (20.5%)**
FY2012 State funding request:	**$28,500,000 (28.5%)**
FY2012 Federal funding request:	**$12,500,000 (12.5%)**
Additional Funding Required/Outstanding:	**$38,500,000 municipal (38.5%)**

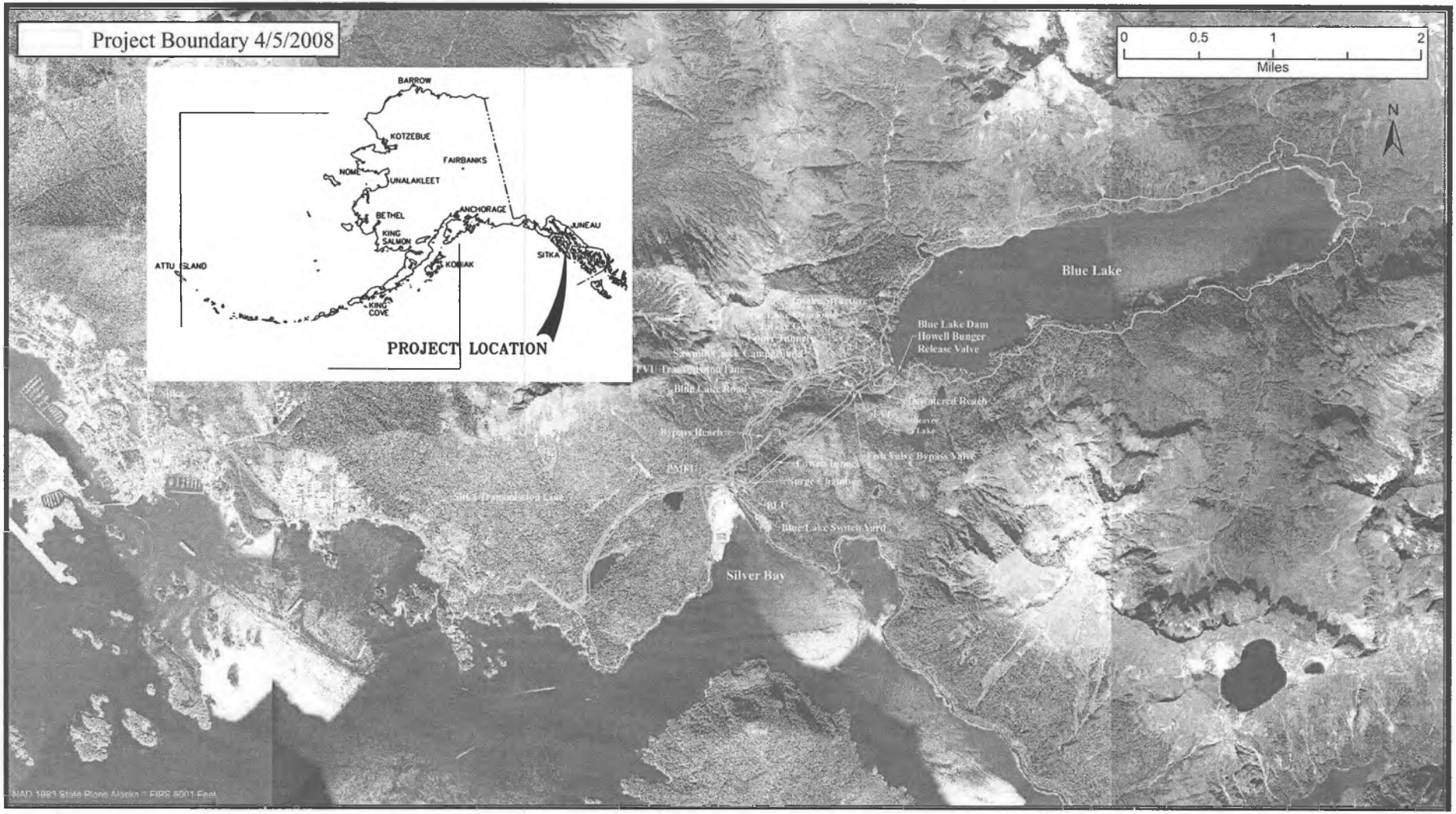
City and Borough of Sitka Federal Tax ID Number: 92-0041163

The Sitka Blue Lake Hydroelectric Project is the Number One Highest Priority of the City and Borough of Sitka and the Sitka community. It has been studied by AEA, Southeast Conference and the local CBS utility since the 1980's and is recommended for full City and Borough of Sitka funding by AEA's Southeast Integrated Resources Plan Advisory Committee. The City and Borough of Sitka requests **$28,500,000 further assistance from the State of Alaska to fully fund the State's interest in the $100 million Blue Lake Hydroelectric Project Expansion,** which has increased due to an increase in project costs. Sitka will match each dollar of State assistance with the goal of ultimately financing the project 50 percent with State funds and 50 percent municipal funds if Federal funding is not forthcoming.

The scope of the Blue Lake Hydroelectric Project is to raise the height of the existing dam by 83 feet to elevation 425 feet, construct a new intake structure and a new section of penstock to supply a new powerhouse to be constructed adjacent to the existing powerhouse. The new powerhouse will replace the existing two 3MW generators with three 5.3MW generators. This will increase installed capacity from 7.5MW to 17MW, with an increase in Sitka's average total annual hydroelectric energy production by about 32,000 MWh or 29 percent of system capacity. Sitka is aggressively engaged in the preliminary engineering and licensing phase of this expansion of its hydroelectric capability at Blue Lake. The goal is to complete the construction and bring this new hydroelectric capacity on line in 2015.

Sitka has exhausted its hydroelectric resources. Load studies predict up to 5 million gallons of fuel oil for the use of supplemental diesel generators will be required prior to completion of the Blue Lake Expansion Project. Sitka homes and businesses are moving from the high cost of heating oil to clean, renewable hydroelectric energy. The total energy requirements of Sitka are currently met by about 80 percent oil and 20 percent hydroelectric energy resources. Although system load growth declined for FY'10 due to milder weather and stable fuel oil costs, annual KWh sold in FY'09 increased by 3.36 percent over FY'08, which follows load increases of 4.5 percent in FY'08, and 8 percent in FY'06. Base-case load studies have predicted annual load growth at approximately 1.2 percent, yet the electric system has seen unprecedented growth, averaging 3.8 percent annually since 1973. The existing hydroelectric generation is now operating at over 96 percent capacity. It is expected that volatile oil prices will continue the trend of significant system load growth and that any new hydroelectric capacity will be fully utilized to displace oil for space and water heating.

Despite CBS actively promoting energy conservation, hydroelectric energy usage is escalating at a rate that will shortly exceed system capacity. Therefore, Sitka is actively working to complete the project as quickly as possible and is pledging up to 50 percent of the total project costs.


Project Boundary 4/5/2008
BARROW
KOTZEBUE
FAIRBANKS
NOME
UNALAKLEET
BETHEL
ANCHORAGE
JUNEAU
KING SALMON
ATTU ISLAND
KODIAK
SITKA
KING COVE
PROJECT LOCATION
0 0.5 1 2
Miles
N
Blue Lake
Blue Lake Dam
Howell Bunger
Release Valve
Blue Lake Road
Bypass Reach
PMF
Silver Bay
Blue Lake Switch Yard
NAD 1983 State Plane Alaska 1 FIPS 5001 Feet

Southeast Conference

Welcome Legislators!

Thank you all for your continued leadership and hard work on behalf of our region. Southeast has made great strides in many areas – but especially on the energy front. The establishment of the renewable energy grant fund and subsequent funding has seen unprecedented investment in many projects and the creation of HB 306 and SB 220 (with the southeast energy fund) will help the region achieve its quest toward energy security and diesel-independence.

This year's main task will be the development of the Southeast Integrated Resource Plan (IRP). This IRP will be one of the most important documents produced for the region since our 1997 Intertie System Plan (and subsequent updates in 2003/2005) and will provide guidance to communities, utilities – and the State of Alaska as energy infrastructure gets planned for and constructed in our region.

But while we wait for the conclusions of the IRP, there are a number of projects that have been recognized throughout the region that need funding now. The following list of energy projects are offered for your consideration (listed in alphabetical order):

- Blue Lake Hydro - The scope of this project is to raise the height of the existing dam by 83 feet construct a new intake gate and a new section of power tunnel to supply a new powerhouse to be constructed adjacent to the existing powerhouse.

- Kake to Petersburg Intertie – This project has entered the NEPA phase and is funded through the environmental process. The community of Kake is seeking funding so that the project can begin construction as soon as the intertie is designed and permitted (estimated spring 2012).

- Metlakatla to Ketchikan Intertie – The combined hydros at Chester Lake and Purple Lake generate surplus power that could be dispatched to Ketchikan or to Kake via the Southeast Alaska Power Agency (SEAPA) intertie system if extended to Metlakatla. This project is under construction but needs funding for the segment between Annette Island and Ketchikan.

- Reynolds Creek Hydro – This project is officially in the construction phase. Good progress has been made in the creation of a project management team that is now updating costs and performing "value-engineering" tasks. It is anticipated that gap funding will be sought to cover construction-inflation costs that have increased since the project began.

- Thayer Creek Hydro – This hydro is the known solution to Angoon's need for renewable energy development. The Forest Service signed the EIS Record of Decision for the Thayer Creek Hydroelectric Project in May 2009. Kootznoowoo has the rights to develop the project, and IPEC is the certificated and regulated electric provider for Angoon.

- Whitman Lake Hydro - Development of the Whitman Lake Hydroelectric Project is critical to Ketchikan's continued economic sustainability as it provides the community with a source of reliable and reasonably priced hydroelectric power. The project will operate in cooperation with the Whitman Lake Hatchery (owned by Southern Southeast Regional Aquaculture Association).

For more information, contact the communities directly or Southeast Conference Energy Coordinator Robert Venables at energy@seconference.org.

P.O. Box 21989 612 W. Willoughby Avenue, Suite B, Juneau Alaska 99802
(907) 523-4353 (907) 463-5670 Fax info@seconference.org
www.seconference.org

Resolution No. 2011-01

Advisory Work Group for the Southeast Alaska Integrated Resource Plan

Whereas: The Alaska Energy Authority is conducting a Southeast Integrated Resource Plan as directed by the 26th Alaska State Legislature.

Whereas: The Southeast Integrated Resource Plan will not be completed until January 2012.

Whereas: Many citizens and businesses in the Southeast are suffering severe economic impact from the high cost of oil contributing to very high electricity and space heating costs.

Whereas: The following list of projects will help alleviate the impacts of the high cost of oil on citizens and businesses in the Southeast.

Whereas: The following list of projects have been under development for many years, have completed or nearly completed exhaustive FERC licensing or similar process, and have broad public support.

NOW THEREFORE BE IT RESOLVED THAT The Advisory Work Group for the Southeast Alaska Integrated Resource Plan unanimously requests that AEA accelerate consideration of the below listed projects and that they not be delayed as AEA conducts the SE Integrated Resource Plan project.

NOW THEREFORE BE IT FURTHER RESOLVED THAT The Advisory Work Group for the Southeast Alaska Integrated Resource Plan unanimously requests that the 27th Alaska State Legislature provide funding for the continued development of the following projects in alphabetical order to provide relief to the citizens and businesses in Southeast Alaska from the high cost of electricity and space heating.

- Blue Lake Hydro
- Kake to Petersburg Intertie
- Metlakatla to Ketchikan Intertie
- Reynolds Creek Hydro
- Thayer Creek Hydro
- Whitman Lake Hydro

By: _____ Date: March 21, 2011

Rick Harris, Executive Vice President, Sealaska Corporation
Chairman, Southeast Alaska Integrated Resource Plan Advisory Work Group

SOUTHEAST ALASKA ELECTRICAL INTERTIE



Southeast Conference

HATCH ACRES

2/23/09

ARCTEC
Alaska Railbelt Cooperative Transmission & Electric Company

Chugach Electric Association
City of Seward Electric
Golden Valley Electric Association
Homer Electric Association
Matanuska Electric Association

c/o Matanuska Electric Association, Inc.
Post Office Box 2929, Palmer, AK 99645

May 5, 2011

Representative Eric Feige, Co-Chair
Representative Paul Seaton, Co-Chair
House Resources Committee
House of Representatives
State Capitol
Juneau, Ak 99801-1182

Representative Neal Foster, Co-Chair
Representative Lance Pruitt, Co-Chair
House Energy Committee
House of Representatives
State Capitol
Juneau, Ak 99801-1182

Dear Co-Chair Feige, Co-Chair Seaton, Co-Chair Foster and Co-Chair Pruitt:

I am writing to you on behalf of the Alaska Railbelt Cooperative Transmission and Electric Company (ARCTEC). ARCTEC was formed by five Railbelt electric utilities to collectively address Railbelt energy needs and challenges.

The five utilities include Chugach Electric Association, Matanuska Electric Association, Homer Electric Association, Golden Valley Electric Association and the Seward Electric System. While declining initial membership in ARCTEC, Anchorage Municipal Light & Power has committed to participate and provide ongoing support.

The idea of forming a regional electric organization for the Railbelt began several years ago with the Railbelt Electric Grid Authority (REGA) study initiated by the Alaska Energy Authority. Early in this process it was recognized that there were several significant benefits to a regional organization. These include coordinated operation of the Railbelt transmission system, economic dispatch of regional generation, regional resource and transmission planning and achieving economies of scale by jointly developing new generation and transmission projects.

After the REGA study was completed in September 2008, a joint utility task force was formed to investigate the formation of a regional entity. The work culminated in the incorporation of ARCTEC on January 7, 2011.

An early task for ARCTEC was to identify and prioritize energy projects that would strengthen the Railbelt transmission grid, increase the supply of energy and enhance fuel supply and deliverability. The prioritized projects were the core of ARCTEC's legislative agenda and includes requests for State financial assistance for these capital projects.

The projects which ARCTEC is requesting funding assistance for are listed on the attached sheet. The projects can be grouped into three categories:

- Generation projects that increase the supply and reliability of energy.
- Transmission projects that strengthen the transmission grid to improve reliability, and the ability to transfer energy, by adding new facilities or upgrading existing facilities, some of which have been in service for over 50 years.
- A gas pipeline project to ensure gas can be reliably delivered to power plants when needed to meet peak demands.

These projects will increase the ability of the Railbelt electric utilities to reliably and economically meet the energy needs of the approximate 500,000 citizens that populate the Railbelt.

Your assistance in helping to secure the passage of a capital budget that includes these energy projects is needed and greatly appreciated.

Sincerely,

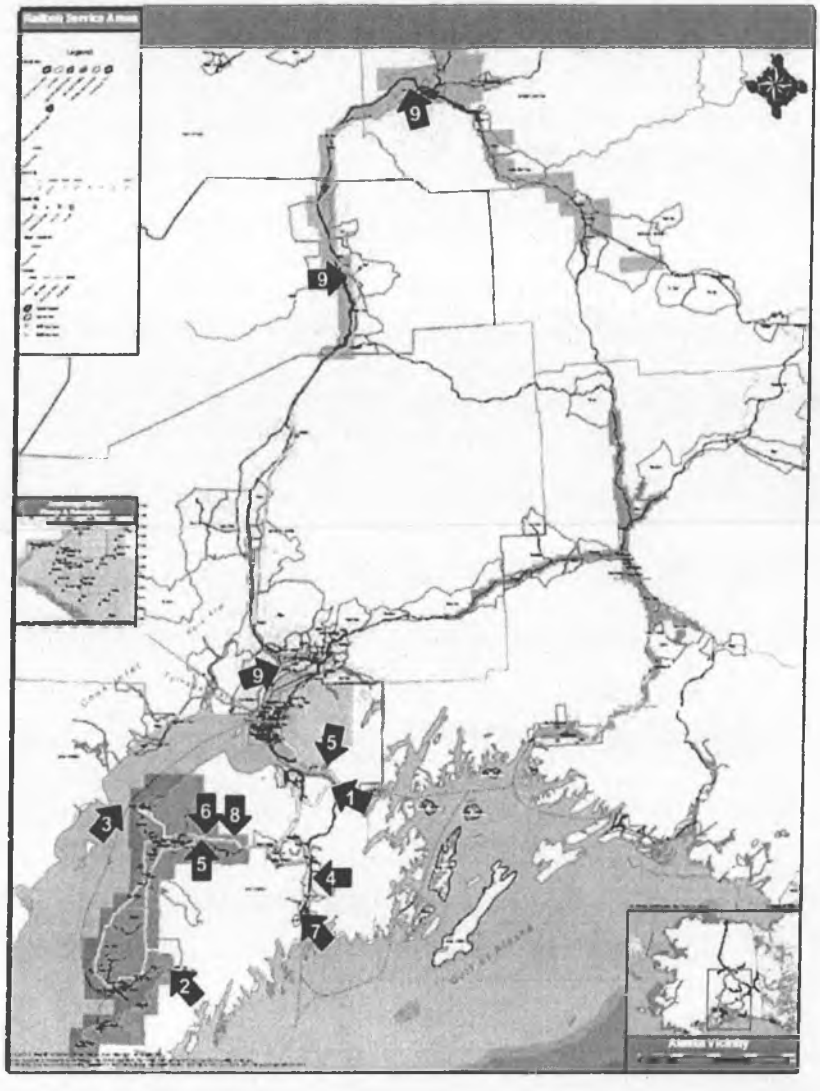


Rick Schikora
Chairman

ARCTEC (Alaska Railbelt Cooperative Transmission and Electric Company)
Energy Projects in CSSB 46 Version T, Section 4 - Projects

Project List

1. Anchorage to Quartz Creek Transmission Maintenance and Repair ($25,000,000)
2. Battle Creek Diversion Project ($15,000,000)
3. Cook Inlet Gas Gathering System Remodel ($2,000,000)
4. Dave's Creek to Seward Transmission Line Completion ($1,500,000)
5. Girdwood and Sterling Substation Improvements ($4,000,000)
6. Quartz Creek to Soldotna Transmission Maintenance and Repair ($10,000,000)
7. Seward Power Plant Integration ($4,000,000)
8. Soldotna to Quartz Creek Transmission Study Design and Permitting ($5,000,000)
9. Teeland to Healy Substation Improvements and Repair ($5,000,000)



ARCTEC (Alaska Railbelt Cooperative Transmission and Electric Company)
Energy Projects in CSSB 46 Version T, Section 4 - Projects

Project Descriptions

1. Anchorage to Quartz Creek Transmission Maintenance and Repair ($25,000,000)

The Anchorage to Quartz Creek transmission line is a segment of the transmission line that connects Anchorage to the Kenai Peninsula. The Anchorage to Quartz Creek segment was constructed in 1959 and is 76 miles long.

The project is to repair portions of the transmission line that are most at risk of failure. The segments are the first 11 miles of the line from the Anchorage end (Anchorage to Powerline Pass) and the 12 miles between Ingram Creek and Johnson Pass trailhead. The wood pole line is more than 50 years old, and based on field inspection, needs to be repaired to mitigate possible structure failure.

This line is a critical piece of electrical infrastructure because it provides access to the hydroelectric resources on the Kenai Peninsula (Bradley Lake and Cooper Lake) and provides reserve sharing for the entire Railbelt.

The AEA Railbelt IRP identifies this project "for priority attention because of their immediate impact on the reliability of the existing system".

2. Battle Creek Diversion Project ($15,000,000)

The Battle Creek Diversion project is to increase the amount of energy produced by the Bradley Lake hydroelectric project by diverting a portion of the Battle Creek water flow to Bradley Lake. Battle Creek is located two miles to the west of the Bradley Lake hydroelectric project on the Kenai Peninsula.

Diverting a portion of Battle Creek into Bradley Lake is expected to increase the annual energy output of Bradley Lake by about 10%. This increase in renewable energy output will be produced by the Bradley Lake project without any additional investment in generation or transmission facilities.

The six utilities that participate in the State-owned Bradley Lake project are members of the Bradley Lake Project Management Committee and all signed a resolution in support of this project. Thus, the governance of the project and participation by utilities is well established.

3. Cook Inlet Gas Gathering System Remodel ($2,000,000)

The Cook Inlet Gas Gathering System (CIGGS) is an existing pipeline that provides transportation of natural gas from the west side of the Cook Inlet to the Kenai Peninsula

side, but not vice versa. The project is to make equipment changes to the pipeline system to allow gas flow from the Kenai side of Cook Inlet to the west side of Cook Inlet.

Changes in the Cook Inlet gas supply and deliverability, consumer demand and commercial arrangements have driven the need to make the CIGGS pipeline bi-directional.

4. Dave's Creek to Seward Transmission Line Completion ($1,500,000)

This project is to rebuild 1.5 miles of 50-year old wood-pole power lines. This will improve the reliability of electric service to the City of Seward and the Railbelt electric utilities' access to Seward's generation in the event of an emergency.

5. Girdwood and Sterling Substation Improvements ($4,000,000)

The Girdwood and Sterling Substation project is to improve the reliability of electric service to the communities of Girdwood and Sterling. The project is to install new transmission switching at both substations. The upgraded switching equipment will reduce the likelihood of an outage at Girdwood or Sterling when the Anchorage to Kenai line has an outage. For example, the Anchorage to Girdwood section of the Anchorage to Kenai line has an outage, Girdwood can receive power from Kenai.

6. Quartz Creek to Soldotna Transmission Maintenance and Repair ($10,000,000)

The Quartz Creek to Soldotna transmission line is a segment of the transmission line that connects Anchorage to the Kenai Peninsula. This segment was constructed in 1959 and is 54 miles long. Based on field inspection the line needs to be repaired to mitigate possible structure failure.

This line is a critical piece of electrical infrastructure because it provides access to the hydroelectric resources on the Kenai Peninsula (Bradley Lake and Cooper Lake) and provides reserve sharing for the entire Railbelt.

The AEA Railbelt IRP identifies this project "for priority attention because of their immediate impact on the reliability of the existing system".

7. Seward Power Plant Integration ($4,000,000)

The purpose of the Seward Power Plant Integration Project is to enable Seward's diesel generation plant to seamlessly contribute generation to the Railbelt in the event of an emergency. The project is to upgrade switching components, SCADA, metering and other equipment and adding an on-site building suitable for monitoring the facility, immediate response, maintenance and emergency operations.

8. Soldotna to Quartz Creek Transmission Study Design and Permitting ($5,000,000)

This project is for a conversion study, preliminary design and initial permitting to convert a transmission line between Soldotna and Quartz Creek substations to 115 kV from 69 kV. The upgrade of the 69 kV Soldotna to Quartz Creek line would increase the overall reliability of the system because it would add a second 115 kV line from Soldotna to Quartz Creek.

9. Teeland to Healy Substation Improvements and Repair ($5,000,000)

The Teeland to Healy Substation Improvements and Repair project is to allow continued reliable service of the transmission line connecting the Anchorage - Mat-Su Valley area to Fairbanks.

The operation of the Alaska Intertie depends on electrical equipment to manage the power transfer. One component of the equipment that is critical to the operation of the Alaska Intertie is no longer manufactured. If one of three of these components fails before replacement, the Alaska Intertie operation will be limited and will be inoperable if more than one fails. The project is to replace components before failure.

The AEA Railbelt IRP identifies this project "for priority attention because of their immediate impact on the reliability of the existing system".

HB 103

<TARGET><BILL>HB 103</BILL><SUBJECT>HB 103</SUBJECT><COMM>HENE27</COMM></TARGET>

27-GH1822\I
Kane
4/11/11

CS FOR HOUSE BILL NO. 103(FIN)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - FIRST SESSION

BY THE HOUSE FINANCE COMMITTEE

Offered:
Referred:

Sponsor(s): HOUSE RULES COMMITTEE BY REQUEST OF THE GOVERNOR

A BILL

FOR AN ACT ENTITLED

"An Act relating to the quorum of the Alaska Energy Authority; relating to the powers of the Alaska Energy Authority; relating to the acquisition or construction of a Susitna River power project by the Alaska Energy Authority; relating to the definition of 'feasibility study' in the Alaska Energy Authority Act; providing legislative approval for certain loans from the power project fund; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* **Section 1.** AS 44.83.040(a) is amended to read:

(a) The chair and vice-chair of the Alaska Industrial Development and Export Authority shall serve as officers of the Alaska Energy Authority. The powers of the Alaska Energy Authority are vested in the directors, and **four** [THREE] directors of the authority constitute a quorum. Action may be taken and motions and resolutions adopted by the Alaska Energy Authority at a meeting by the affirmative vote of a majority of the directors. The directors of the Alaska Energy Authority serve without

compensation, but they shall receive the same travel pay and per diem as provided by law for board members under AS 39.20.180.

* **Sec. 2.** AS 44.83.080 is amended to read:

Sec. 44.83.080. Powers of the authority. In furtherance of its corporate purposes, the authority has the following powers in addition to its other powers:

(1) to sue and be sued;

(2) to have a seal and alter it at pleasure;

(3) to make and alter bylaws for its organization and internal management;

(4) to adopt regulations governing the exercise of its corporate powers;

(5) to improve, equip, operate, and maintain power projects and bulk fuel, waste energy, energy conservation, energy efficiency, and alternative energy facilities and equipment;

(6) to issue bonds to carry out any of its corporate purposes and powers, including the establishment or increase of reserves to secure or to pay the bonds or interest on them, and the payment of all other costs or expenses of the authority incident to and necessary or convenient to carry out its corporate purposes and powers;

(7) to sell, lease as lessor or lessee, exchange, donate, convey, or encumber in any manner by mortgage or by creation of any other security interest, real or personal property owned by it, or in which it has an interest, when, in the judgment of the authority, the action is in furtherance of its corporate purposes;

(8) to accept gifts, grants, or loans from, and enter into contracts or other transactions regarding them, with any person;

(9) to deposit or invest its funds, subject to agreements with bondholders;

(10) to enter into contracts with the United States or any person and, subject to the laws of the United States and subject to concurrence of the legislature, with a foreign country or its agencies, for the construction, financing, **acquisition,** operation, and maintenance of all or any part of a power project or bulk fuel, waste energy, energy conservation, energy efficiency, or alternative energy facilities or

equipment, either inside or outside the state, and for the sale or transmission of power from a project or any right to the capacity of it or for the security of any bonds of the authority issued or to be issued for the project;

(11) to enter into contracts with any person and with the United States [,] and, subject to the laws of the United States and subject to the concurrence of the legislature, with a foreign country or its agencies for the purchase, sale, exchange, transmission, or use of power from a project, or any right to the capacity of it;

(12) to apply to the appropriate agencies of the state, the United States, and a foreign country and any other proper agency for the permits, licenses, or approvals as may be necessary, to **acquire, construct,** maintain**,** and operate power projects in accordance with the licenses or permits, and to obtain, hold, and use the licenses and permits in the same manner as any other person or operating unit;

(13) to enter into contracts or agreements with respect to the exercise of any of its powers, and do all things necessary or convenient to carry out its corporate purposes and exercise the powers granted in this chapter;

(14) to recommend to the legislature

(A) the pledge of the credit of the state to guarantee repayment of all or any portion of revenue bonds issued to assist in construction of power projects;

(B) an appropriation from the general fund

(i) for debt service on bonds or other project purposes; or

(ii) to reduce the amount of debt financing for the project;

(15) to carry out the powers and duties assigned to it under AS 42.45;

(16) to make grants or loans to any person and enter into contracts or other transactions regarding the grants or loans;

(17) to promote energy conservation, energy efficiency, and alternative energy through training and public education**;**

(18) to acquire a Susitna River power project, whether by construction, purchase, gift, or lease, including the acquisition of property rights

and interests by eminent domain under AS 09;

(19) to perform feasibility studies and engineering and design with respect to power projects.

*** Sec. 3.** AS 44.83.396(a) is amended to read:

(a) A power project that was acquired or constructed **under AS 44.83.080(18) or** as part of the former energy program for Alaska is owned, and shall be administered, by the authority.

*** Sec. 4.** AS 44.83.990(3) is amended to read:

(3) "feasibility study"

(A) means a study conducted for the purpose of establishing the economic and environmental practicality of completing a proposed power project [UNDER FORMER AS 44.83.181];

(B) includes engineering and design work to meet the requirements for submission of a license application for a proposed new project to the Federal Energy Regulatory Commission;

*** Sec. 5.** The uncodified law of the State of Alaska is amended by adding a new section to read:

LEGISLATIVE APPROVAL OF LOANS FROM THE POWER PROJECT FUND. (a) Provided the Alaska Energy Authority approves a loan for the Haida Energy, Inc., Reynolds Creek hydroelectric project, the legislature authorizes the Alaska Energy Authority to loan an amount not to exceed $11,000,000 from the power project fund (AS 42.45.010) for the Haida Energy, Inc., Reynolds Creek hydroelectric project in addition to the loan authorized by sec. 6, ch. 70, SLA 2010.

(b) Provided the Alaska Energy Authority approves a loan for the Cordova Electric Cooperative Humpback Creek hydroelectric project, the legislature authorizes the Alaska Energy Authority to loan an amount not to exceed $5,000,000 from the power project fund (AS 42.45.010) for the Cordova Electric Cooperative Humpback Creek hydroelectric project.

(c) Subsections (a) and (b) of this section constitute legislative approval under AS 42.45.010(j) for a loan from the fund that exceeds $5,000,000.

*** Sec. 6.** This Act takes effect immediately under AS 01.10.070(c).

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version **CSHB 103(FIN)**
() Publish Date

Identifier (file name) HB103-CCED-AIDEA-04-11-11
Dept. Affected DCCED

Title Powers of Alaska Energy Authority
Appropriation Alaska Industrial Development & Export Authority

Allocation Alaska Industrial Development & Export Authority

Sponsor Rules by Request of the Governor
Requester House Finance Committee
OMB Component Number 1234

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	1,125.0						
Travel	0.0						
Services	0.0						
Commodities	0.0						
Capital Outlay	0.0						
Grants							
Miscellaneous							
TOTAL OPERATING	**1,125.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1007 I/A Receipts	1,125.0						
Other (please identify)							
TOTAL	**1,125.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time	**8.0**						
Part-time							
Temporary							

Why this fiscal note differs from previous version (if initial version, please note as such)

This Fiscal Note estimates employee costs for Susitna Project Office and assumes that new staff are AIDEA employees contracted to the Alaska Energy Authority.

Prepared by Amy Adler
Phone 771-3013
Division Alaska Energy Authority
Date/Time 4/11/11 5:00 PM
Approved by Susan K. Bell, Commissioner
Date 4/11/2011
Commerce, Community, and Economic Development

(Revised 1/27/2011 OMB)

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. CSHB103(FIN)

Analysis

This legislation expands the Alaska Energy Authority's powers to allow AEA to acquire a Susitna River power project.

This fiscal note reflects the costs to AIDEA for the increase in personal services related to AEA's establishment of a project office in pursuit of constructing and owning the Susitna Hydro project.

PERSONAL SERVICES: $1,125.0 - Increased to include 8 staff for the first year as follows:
Project Manager Rg 27
Environmental Manager Rg 26
Administrative Assistant Rg 12
Project Accountant Rg 18
Financial/Budget Analyst Rg 24
Public Outreach/Legislation Liaison Rg 23
Procurement Manager Rg 24
Data System Specialist Rg 20

The funding source is an increase to I/A receipts from the Alaska Energy Authority.

See also the related Fiscal Note for the costs to AEA Statewide Project Development component to establish a project office for the Susitna Hydro project.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version **CSHB 103(FIN)**
() Publish Date

Identifier (file name) HB103-CCED-AEA-04-11-11
Title Powers of Alaska Energy Authority
Sponsor Rules by Request of the Governor
Requester House Finance Committee

Dept. Affected DCCED
Appropriation Alaska Energy Authority
Allocation Statewide Project Development
Alternative Energy and Efficiency
OMB Component Number 2888

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	0.0		0.0	0.0	0.0	0.0	***
Travel	0.0		0.0	0.0	0.0	0.0	***
Services	1,350.0		1,413.5	1,476.1	1,538.1	1,606.8	***
Commodities	0.0		0.0	0.0	0.0	0.0	***
Capital Outlay	413.0		5.0	5.0	5.0	5.0	***
Grants							
Miscellaneous							
TOTAL OPERATING	**1,763.0**	**0.0**	**1,418.5**	**1,481.1**	**1,543.1**	**1,611.8**	***
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1061 CIP Receipts	1,763.0		1,418.5	1,481.1	1,543.1	1,611.8	***
1037 GF/Mental Health							
Other (please identify)							
TOTAL	**1,763.0**	**0.0**	**1,418.5**	**1,481.1**	**1,543.1**	**1,611.8**	***

Estimate of any current year (FY2011) cost

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version (if initial version, please note as such)

This Fiscal Note estimates employee costs for Susitna Project Office and assumes that new staff are AIDEA employees contracted to the Alaska Energy Authority.

Prepared by Amy Adler
Division Alaska Energy Authority
Approved by Susan K. Bell, Commissioner
Commerce, Community, and Economic Development

Phone 771-3013
Date/Time 4/11/11 5:00 PM
Date 4/11/2011

(Revised 1/27/2011 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** CSHB103(FIN)
2011 LEGISLATIVE SESSION

Analysis

This legislation expands the Alaska Energy Authority's powers to allow AEA to acquire a Susitna River power project.

This fiscal note reflects the costs to AEA to establish a project office in pursuit of constructing and owning the Susitna Hydro project.

CONTRACTUAL: $1,350.0

$1,125.0 Contractual Services for 8 staff (AIDEA employees) for the first year as follows:

Project Manager - Rg 27
Environmental Manager - Rg 26
Administrative Assistant - Rg 12
Project Accountant - Rg 18
Financial/Budget Analyst - Rg 24
Public Outreach/Legislation Liaison - Rg 23
Procurement Manager - Rg 24
Data System Specialist - Rg 20

Note: Personal Services Costs are reflected in the related Fiscal Note for the AIDEA component.

$225.0 Contractual Services for Building lease, and G&A costs for Project Office. Cost estimates include a cost associated with contract labor personnel.

$ 189.0	Annual Lease - 4,500 sq. ft. (250'/pp x 14 +1000') x $3.50 per sq. ft./mo. x 12 mo.'s.
$ 36.0	G&A Expense: $3.6 per person - $3.6 x 10 (8 staff + 2 contractors).
$ 225.0	

EQUIPMENT/FURNITURE: $413.0 - Increase for first year Project Office set up costs. This cost estimate assumes all equipment and furniture purchases in the first year as well as one time only moving expenses and tenant improvements.

$ 28.0	IT Equipment $2.0 per person x 14 (8 staff + 6 contractors). Assumes all equipment purchases in first year for project office (including contract labor needs).
$ 385.0	Tenant Improvement $315.0 ($70 x 4,500 sq. ft.); Moving Expenses $21.0; and Furniture $49.0
$ 413.0	

Note: Tenant Improvement costs will vary depending on building configuration and may also be negotiated as part of a long term lease.

*** Costs for FY 2017 indeterminate

CSHB 103(ENE)
Sectional Analysis - Sequential

Section 1: Would expressly authorize the legislature to appropriate amounts in the Railbelt energy fund to capitalize the new Railbelt energy fund, called the Alaska Railbelt energy fund, created by Section 3 of the bill. This would allow amounts to be appropriated and transferred from the existing Railbelt Energy fund into the new fund.

Section 2: Would place in the exempt service the executive director and other staff of AEA.

Section 3: Would establish the new Railbelt energy fund, called the Alaska Railbelt energy fund of AEA. The legislature may appropriate money from the fund for feasibility studies, license, permit, acquire or construct, or to make grants for power projects and electric transmission lines and interties that serve the Railbelt region.

Section 4: Would increase from 3 to 4 the quorum requirement for meetings of the AEA board of directors in reaction to statutory amendments made in 2010. Those amendments increased the size of the AIDEA board from 5 to 7. The AIDEA board serves as the board of AEA. The proposed amendment would correct the quorum for meetings of AEA's board of directors.

Section 5: Would empower AEA to hire employees and advisors in the exempt service. This power to hire employees would be equivalent to powers the Alaska Industrial Development and Export Authority (AIDEA) currently possesses.

Section 6: Would expand AEA's powers to allow AEA to acquire and construct new projects, and to conduct feasibility studies of new power projects.

Sections 7: Would empower AEA to establish subsidiary corporations to support the acquisition, construction, ownership, and operation of power projects, and thereby potentially limit potential liability of AEA or strengthen the financial viability of a project.

Section 8: Would enable an AEA subsidiary to exercise powers currently granted to AEA under AS 44.83.090. For example, an AEA subsidiary would be exempt from regulation by the Regulatory Commission of Alaska (RCA) to the same extent as AEA is exempt (but utilities contracting with the AEA subsidiary would not be exempted, and RCA would still need to approve power sales agreements between the AEA subsidiary and the Railbelt utilities).

Section 9: Would provide that AEA must exercise for new power projects, existing statutory authority managing power projects. This obligation is currently limited to power projects from the pre-1993, "former energy program for Alaska."

Section 10: Would make AS 44.83.396 apply to AEA subsidiaries that own power projects . AS 44.83.393 addresses how AEA administers the power project and contracts for operators, and includes provisions providing for AEA to contract with qualified utilities for the operation of the project. The amendment in Section 10 will impose these same duties on a subsidiary of AEA formed for a power project.

Section 11: Would amend the definition of "feasibility study" under AS 44.83.990(3) so that the term is not limited to only pre-1993 power projects.

Section 12: Would repeal the existing Railbelt energy fund, AS 37.05.520. This repeal would become effective under Section 15 when the balance of the fund is appropriated to AEA for deposit into the new Alaska Railbelt energy fund (created by Section 3), or appropriated and expended on projects.

Section 13: Would provide transitional provisions to address the status of existing employees who perform AEA functions with the Alaska Industrial Development Export Authority. AEA has not possessed the statutory authority to hire its own staff since the reorganization of AEA affected by 1993 legislation (ch. 18, SLA 1993). Since the 1993 legislation, AEA programs have been implemented by AIDEA employees. AEA's executive director, for example, is an employee of AIDEA, but is independent from the executive director of AIDEA. Sections 2 and 5 would authorize AEA to hire its own employees, and thereby assume greater control over the implementation of AEA programs. Section 13 provides for the transition of these employees from AIDEA to AEA.

Section 14: Would instruct the revisor of statutes to amend the statutory heading of AS 44.83.040 to reflect that the section would also address AEA employees.

Section 15: Would make the repeal of the existing Railbelt energy fund, AS 37.05.520, contingently effective when the balance of the fund is appropriated to AEA for deposit into the new Alaska Railbelt energy fund (created by Section 3), or appropriated and expended on projects.

Section 16: Would provide for an immediate effective date, excepting the contingent effective date for repeal of the existing Railbelt energy fund.

Fiscal Note Numbers:
Support for Fiscal Note Computations (Thousands of Dollars).
Prepared by Alaska Energy Authority
Updated January 25, 2011

					FN 1 of 2	FN 2 of 2				
	Component:	AIDEA	AIDEA Facilities	AIDEA RDU	AEA Statewide Project Devel., AEE	AEA Statewide Project Devel., AEE	AEA Rural Energy Ops	AEA PCE	AEA Owned Facilities	AEA RDU
	Component Number:	(1234)	(2361)	Total	(2888)	(2888)	(2600)	(2602)	(2599)	Total
	Operating Expenditures:									
71000	Personal Services	(5,578.7)		(5,578.7)	5,838.7	1,125.0				6,763.7
72000	Travel			0.0						0.0
73000	Contractual	341.6		341.6	(2,311.1)	238.0	(2,329.3)	(160.0)	(25.0)	(4,587.4)
74000	Supplies			0.0						0.0
75000	Land & Structures/Equipment			0.0		413.0				413.0
77000	Grants & Claims			0.0						0.0
78000	Miscellaneous			0.0						0.0
	Total Operating	(5,237.1)	0.0	(5,237.1)	3,327.6	1,776.0	(2,329.3)	(160.0)	(25.0)	2,589.3
	Funding Source									
1002	Federal Receipts			0.0						0.0
1004	General Fund			0.0	1,388.4		(816.7)	(160.0)		411.7
1007	I/A Receipts	(5,379.9)	142.8	(5,237.1)	341.6					341.6
1061	CIP Receipts			0.0	1,512.6	1,776.0	(1,512.6)			1,776.0
1062	Power Project Fund			0.0						0.0
1074	Bulk Fuel Revolving Loan Fun			0.0	60.0					60.0
1102	AIDEA Receipts	142.8	(142.8)	0.0						0.0
1107	AEA Corporate Receipts			0.0	25.0				(25.0)	0.0
1108	Statutory Desig. Program Rcpts			0.0						0.0
1173	Miscellaneous Earnings			0.0						0.0
1210	Renewable Energy Fund			0.0						0.0
	Total	(5,237.1)	0.0	(5,237.1)	3,327.6	1,776.0	(2,329.3)	(160.0)	(25.0)	2,589.3
	Positions									
	Transfer	(42.0)		(42.0)	42.0					42.0
	New positions	1.0		1.0	1.0	8.0				9.0
	Net position change	(41.0)		(41.0)	43.0	8.0				51.0
	Total positions			**35.0**						**51.0**

Analysis:

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY - AIDEA

Personal Services: TOTAL $(5,578.7)

$ (5,578.7) Decrease in personal services costs with transfer of 42 employees to Alaska Energy Authority.

$ - Request one new position for AIDEA - Accountant IV, Range 20, to accommodate anticipated increased work load. Estimated cost is $110.0
No net increase in AIDEA Receipts requested - Cost offset by receipts from AEA for facilities costs. See net change in receipts for AIDEA Facilities Component.
Net reduction in position count to AIDEA is 41.

Contractual Services: TOTAL $341.6

$ 341.6 Contractual cost of AEA Employees providing shared services (Operations Department) to AIDEA.

$ (5,237.1) Net Change to Expenditures

ALASKA INDUSTRIAL DEVELOPMENT & EXPORT AUTHORITY - Facilities Maintenance

Currenty AIDEA absorbs the building operating costs . This fiscal note estimates the impact to AEA and AIDEA if AEA reimbursed AIDEA for their pro rata share.

Facility Operating Cost = $3.4 per PCN per year x 42 employees = $142.8

Contractual Services: No net impact to expenditure line. Reimbursement of actual costs impacts only the revenue source.

Impact to Fund Source: Reduces AIDEA receipts and Increases I/A receipts. Tranfer AIDEA receipt authority to operations component

ALASKA ENERGY AUTHORITY - Statewide Project Development, Alternative Energy and Efficiency
FN 1 of 2

Personal Services: TOTAL $ 5,638.7

Increase in personal services costs with transfer of approximately 42 employee from AIDEA. All employee costs will be accounted for in one component - Statewide Project Development, AEE. This transfer reduces contractual services in several AEA components and increases personal services in this component.

$	160.0	Approximately 2 FTE's providing support to the AEA PCE Component - GF funds.
$	2,207.5	Approximately 16 FTE's providing support to the AEA Rural Energy Operations Component - GF and CIP receipts.
$	2,320.0	Approximately 17 FTE's providing support to the AEA Statewide Project Development & AEE Component - GF and CIP receipts.
$	891.2	Approximately 7 FTE's who are defined as shared service. This includes 6 positions that report to the Deputy Director of Operations and one engineer that works on both AIDEA and AEA projects.
$	5,578.7	
$	60.0	Request one new position for AEA - Loan Officer R20. Request additional BF receipts of $60.0 with remaining funds through current funding levels.
$	5,638.7	

Contractual Services: TOTAL $ (2,311.1)

$	(2,320.0)	Decrease Contractual Services and transfer cost to Personal Services. Approximately 17 FTE's.
$	(285.1)	Operations - Shared Services. Decrease Contractual Services and transfer cost to Personal Services.
$	142.8	Facility Operating Cost = $3.4 per PCN per year x 42 employees = $142.8
$	151.2	G&A Cost Currently paid by AIDEA = $3.6 per PCN per year x 42 employees = $151.2
$	(2,311.1)	

$	**3,327.6**	Net change to expenditures

ALASKA ENERGY AUTHORITY - Statewide Project Development, Alternative Energy and Efficiency
FN 2 of 2

Personal Services: TOTAL $ 1,125.0

Increased to include 8 staff for the first year as follows.

$	210.0	Project Manager Rg 27
$	175.0	Environmental Manager Rg 26
$	70.0	Administrative Assistant Rg 12
$	100.0	Project Accountant Rg 18
$	155.0	Financial/Budget Analyst Rg 24
$	140.0	Public Outreach/Legislative Liaison Rg 23
$	155.0	Procurement Manager Rg 24
$	120.0	Data Systems Specialist Rg 20
$	1,125.0	

Contractual Services: TOTAL $ 238.0

$	189.0	Annual Lease - 4,500 sq. ft. x $3.50 per sq. ft./mo. X 12 mo.'s
$	13.0	Utilities - $1.3 per person x 10 (8 staff + 2 contractors)
$	36.0	G&A Expense. $3.6 per person - $3.6 x 10 (8 staff + 2 contractors)
$	238.0	

Equipment/Furniture: TOTAL $ 413.0

$	28.00	IT Equipment $2.0 per person per year x 14 (8 staff + 6 contractors). Assumes all equipment purchases in 1st yr for project office (including contract labor needs)
$	385.00	Tenant Improvement $315.0 ($70 x 4,500 sq ft); Moving Expenses $21.0 and Furniture 49.0
$	413.00	

ALASKA ENERGY AUTHORITY - Rural Energy Operations

Personal Services: No Impact.

Contractual Services: TOTAL $ (2,329.3)

$	(2,207.5)	Reduce cost contractual costs of employee services and transfer out to Statewide component. Approximately 16 FTE's.
$	(121.8)	Reduce contractual costs of Operations employees who provide shared services. Transfer cost to Statewide component personal services.
$	**(2,329.3)**	

ALASKA ENERGY AUTHORITY - Power Cost Equalization

Personal Services: No Impact.

Contractual Services: TOTAL $ (160.0)

$	(160.0)	Reduce cost contractual costs of employee services and transfer out to Statewide component. Approximately 2 FTE's.
$	**(160.0)**	

ALASKA ENERGY AUTHORITY - Owned Facilities

Personal Services: No Impact.

Contractual Services: TOTAL $ (25.0)

$	(25.0)	Reduce cost contractual costs of employee services and transfer out to Statewide component. Approximately 15% of 1 FTE.
$	**(25.0)**	

Summary of Net Increase in GF Request for AEA:

$	76.9	Shared Services - IT Support not previously paid for by AEA
$	40.8	Shared Services -HR Support not previously paid for by AEA
$	294.0	O/H Facility Operating Cost/G&A not previously paid for by AEA
$	411.7	

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Governor Sean Parnell
STATE OF ALASKA

January 14, 2011

The Honorable Mike Chenault
Speaker of the House
Alaska State Legislature
State Capitol, Room 208
Juneau, AK 99801-1182

Dear Speaker Chenault,

Under the authority of Article III, Section 18, of the Alaska Constitution, I am transmitting a bill that would authorize the Alaska Energy Authority (AEA) to move forward on pursuing a large hydroelectric project to supply much needed energy to Interior and Southcentral Alaska. The bill would authorize AEA to acquire, construct, own, and operate new power projects; create a new Alaska Railbelt energy fund as a fund of AEA; repeal the existing Railbelt energy fund (AS 37.05.520) after the balance of the existing fund is appropriated and transferred into the new fund or appropriated and expended for other purposes; address quorum requirements of the AEA board; and allow for the adoption of regulations to govern the procurement of supplies, services, professional services, and construction.

Alaska's State Energy Policy target is to reach 50 percent of its electricity generation through renewable energy by 2025. To achieve this goal, we must move aggressively and invest now to develop capacity for a major hydroelectric project on the Susitna River. This legislation allows AEA to continue with environmental and feasibility studies positioning the State to seek preliminary approval from the Federal Energy Regulatory Commission for a project that will provide half of Southcentral's electricity demand.

Alaska must invest now to create new opportunities for economic development and jobs for Alaskans. A Susitna Dam hydroelectric project will provide an important and much needed supply of renewable energy for Alaskan homes and businesses while creating jobs for Alaskans. A sectional analysis is provided with this packet.

I urge your prompt and favorable action on this important measure.

Sincerely,

Sean Parnell
Governor

Enclosure

27-GH1822\A.7
Kane
3/7/11

AMENDMENT #1

OFFERED IN THE HOUSE BY REPRESENTATIVES FOSTER AND PRUITT

TO: HB 103

Page 4, line 22:

Delete "**construction,**"

27-GH1822\A.8
Kane
3/7/11

AMENDMENT #2

OFFERED IN THE HOUSE BY REPRESENTATIVES FOSTER AND PRUITT

TO: HB 103

Page 3, line 4:

Delete "authority may use"

Insert "legislature may appropriate"

27-GH1822\A.4
Kane
3/4/11

AMENDMENT #3

OFFERED IN THE HOUSE BY REPRESENTATIVE TUCK

TO: HB 103

Page 1, lines 1 - 2:

Delete **"relating to the procurement of supplies, services, professional services, and construction for the Alaska Energy Authority;"**

Page 1, line 11, through page 2, line 13:

Delete all material.

Page 2, line 14:

Delete "**Sec. 2**"

Insert "**Section 1**"

Renumber the following bill sections accordingly.

Page 7, line 8:

Delete "Section 13"

Insert "Section 12"

Page 7, line 10:

Delete "sec. 4"

Insert "sec. 3"

Page 7, line 14:

Delete "sec. 16"

Insert "sec. 15"

27-GH1822\A.3
Kane
3/4/11

AMENDMENT #4

OFFERED IN THE HOUSE BY REPRESENTATIVE PETERSEN

TO: HB 103

Page 1, line 5:

Delete "**regarding employees and**"

Insert "**and to**"

Page 5, line 25, following "**projects**":

Insert "**;**

(20) to carry out and be guided by the state energy policy described in AS 44.99.115"

27-GH1822\A.5
Kane
3/7/11

AMENDMENT #5

OFFERED IN THE HOUSE BY REPRESENTATIVE PETERSEN

TO: HB 103

Page 2, line 23:

Delete "and other staff"

Page 3, line 22:

Delete "and employees of the authority are"

Insert "of the authority is"

Page 7, line 3, following "EMPLOYEES.":

Insert "(a)"

Page 7, following line 7:

Insert a new subsection to read:

"(b) Notwithstanding any other provision of law, staff members of the Alaska Industrial Development and Export Authority who will be transferred as staff to the Alaska Energy Authority and who are employed as of the effective date of this section

(1) shall immediately be appointed to the classified service upon their transfer;

(2) may not have a reduction in pay

(A) solely because of the assignment described in this subsection; or

(B) if the employee is assigned to a position in the classified service that is classified at a lower rate of pay than that received when the position was assigned to the exempt service;

(3) shall retain the step status previously held immediately before the transfer and shall be entitled to receive any merit or cost-of-living salary increases they would receive had they not been transferred."

27-GH1822\A.6
Kane
3/7/11

AMENDMENT #6

OFFERED IN THE HOUSE BY REPRESENTATIVE PETERSEN

TO: HB 103

Page 1, line 4:

Following "**quorum**":

Insert "**and membership**"

Following "**Authority;**":

Insert "**establishing an Alaska Energy Authority Advisory Board;**"

Page 3, following line 9:

Insert a new bill section to read:

"*** Sec. 5.** AS 44.83.030 is amended to read:

Sec. 44.83.030. Membership of the authority. The directors of the Alaska Energy Authority are the members of the Alaska Industrial Development and Export Authority **and two members of the advisory board elected under AS 44.83.055**."

Renumber the following bill sections to read.

Page 3, following line 23:

Insert a new bill section to read:

"*** Sec. 8.** AS 44.83 is amended by adding a new section to article 1 to read:

Sec. 44.83.055. Alaska Energy Authority Advisory Board. (a) The Alaska Energy Authority Advisory Board is established and is made up of seven members appointed by the directors of the authority. The advisory board members shall serve staggered three-year terms and may be removed by the directors of the authority for cause. The advisory board shall consist of three public members and four other

members qualified as follows:

(1) one member with expertise in operation of power plants serving urban areas of the state;

(2) one member with expertise in providing energy to rural areas of the state;

(3) one member with expertise in energy efficiency improvements;

(4) one member with expertise in consumer and ratepayer advocacy.

(b) Each year, the advisory board shall elect two of its members to serve as voting members of the board of directors of the authority under AS 44.83.030.

(c) The advisory board shall advise the board of directors and executive director of the authority on how to fulfill most efficiently and effectively the corporate purpose of the authority in the best interest of the residents of the state.

(d) The advisory board may create subcommittees to consider specific projects and programs and may appoint persons not serving on the advisory board to serve on a subcommittee.

(e) The members of the advisory board serve without compensation but shall receive the same travel pay and per diem as provided by law for members of boards and commissions under AS 39.20.180."

Renumber the following bill sections accordingly.

Page 6, following line 26:

Insert a new bill section to read:

*** Sec. 16.** The uncodified law of the State of Alaska is amended by adding a new section to read:

INITIAL APPOINTMENTS AND TERMS. Notwithstanding AS 44.83.055(a), as enacted by sec. 8 of this Act, the terms of the first members of the Alaska Energy Authority Advisory Board are as follows:

(1) three members shall be appointed for a three-year term;

(2) three members shall be appointed for a two-year term; and

(3) one member shall be appointed for a one-year term."

Renumber the following bill sections accordingly.

Page 7, line 8:

Delete "Section 13"

Insert "Section 15"

Page 7, line 14:

Delete "sec. 16"

Insert "sec. 19"

HB 103

An Act relating to the procurement of supplies, services, professional services, and construction for the Alaska Energy Authority; establishing the Alaska Railbelt energy fund and relating to the fund, relating to and repealing the Railbelt energy fund; relating to the quorum of the board of the Alaska Energy Authority; relating to the powers of the Alaska Energy Authority regarding employees and the transfer of certain employees of the Alaska Industrial Development Export Authority to the Alaska Energy Authority; relating to acquiring or constructing certain projects by the Alaska Energy Authority; and relating to the definition of "feasibility study" in the Alaska Energy Authority Act; providing an effective date.

Sectional Analysis

Section	Analysis
1	Amends AS 36.30.015(f) (the procurement code) to allow AEA to adopt regulations to govern AEA's procurement of supplies, services and construction. AEA regulations will be required to reflect competitive bidding principles; AEA would be given authority similar to other state corporations such as AHFC and KABATA
2	Amends AS 37.05.520 to explicitly allow the legislature to appropriate money from the Railbelt energy fund to a newly created Alaska Railbelt energy fund (AS 42.45.035)
3	Amends AS 39.25.110 to allow AEA to hire an executive director and other staff.
4	Adds new section 42.45.035 creating the Alaska Railbelt energy fund as a separate fund in AEA; Department of Revenue will be the fiduciary; allows AEA to use money in the fund for power projects, transmission lines and interties serving the Railbelt region.
5	Amends AS 44.83.040 (a) by defining that four, not three, AEA directors constitutes a quorum. The Board of Directors was expanded from five to seven members in 2010.
6	Adds new subsection AS 44.83.040 (e) allowing the authority to appoint persons as staff in the exempt service under AS 39.25
7	Amends AS 44.83.080 by allowing AEA to acquire and construct new power projects and to perform feasibility studies, and engineering and design, with respect to power projects
8	Adds new section AS 44.83.085 allowing AEA to create subsidiary corporations for the purpose of acquiring, constructing, owning, maintaining, operating, or financing power projects.
9	Adds new subsection AS 44.83.090 (c) allowing created subsidiaries to exercise powers granted to AEA.

10	Amends AS 44.83.396(a) to include how AEA administers newly acquired power projects in the operation of a power project
11	Adds new subsection AS 44.83.396 (f) to include subsidiary owned projects in the operation of a power project
12	Amends AS 44.83.990(3) by defining feasibility study to include new power projects
13	Repeals the Railbelt energy fund – AS 37.05.520
14	Revisor's instructions
15	Adds new section to uncodified law relating to the transfer of certain employees from AIDEA to AEA by providing a deadline of 12/31/2011
16	Provides a conditional effective date to the repeal of the Railbelt energy fund which will occur when the balance of the fund is appropriated and transferred to the new Alaska Railbelt Energy Fund or appropriated and expended for other purposes.
17	Immediate effective date for all sections except as provided in section 16

Prepared by AEA

January 26, 2011

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 1
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: AIDEA
Allocation: Alaska Industrial Development & Export Authority
OMB Component Number: 1234

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	(5,578.7)						
Travel							
Contractual	341.6						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**(5,237.1)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF							
1007 I/A Receipts	(5,379.9)						
1061 CIP Receipts							
1102 AIDEA Receipts	142.8						
1074 Bulk Fuel							
1107 AEA Corporate Receipts							
TOTAL	**(5,237.1)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time	**(41.0)**						
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher-Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Industrial Development & Export Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community, & Economic Development
Date: 1/13/2011

(Revised 12/29/2010 OMB)

FISCAL NOTE #1

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis

This bill empowers the Alaska Energy Authority (AEA) to hire employees. The impact of this legislation to AIDEA's Operating component is that approximately 42 employees will transfer to AEA and decrease AIDEA's cost of personal services. This cost analysis assumes that AIDEA and AEA will maintain certain shared services (Finance, Operations, and Credit Departments).

Personal Services:	$(5,578.7)	Transfer of 42 employees to AEA Statewide Component.
Contractual Services:	$ 341.6	Contractual cost of AEA Employees providing shared services. Net
Change	$(5,237.1)	

Under this analysis, AIDEA contractual costs increase by the cost of AEA employees providing shared services (Operations Department) to AIDEA. The Finance and Credit departments provide shared services to AEA.

One new Finance position is requested to meet anticipated increased work. The anticipated cost of this position is estimated to be $110.0 No additional funding is requested to support this position. AIDEA anticipates that this position can be funded with the additional AIDEA receipts gained as a result of billing AEA for their share of the building operating costs, estimated in this analysis to be $142.8.

(42) Employee transfers to AEA Statewide Component
1 New position - Accountant, Rg 20
(41) Net Positions

Please see cost analysis in AEA's Statewide Project Development & AEE component for more detail as well as a list of the PCN's transferred to AEA.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 2
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: AIDEA
Allocation: Alaska Industrial Development Corporation Facilities Maintenance
OMB Component Number: 2361

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual							
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF							
1007 I/A Receipts	142.8						
1061 CIP Receipts							
1102 AIDEA Receipts	(142.8)						
1074 Bulk Fuel							
1107 AEA Corporate Receipts							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher-Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Industrial Development & Export Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community, & Economic Development
Date: 1/13/2011

(Revised 12/29/2010 OMB)

FISCAL NOTE #2

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis

This bill empowers the Alaska Energy Authority (AEA) to hire employees. Currently AIDEA absorbs 100% of the facility operating costs. This fiscal note estimates the impact to AIDEA if AEA reimbursed AIDEA for their pro-rata share of the facility operating costs based on PCN count.

Facility Operating Cost = $3.4 per PCN per year x 42 employees = $142.8.

There is no net impact to the expenditure line as actual building costs remain the same. Increase in I/A receipts reduces AIDEA receipts in this component. AIDEA receipt authority is transferred to the AIDEA operations component.

See related fiscal notes for both AIDEA and AEA Statewide Project Development components for the full impact of this legislation.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 3
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: Statewide Project Development; Alternative Energy and Efficiency
OMB Component Number: 2888

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	5,638.7						
Travel							
Contractual	(2,311.1)						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**3,327.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF	1,388.4						
1007 I/A Receipts	341.6						
1061 CIP Receipts	1,512.6						
1102 AIDEA Receipts							
1074 Bulk Fuel	60.0						
1107 AEA Corporate Receipts	25.0						
TOTAL	**3,327.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time	**43.0**						
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Energy Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community, & Economic Development
Date: 1/13/2011

(Revised 12/29/2010 OMB)

FISCAL NOTE #3

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis

Note: This is fiscal note 1 of 2 for the AEA Statewide Project Development component. The cost information relevant to the power of AEA to have employees is presented separately from the cost information relevant to the power of AEA to construct and own projects (See fiscal note 2 of 2 Statewide Project Development for cost of AEA to establish a project office for the Susitna Hydro Projects.)

This bill empowers the Alaska Energy Authority (AEA) to hire employees. All AEA employee costs will be accounted for in this component. This increases personal services with the transfer of approximately 42 employees from AIDEA. This transfer reduces contractual services in several AEA components and increases personal services in this component. One new position (Loan Officer Rg 20) is requested to meet anticipated increased work in lending activities. This position will be primarily responsible for AEA loan programs.

Personal Services: TOTAL $5,638.7

$ 160.0	Approximately 2 FTE's providing support to the AEA PCE Component - GF Funds.
$ 2,207.5	Approximately 16 FTE's providing support to the AEA Rural Energy Operations Component - GF & CIP.
$ 2,320.0	Approximately 17 FTE's providing support to the AEA Statewide Pj Devel & AEE Component - GF & CIP.
$ 891.2	Approximately 7 FTE's who are defined as shared services. This includes 6 positions that report to the Deputy Director of Operations and one engineer that works on both AIDEA and AEA projects.
$ 5,578.7	Subtotal Personal Services - 42 employees transferred from AIDEA to AEA.
$ 60.0	Request 50% funding for one new position for AEA - Loan Officer Rg 20.
$ 5,638.7	

Contractual Services: TOTAL $(2,311.1)

$(2,320.0)	Decrease Contractual Services and transfer cost to Personal Services. Approximately 17 FTE's.
$ (285.1)	Operations - Shared Services. Decrease Contractual Services and transfer cost to Personal Svcs.
$ 142.8	Facility Operating Costs = $3.4 per PCN per year x 42 employees = $142.8 (See also AIDEA Facilities Comp).
$ 151.2	G&A Cost currently paid by AIDEA = $3.6 per PCN per year x 42 employees = $151.2.
$(2,311.1)	

$ 3,327.6 Net Change in Expenditures

PCN List (Title, Range, PCN, Dept./Area):

Transfers from AIDEA:

1) PCE Program Administrator Rg 17 - 080411 (PCE)
2) Accounting Technician Rg 12 - 080217 (PCE)
3) Deputy Director - Operations Rg 27 - 080405 (Operations Shared Services)
4) Data Systems Specialist Rg 22 - 080227 (Operations Shared Services)
5) HR Specialist Rg 18 - 080455 (Operations Shared Services)
6) Administrative Assistant Rg 13 - 080473 (Operations Shared Services)
7) Data Processing Tech II Rg 15 - 08X037 (Operations Shared Services)
8) Project Manager Rg 22 - 080223 (Operations Shared Services)
9) Technical Engineer Rg 25-080229 (Rural Energy Shared Services)
10) Deputy Director-Rural Energy Rg 27 - 080206 (Rural Energy)
11) Project Manager II Rg 24 - 080231 (Rural Energy)
12) Coordinator Rural Community Outreach Rg 24 -080401 (Rural Energy)
13) Project Development Specialist Rg 20 -080403 (Rural Energy)
14) Warehouse Manager Rg 15 - 080440 (Rural Energy)
15) Technical Engineer II Rg 25 - 080443 (Rural Energy)

See Page 3 of 3 for Continued Analysis.

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis Continued

PCN List (Title, Range, PCN, Dept./Area):

Transfers from AIDEA - continued:

16) Assistant Project Manager Rg 22 - 080466 (Rural Energy)
17) Rural Electric Utility Worker Rg 20 - 080479 (Rural Energy)
18) Project Manager Rg 25 - 080491 (Rural Energy)
19) Project Manager Rg 25 - 080498 (Rural Energy)
20) Rural Electric Utility Worker Rg 20 - 217010 (Rural Energy)
21) Project Assistant Rg 16 - 217011 (Rural Energy)
22) Rural Electric Utility Worker Rg 20 - 217012 (Rural Energy)
23) Program Manager Bulk Fuel & RPSU Rg 25 - 217014 (Rural Energy)
24) Project Manager Rg 22 - 08T019 (Rural Energy)
25) Circuit Rider Technician Rg 20 - 08X003 (Rural Energy)
26) Executive Director Rg 28 - 080208 (AEA Statewide)
27) Executive Assistant Rg 16 - 080219 (AEA Statewide)
28) Project Manager Rg 25 - 080222 (AEA Statewide)
29) Administrative Assistant Rg 12 - 080410 (AEA Statewide)
30) Administrative Assistant Rg 12 - 080434 (AEA Statewide)
31) Grants Assistant Rg 15 - 080233 (AEA Statewide)
32) Grants Administrator Rg 22 - 080457 (AEA Statewide)
33) Project Manager Rg 22 - 080230 (AEA Statewide)
34) Project Manager Rg 24 - 080232 (AEA Statewide)
35) Deputy Director - AEEE Rg 27 - 080407 (AEA Statewide)
36) Project Manager - Energy Data Inventory Rg 22 - 080425 (AEA Statewide)
37) Project Manager Rg 24 - 080458 (AEA Statewide)
38) Project Manager Rg 24 - 08X007 (AEA Statewide)
39) Assistant Project Manager - Wind Rg 22 - 08X028 (AEA Statewide)
40) Assistant Project Manager - Hydro Rg 22 - 08X029 (AEA Statewide)
41) Assistant Project Manager - GEO/Ocean Rg 22 - 08X033 (AEA Statewide)
42) Assistant Project Manager - Energy Efficient Rg 20 - 08X034 (AEA Statewide)

New Position:

43) Loan Officer Rg 20

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 4
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: Alaska Energy Authority Rural Operations
OMB Component Number: 2600

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual	(2,329.3)						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**(2,329.3)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF	(816.7)						
1007 I/A Receipts							
1061 CIP Receipts	(1,512.6)						
1102 AIDEA Receipts							
1074 Bulk Fuel							
1107 AEA Corporate Receipts							
TOTAL	**(2,329.3)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost _____

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Energy Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community, & Economic Development
Date: 1/13/2011

(Revised 12/29/2010 OMB)

FISCAL NOTE #4

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis

This legislation allows the Alaska Energy Authority (AEA) to have employees. The impact to the Rural Energy Operating component is a reduction in contractual costs of employee services for an estimated 16 FTE's that were previously AIDEA employees estimated to be $2,207.5 and a reduction in contractual costs of Operations employees who provide shared services estimated to be $121.8. These positions are funded by both GF and CIP receipts. Costs are transferred to the Statewide component personal services. Please see the fiscal note analysis for the AEA Statewide Project Development, Alternative Energy and Efficiency component (FN 1 of 2) for more detail.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 5
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: Alaska Energy Authority Power Cost Equalization
OMB Component Number: 2602

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual	(160.0)						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**(160.0)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF	(160.0)						
1007 I/A Receipts							
1061 CIP Receipts							
1102 AIDEA Receipts							
1074 Bulk Fuel							
1107 AEA Corporate Receipts							
TOTAL	**(160.0)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost _____

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Energy Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community & Economic Development
Date: _____

(Revised 12/29/2010 OMB)

FISCAL NOTE #5

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis

This legislation allows the Alaska Energy Authority (AEA) to have employees. The impact to the Power Cost Equalization component is a reduction in contractual costs of employee services for an estimated 2 FTE's that were previously AIDEA employees estimated to be $160.0. These positions are funded by GF receipts. Costs are transferred to the Statewide component personal services. Please see the fiscal note analysis for the AEA Statewide Project Development, Alternative Energy and Efficiency component (FN 1 of 2) for more detail.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 6
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: Alaska Energy Authority Owned Facilities
OMB Component Number: 2599

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual	(25.0)						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**(25.0)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF							
1007 I/A Receipts							
1061 CIP Receipts							
1102 AIDEA Receipts							
1074 Bulk Fuel							
1107 AEA Corporate Receipts	(25.0)						
TOTAL	**(25.0)**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Energy Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community, & Economic Development
Date: 1/13/2011

(Revised 12/29/2010 OMB)

FISCAL NOTE #6

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB 103

Analysis

This legislation allows the Alaska Energy Authority (AEA) to have employees. The impact to AEA Owned Facilities component is a reduction in contractual costs of employee services for an estimated 15% of one engineer position funded by AEA Corporate receipts. Costs are transferred to the Statewide component personal services. Please see the fiscal note analysis for the AEA Statewide Project Development, Alternative Energy and Efficiency component (FN 1 of 2) for more detail.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number: 7
Bill Version: HB 103
(H) Publish Date: 1/18/11

Identifier (file name) 1822-CED-AEA-12-10-10
Title: Powers of Alaska Energy Authority
Sponsor: Rules Committee
Requester: Request of the Governor

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: Statewide Project Development
Alternative Energy and Efficiency
OMB Component Number: 2888

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services	1,125.0		1,181.3	1,240.3	1,302.3	1,367.4	
Travel							
Contractual	238.0		247.8	252.7	252.7	257.1	
Supplies							
Equipment	413.0		5.0	5.0	5.0	5.0	
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**1,776.0**	**0.0**	**1,434.1**	**1,498.0**	**1,560.0**	**1,629.5**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1004 GF							
1007 I/A Receipts							
1061 CIP Receipts	1,776.0		1,434.1	1,498.0	1,560.0	1,629.5	
1102 AIDEA Receipts							
1074 Bulk Fuel							
1107 AEA Corporate Receipts							
TOTAL	**1,776.0**	**0.0**	**1,434.1**	**1,498.0**	**1,560.0**	**1,629.5**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time	8.0						
Part-time							
Temporary							

Why this fiscal note differs from previous version

Prepared by: Sara Fisher Goad, Deputy Director - Operations
Phone: 907-771-3012
Division: Alaska Energy Authority
Date/Time: 1/12/11 5:00 PM
Approved by: Susan K. Bell, Commissioner
Commerce, Community, & Economic Development
Date: 1/13/2011

(Revised 12/29/2010 OMB)

FISCAL NOTE #7

STATE OF ALASKA **BILL NO. HB 103**
2011 LEGISLATIVE SESSION

Analysis

Note: This is fiscal note 2 of 2 for the AEA Statewide Project Development component. The cost information relevant to the AEA project construction portion of this legislation is presented separately from the cost information relevant to the power of AEA to have employees (See fiscal note 1 of 2 for the costs of AEA Statewide Project Development to have employees).
Section 6, 9, and 11 of this bill expands AEA's powers to allow AEA to acquire, construct, and conduct feasibility studies of new power projects. Section 6 of the bill would amend the powers of AEA to add provisions related to new power projects. Sections 9 and 11 of the bill would empower AEA to exercise for new power projects, the existing statutory authority managing power projects which are currently limited to power projects from the pre-1993, "former energy program for Alaska."

This fiscal note reflects the costs to AEA to establish a project office in pursuit of constructing and owning the Susitna Hydro project.

PERSONAL SERVICES: $1,125.0 - Increased to include 8 staff for the first year as follows:

Project Manager Rg 27
Environmental Manager Rg 26
Administrative Assistant Rg 12
Project Accountant Rg 18
Financial/Budget Analyst Rg 24
Public Outreach/Legislation Liaison Rg 23
Procurement Manager Rg 24
Data System Specialist Rg 20

CONTRACTUAL: $238.0 - Increase for Contractual services including Lease, Utilities, and G&A costs for Project Office. Utilities and G&A estimates include a cost associated with contract labor personnel.

$ 189.0	Annual Lease - 4,500 sq. ft. x $3.50 per sq. ft./mo. x 12 mo.'s.
$ 13.0	Utilities $1.3 per person x 10 (8 staff + 2 contractors) first year.
$ 36.0	G&A Expense: $3.6 per person - $3.6 x 10 (8 staff + 2 contractors).
$ 238.0	

EQUIPMENT/FURNITURE: $413.0 -Increase for 1st year Project Office set up costs. This cost estimate assumes all equipment and furniture purchases in the first year as well as one time only moving expenses and tenant improvements.

$ 28.0	IT Equipment $2.0 per person per year x 14 (8 staff + 6 contractors). Assumes all equipment purchases in 1st year for project office (including contract labor needs).
$ 385.0	Tenant Improvement $315.0 ($70 x 4,500 sq. ft.); Moving Expenses $21.0; and Furniture 49.0
$ 413.0	

HB 103
Updated Sectional Analysis by the Alaska Energy Authority
14 February 2011

Section 1: Would amend the procurement code (AS 36.30.015(f)) to empower AEA to adopt regulations to govern AEA's procurement of supplies, services, professional services, and construction. Under the amendment, AEA will be required to adopt regulations governing procurement that must "reflect competitive bidding principles and provide vendors reasonable and equitable opportunities to participate in the procurement process and must include procurement methods to meet emergency and extraordinary circumstances." The amendment will give AEA similar authority over procurement as that currently exercised by the Alaska Housing Finance Corporation, the Knik Arm Bridge and Toll Authority, and the Alaska Retirement Management Board.

Sections 2, 4, 13, and 16: Creates a new Railbelt energy fund called the Alaska Railbelt Energy Fund, as a fund of AEA and repeal the existing Railbelt energy fund. **Section 2** would expressly authorize the legislature to appropriate amounts in the Railbelt energy fund to capitalize the new Railbelt energy fund, called the Alaska Railbelt energy fund. This would allow amounts to be appropriated and transferred from the existing Railbelt Energy fund into the new fund. **Section 4** would establish the new Railbelt energy fund, called the Alaska Railbelt energy fund of AEA. AEA will be authorized to use money from the fund to conduct feasibility studies, license, permit, acquire or construct, or to make grants for, legislatively approved power projects and electrical transmission lines and interties which serve the Railbelt region, and an appropriation to the fund that names the project would constitute legislative approval.

Section 13: Would repeal the existing Railbelt energy fund, while **Section 16** would make that repeal contingent upon the balance of the fund being appropriated to AEA for deposit into the new Railbelt energy fund called the Alaska Railbelt energy fund, or appropriated and expended on projects.

Sections 3and 6: Would empower AEA to hire employees and advisors in the exempt service. This power would be equivalent to powers the Alaska Industrial Development and Export Authority (AIDEA) currently possesses.

Section 5: Would increase from 3 to 4 the quorum requirement for meetings of the AEA board of directors in reaction to statutory amendments made in 2010. Those amendments increased the size of the AIDEA board from 5 to 7. The AIDEA board serves as the board of AEA. The proposed amendment would correct the quorum for meetings of AEA's board of directors.

Sections 14 and 15: Are transitional sections related to AEA hiring employees. **Section 14:** would instruct the revisor of statutes to amend the statutory heading of AS 44.83.040 to reflect that the section would also address employees. **Section 15:** would address the status of existing employees who perform energy functions with the Alaska Industrial Development Export Authority. AEA has not possessed the statutory authority to hire its own staff since the reorganization of AEA affected by 1993 legislation (ch. 18, SLA 1993). Since the 1993 legislation, AEA programs have been implemented by AIDEA employees. AEA's executive director, for example, is an employee of AIDEA, but is independent from the executive director of AIDEA. The bill would authorize AEA to hire its own employees, and thereby assume greater control over the implementation of AEA programs.

Sections 7, 10, and 12: Would expand AEA's powers to allow AEA to acquire, construct, and conduct feasibility studies of new power projects. **Section 7** would amend the powers of AEA to add provisions related to new power projects. **Sections 10 and 12** would empower AEA to exercise for new power projects, existing statutory authority managing power projects which are currently limited to power projects from the pre-1993, "former energy program for Alaska." AS 44.83.396 (amended by sec. 10 of the bill) addresses how AEA administers the power project and contracts for operators. **Section 11** would make AS 44.83.396 apply to AEA subsidiaries that own power projects. AS 44.83.990(3) (amended by **Section 12**) would define "feasibility study" so that it is not limited to only pre-1993 power projects.

Sections 8, 9, and 11: Would empower AEA to establish subsidiary corporations to support the acquisition, construction, ownership, and operation of power projects. **Section 7** would empower AEA to create subsidiary corporations for new power projects, and thereby potentially limit potential liability of AEA or strengthen the financial viability of a project. **Sections 9 and 11** of the bill would enable an AEA subsidiary to exercise powers currently granted to AEA. For example, AS 44.83.090 (amended by **Section 9**) would exempt an AEA subsidiary from regulation by the Regulatory Commission of Alaska to the same extent as AEA is exempt (but would not exempt utilities contracting with the AEA subsidiary). Also, **Section 11** would make AS 44.83.396 apply to AEA subsidiaries that own power projects and address how AEA administers the power project and contracts for operators.

Section 16: Would provide for an immediate effective date, excepting the contingent effective date for repeal of the existing Railbelt energy fund.

HB 103 – FERC Oversight (Prepared by the Alaska Department of Law)

FERC Oversight in Licensing Procedures	RCA Oversight
1. Certain factors related to cost of power FERC evaluates in determining whether to grant a license include: a. Construction and operational plans. b. Whether the project can be operated efficiently. c. The local need for power. d. The projected cost of power. e. Comparison of the lowest cost, reasonable alternative source of power. FERC will not grant a license if not in the public interest based upon economic and other factors.	1. RCA approves power sales agreements. a. Decision based on economic and cost of power factors similar to those FERC uses in licensing. b. After a power sales agreement is approved i. RCA may not invalidate power sales under an approved contract, and ii. RCA does not economically regulate operations under the contract, but may order renegotiation or dispute resolution.
2. License conditions FERC imposes will impact the cost of power: a. FERC will impose license conditions (e.g., environmental conditions). b. License conditions usually increase the cost of power. c. License conditions are mandatory. d. FERC will enforce license conditions. e. RCA economic regulation would not eliminate license conditions, regardless of impact on power rates.	2. RCA Statutory Regulation. a. Non-economic regulation includes potential investigation of services and facilities of public utility that are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory. b. Economic regulation includes: i. Approval of rates if "just and reasonable," and "non-discriminatory." ii. Potential investigation of utility management for inefficient or unreasonable practices.
3. Post licensing activities. a. FERC will review and enforce compliance with license conditions, including dam safety. b. FERC reviews and approves license amendments, e.g. to improve efficiency of project. c. FERC oversight might impact efficiency and costs, but is not focused upon economic regulation.	

Impact of Imposing Rate Regulation on Ability to Obtain Financing.

1. Financing a project at reasonable, economic rates requires minimizing risk of non-payment of the debt.

2. If "rate regulation" is imposed to eliminate the obligation of ratepayers to pay certain expenses (e.g., for cost overruns), another person or entity must pay.
    a. Placing payment risk on lenders or bond holders will likely either (i) preclude financing, or (ii) increase the cost of financing (increased costs which would pass through to ratepayers).
    b. Placing payment risk on utilities would generally redirect the obligation to the same persons - - from ratepayers to members for cooperatives, and from ratepayers to tax-payers for municipal utilities.
    c. Future legislatures could choose to appropriate more funds to the project to cover cost overruns, and protect ratepayers.

3. RCA statutes protect lenders and bond holders of municipal and cooperative utilities, assuring that rates RCA approves will cover debt payments.

Alaska Energy Authority
Estimated cost comparison from March 2009 report
vs November 2010 Preliminary Decision Document

March 2009 was an Interim Report. Costs are conceptual.
Roller Compact Concrete and Concrete faced Rockfill dams may be lower cost than embankment design.
$8.4B number in March 2009 was for the 885` high Watana Dam. The $4.5 or $4.9 (expandable) numbers are for 700` high.

	Low Watana Expand (Mar 2009) ($000)	Low Watana Expand (Nov 2009) ($000)	Difference ($000)		Low Watana Non Expand (Nov 2009) ($000)
Land and Land Rights	121,000	121,000	$ -		$ 121,000
Power Plant Structure Improvements	159,000	159,000	$ -		$ 115,000
Reservoir, Dams and tunnels	2,449,800	1,718,000	$ (731,800)	Nov used separate cost line for waterways.	$ 1,537,690
Waterways	-	677,000	$ 677,000	March has Waterways in with dam.	$ 590,000
Waterwheel, Turbines and Generators	324,700	297,000	$ (27,700)	Mar was an avg from quotes	$ 297,000
Accessory Electrcal Equipment	38,900	41,000	$ 2,100		$ 41,000
Misc Power Plant Equipment	28,500	32,000	$ 3,500		$ 21,000
Roads, Rails and Air Facilities	599,300	232,000	$ (367,300)	Removed road and bridge Devil Canyon to Watana that should not be in calc	$ 232,000
Transmission	648,374	224,000	$ (424,374)	Removed trans upgrades along intertie and substation work in Anch/Fair. Need to invest req upgrades more.	$ 224,000
Misc Equipment	9,200	16,000	$ 6,800		$ 16,000
Construction Camp	609,100	180,000	$ (429,100)	Nov est based on smaller workforce & camp const vendor feedback	$ 180,000
Mitigation	200,000		$ (200,000)	Ext hard to place a dollar on this. Left over from 1980's. Mitigation is in EE&CM in Nov Rpt	
	$ 4,987,874	$ 3,697,000	$ (1,290,874)		$ 3,374,690
Contengency (20%)	$ 997,575	$ 739,400	$ (258,175)		$ 674,938
Subtotal	$ 5,985,449	$ 4,436,400	$ (1,549,049)		$ 4,049,628
Engineering, Environmental, Const Management	$ 371,000	$ 407,000	$ 36,000		$ 371,000
Contengency (20%)	$ 74,200	$ 81,400	$ 7,200		$ 74,200
Subtotal	$ 6,430,649	$ 4,924,800	$ (1,505,849)		$ 4,494,828

FERC LICENSING - PUBLIC PROCESSES

This paper outlines public processes applicable to two of FERC's licensing processes: the Alternative Licensing Process (ALP) and the Integrated Licensing Process (ILP). This paper does not outline public processes FERC uses in determining whether to approve a license application.

Exhibit A provides process flow charts for the ALP and ILP. Exhibit B provides a matrix comparing ALP and ILP. Both Exhibits are copied from documents on FERC's website.

1. Overview of processes.

    a. Both ALP and ILP include establishing groups of interested parties to participate in the licensing process (referred to as "stakeholders" in this paper). Stakeholders include state and federal resource agencies, tribal organizations, non-governmental organizations, and members of the public.
    b. FERC recommends that communication with stakeholders is critical, regardless of the process selected. In this regard, the applicant's approach and willingness to engage participants is key.
    c. ILP is the presumptive process; FERC must approve using another process.
    d. ALP is described as "collaborative" while ILP is described as "integrated."
    e. ILP "integrated" basically means that the licensing process is integrated with the environmental processes (e.g., NEPA, 401 permit - Clean Water Act, Endangered Species Act.) by FERC and other agencies.
    f. ILP is more regimented (see Exhibit A for detailed process), and has more specific time deadlines. ILP is front loaded; planning ahead and active participation are essential.
    g. ALP is collaborative. For example, the processes and deadlines are developed through collaboration with stakeholders. Communications protocols are established early in the process. Dispute resolution is collaborative; no decision maker if parties fail to reach agreement.
    h. While not imposed by the ILP process, FERC suggests that the applicant may implement open communication/collaborative protocols and other processes similar to ALP.
    i. ILP process gives more deference to state and federal resource agencies.
    j. FERC involvement with all stakeholders early and throughout the process is very helpful.

2. Activities before filing notice of intent and pre-application document (pre-application activity).

    a. FERC has expressed a willingness to participate in workshops and training sessions with stakeholders about the FERC licensing processes. A FERC staff report based upon inquiries made to stakeholders on the ILP suggests:

i. Early workshops/training with FERC staff is invaluable to promoting meaningful public participation.
ii. FERC involvement early and throughout the process is very helpful.

b. The applicant prepares a pre-application document (PAD) which gathers studies and starts organization for environmental processes (the PAD can be structured like an environmental assessment document). Stakeholder comments and participation is helpful.
    i. The applicant gathers existing studies ("existing, relevant, and reasonably available information"), and requests stakeholders to provide additional studies and identify issues and resource management considerations

c. Adopt information/communication protocols – how information will be made available.
    i. Pre-application outreach meetings.
    ii. A project website.
    iii. Document distribution protocol.
    iv. Perhaps, communication protocol

3. Activities before filing License Application (after notice of intent and PAD is filed).

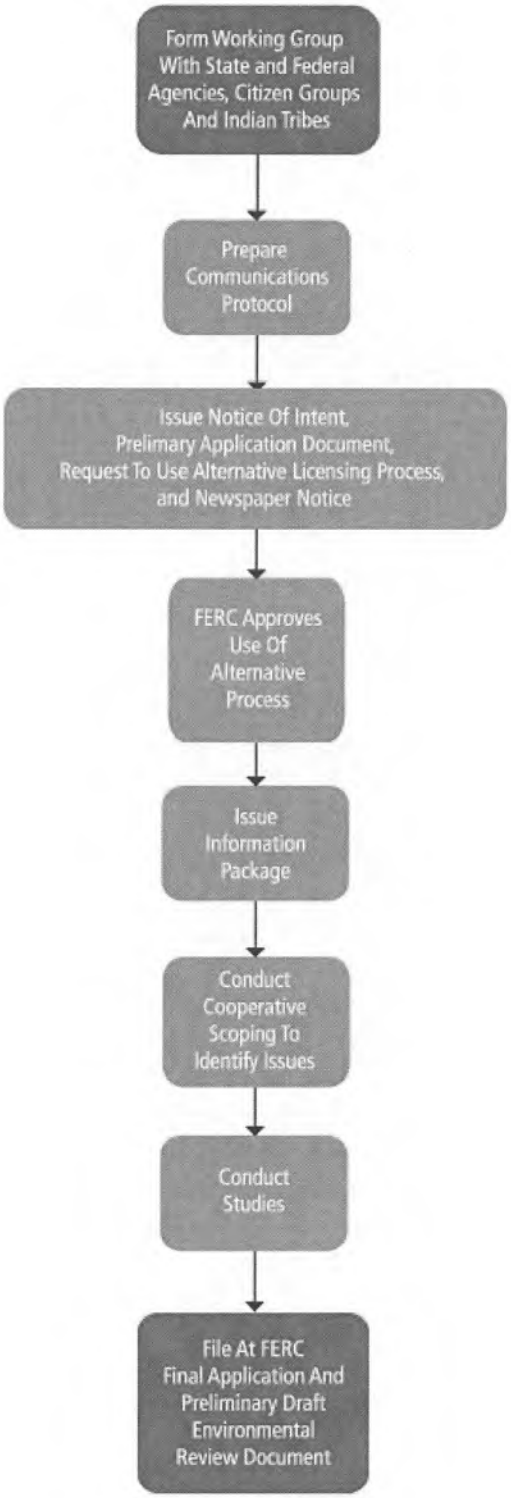
    a. Scoping.
        i. Scoping initiates FERC's process to identify issues to be examined under NEPA. Scoping provides stakeholders an opportunity to review and discuss existing information and conditions, resource management objectives, issues, and the process plan and schedule.
        ii. FERC holds scoping meetings with stakeholders.
    b. Study plan development and study plan requests.
        i. Study plan development involves developing a detailed approach for filing information gaps needed to address issues and identify mitigation opportunities identified during consultation and scoping and for resolving disagreements over studies and study methods.
        ii. Informal study plan workshops may be scheduled before the release of the proposed study plan.
        iii. Stakeholders can review and request additional studies.
        iv. Study plan meetings may be held to resolve disputes.
    c. FERC's pre-environmental impact statement meetings with stakeholders.
    d. Preliminary licensing proposal.
        i. Applicant under ILP process files preliminary license proposal 150 days before filing license application.
        ii. Stakeholders given opportunity to comment.
        iii. Agencies prepare draft terms and conditions for inclusion in License Application

Document Prepared by Department of Law on April 8, 2011

EXHIBIT A

PROCESSES FOR HYDROPOWER LICENSES
Alternative Licensing Process

Applicant's Pre-Filing Process



PROCESSES FOR HYDROPOWER LICENSES
Alternative Licensing Process

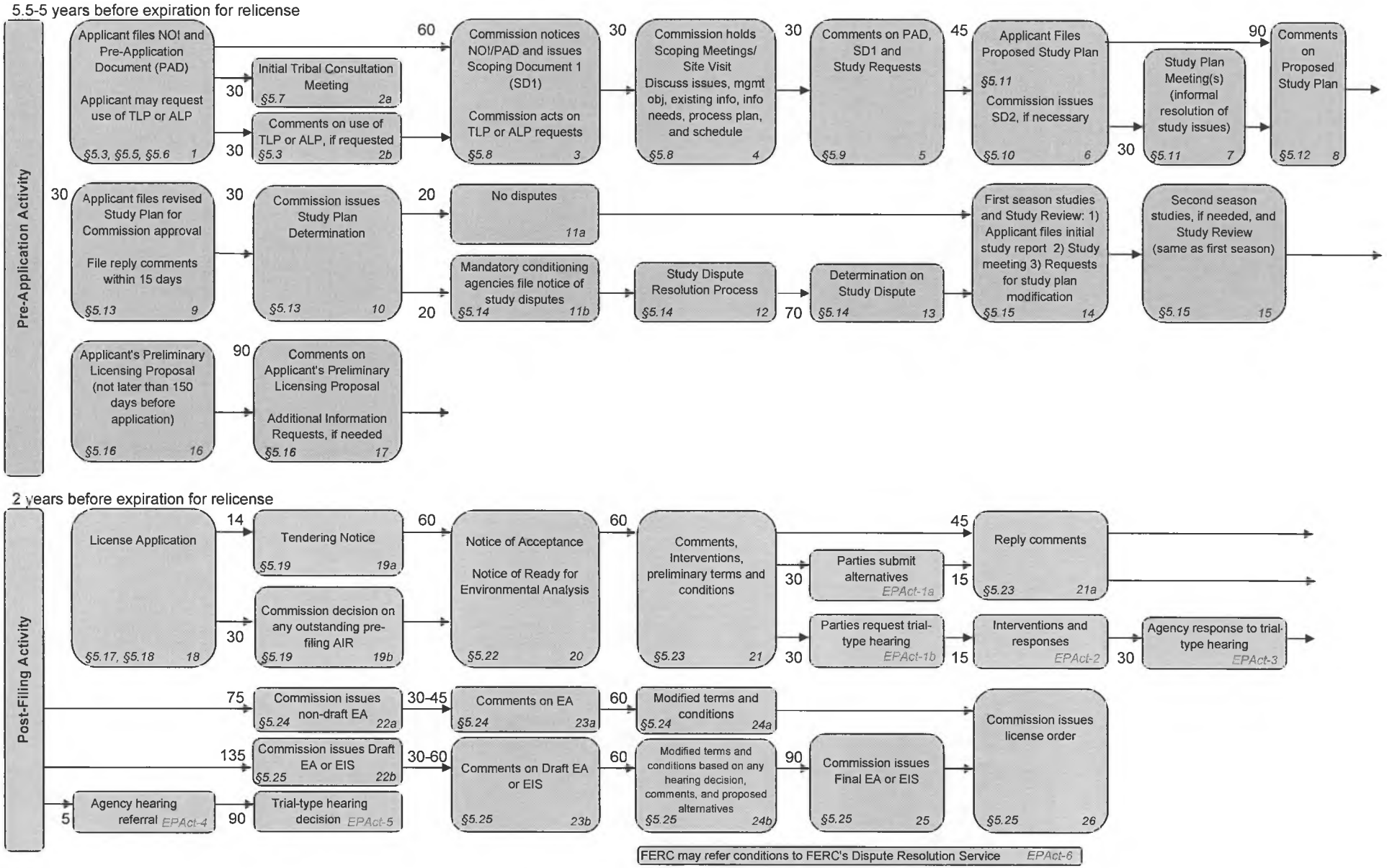
FERC Application Process



Document Copied from FERC Website by Department of Law on April 6, 2011

Integrated Licensing Process

(Section 241 of the Energy Policy Act of 2005)



*Section 241 of the Energy Policy Act of 2005 in pink.

EXHIBIT B

Matrix Comparing Two Licensing Processes

	Integrated Licensing Process (ILP)	Alternative Licensing Process (ALP)
Consultation w/ Resource Agencies and Indian Tribes	- Integrated	- Collaborative
FERC Staff Involvement	- Pre-filing [beginning at filing of Notice of Intent (NOI)] - Early and throughout process	- Pre-filing (beginning at filing the NOI) - Early involvement for National Environmental Policy Act (NEPA) scoping as requested
Deadlines	- Defined deadlines for all participants (including FERC) throughout the process	- Pre-filing: deadlines defined by collaborative group - Post-filing: defined deadlines for participants
Study Plan Development	- Developed through study plan meetings with all stakeholders - Plan approved by FERC	- Developed by collaborative group - FERC staff assist as resources allow
Study Dispute Resolution	- Informal dispute resolution available to all participants - Formal dispute resolution available to agencies with mandatory conditioning authority - Three-member panel provides technical recommendation on study dispute - OEP Director opinion binding on applicant	- FERC study dispute resolution available upon request to agencies and affected tribes - OEP Director issues advisory opinion
Application	- Preliminary licensing proposal or draft application and final application include Exhibit E (environmental report) with form and contents of an EA	- Draft and final application with applicant-prepared environmental assessment or third-party environmental impact statement

Additional Information Requests	- Available to participants before application filing - No additional information requests after application filing	- Available to participants primarily before application filing - Post-filing requests available but should be limited due to collaborative approach
Timing of Resource Agency Terms and Conditions	- Preliminary terms and conditions filed 60 days after Ready for Environmental Analysis (REA) notice - Modified terms and conditions filed 60 days after comments on draft NEPA document	- Preliminary terms and conditions filed 60 days after REA notice - Schedule for final terms and conditions

Document Copied from FERC Website by Department of Law on April 6, 2011

HB 103
REGULATION BY RCA

Prepared by the Alaska Department of Law, 15 February 2011

Statutory Bases for Regulation/Exemption from Regulation:

1. AS 44.83.090(b) – AEA is not subject to jurisdiction by RCA, but that does not diminish RCA jurisdiction over utilities that purchase power from AEA projects. E.g., absent other exemption, RCA must approve a power sales agreement before a utility could purchase from an AEA power project. AS 42.05.431(b).

    a. AEA exemption is similar to treatment given other political subdivisions.

        AS 42.05.711(b) – a public utility owned by and operated by a political subdivision is not subject to RCA regulation under AS 42.05 (with limited exceptions) unless: (a) the governing body elects to be subject to AS 42.05, or (b) the political subdivision would directly compete with another utility.

2. AS 44.83.090(a) – mandates provisions that must be included in AEA power sales agreements. The contract must provide for payment of operating and maintenance costs, interest and amortization of bond debt, AEA monitoring of project, full disclosure of all cost factors so rates will be determined on basis of true cost data; periodic revision of rates based upon accurate cost data; security and default provisions.

    AS 44.83.396(e) – mandates that AEA when it contracts for operation of a power project, review and approve annual budgets for operation and maintenance, and assure that the project is being operated efficiently and in a manner consistent with national standards for industry and agreements with bondholders.

    a. These statutory mandates largely duplicate what RCA does under economic regulation for power sales to ratepayers.

        AS 42.05.381 & AS 42.05.431(a) require rates be just and reasonable, and not discriminatory. Rates based upon costs. RCA generally reviews costs after project is constructed, but may review before construction (e.g., South Anchorage facility). RCA does not monitor construction of projects.

AS 42.05.291 & AS 42.05.511 provide authority for RCA to investigate management, services and facilities for efficiency, safety, etc.

b. The statutory mandates on AEA alleviate the need for what would include duplicative RCA regulation.

3. AS 42.05.431(b) – A wholesale power agreement between public utilities is subject to prior approval by RCA. This provision applies to utilities purchasing from AEA, absent another exemption.

4. AS 42.05.431(c) – provides that wholesale power and related agreements arising out of certain projects owned, or originally owned, by AEA are not subject to RCA review or approval until all long-term debt for the project is paid off.

   a. Applies to Bradley Lake Hydroelectric Project, and the original Four Dam Pool Hydroelectric Project (currently Lake Tyee and Swan Lake owned by the SEAPA joint action agency).

   b. Valid, approved power sales agreements will almost certainly be necessary to support financing a project.

   c. The exemption of RCA review of wholesale power sales agreements for past projects eliminated the time necessary for RCA review and approval, including time that might have been involved with litigation challenging RCA's decision.

5. AS 42.05.431(b) – After RCA approves a wholesale power agreement and the agreement is in effect, RCA may not invalidate a sale under that contract. If sales under the contract make rates unjust or unreasonable, RCA can order parties to the agreement to negotiate or exercise dispute resolution mechanisms in the contract.

6. AS 42.05.431(a) – includes provisions that municipal and cooperative utilities may include rate covenants in bond and debt instruments, and RCA may not reject a rate necessary to satisfy debt covenants relating to rates.

   a. This provision reduce scope of economic regulation and thereby offers assurances to creditors that the utility's debt will be repaid.

   b. Application of this or similar provisions will likely be necessary for AEA financing of large projects.

Susitna Hydroelectric Project

Project Evaluation

Interim Memorandum

FINAL

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Executive Summary

A hydroelectric project on the Susitna River has been studied for more than 50 years and is again being considered by the State of Alaska as a long term source of energy. In the 1980s, the project was studied extensively and a license application was submitted to the Federal Energy Regulatory Commission (FERC). The project was cancelled in 1986 due to a variety of reasons. In 2008, the Alaska State Legislature authorized the Alaska Energy Authority (AEA) to perform an update of the project. That authorization also included an Integrated Resource Plan (IRP) to be performed by others to evaluate the ability of this project and other sources of energy to meet the long term energy demand for the Railbelt region of Alaska. Hydroelectric power is of particular interest to the IRP because it provides stable electricity rates due to renewable river flow, rather than the fluctuating rates of fossil fuel-generated electricity.

HDR was contracted by AEA to update the 1980s cost estimate, energy estimate, and schedule and to evaluate the economics of the project. This report summarizes the results of that study. Based largely on the 1986 FERC license application, the following project development alternatives have been reviewed and updated.

- **Watana.** This alternative consists of the construction of a large storage reservoir on the Susitna River at a site named Watana, with an 885-foot-high rock filled dam, and a powerhouse containing 6 turbines with a total installed capacity of 1,200 megawatts (MW).
- **Low Watana.** This alternative consists of the Watana dam constructed to a lower height of 700 feet, along with a powerhouse containing 4 turbines, with a total installed capacity of 600 MW.
- **Watana/Devil Canyon.** This alternative consists of the full-height Watana development, plus a second reservoir located downstream at a site called Devil Canyon. This downstream reservoir would re-regulate river flow and be impounded by a 646-foot-high concrete dam. The Devil Canyon powerhouse would have an installed capacity of 680 MW. After the FERC license is issued, these 2 dams and powerhouses would be constructed sequentially without delays. The combined Watana/Devil Canyon developments would have an installed capacity of 1,880 MW.
- **Staged Watana/Devil Canyon** *(low height Watana, plus Devil Canyon, plus full-height Watana).* This alternative would ultimately result in the same configuration as the previous alternative, but the Watana dam would be initially constructed to the lower height and the Watana powerhouse would only have 4 out of the 6 lower-head turbine generators installed. The Watana construction crew would demobilize and move downstream to construct the Devil Canyon dam and powerhouse, then either demobilize again, delay further construction, or return upstream to complete the Watana dam to its full height and install the remaining 2 units. The staged capacity of Watana would increase from 600 MW to 1,200 MW for a total project capacity of 1,880 MW.
- **Devil Canyon.** This alternative consists of the Devil Canyon dam, without Watana dam, with a Devil Canyon powerhouse containing 4 turbines, with a total installed capacity of 680 MW. Note that Devil Canyon was intended to be a regulating dam, paired with the

Watana reservoir. Without the larger upstream Watana reservoir, the Devil Canyon alternative would have minimal storage for providing power in winter.

Energy for each of the project alternatives was estimated. Susitna project hydrology, along with reservoir, waterway, and turbine-generator performance data were developed. Model inputs including daily flow for the period of record, reservoir capacity curves, spillway capacity, and tailwater curves were updated, based largely on the 1980's studies, license application, and amendment.

Cost estimates for each alternative were updated. These updates were based on the original 1983 FERC application, including its preliminary design, quantities and associated cost estimate, with several modifications from a 1986 license amendment. For the water-to-wire turbine-generator equipment cost estimates, budget pricing was requested directly from manufacturers. A contingency of 20 percent of direct construction costs was set, which is typical for preliminary design. Project licensing, environmental studies, engineering design and construction management, were estimated at 11 percent of direct construction costs. Cost estimates were developed using conservative assumptions and further review of existing infrastructure and industry practices may reduce costs.

The project schedule was updated to reflect changes in federal and state regulations, including several significant environmental legislation acts and modifications to the FERC licensing process. Based on the modern Integrated Licensing Process (ILP), obtaining the FERC license for Susitna is expected to require an ambitious sustained effort, with issuance of the license expected in approximately 8 years. The licensing process would involve extensive public outreach, stakeholder involvement, and coordination of fishery, botanical, wildlife, cultural resource, and other supporting studies. This approach would by necessity be much more comprehensive than the license process in the 1980's. To expedite the overall schedule to bring the project on line, environmental field studies and engineering design would be developed in parallel with the license application.

Preliminary economic analyses were also developed for each project alternative to determine the average cost of electricity per kilowatt hour. These economic analyses were based on the updated estimates of cost, energy, and schedule for each of the project alternatives, thereby identifying the economically preferred alternative. For this preliminary analysis, the following major assumptions were used to compare each alternative:

1. No inflation
2. 100 percent financing with no capital contribution by the State
3. Bond interest rate is 5 percent with a term of 50 years
4. All energy will be sold
5. Debt coverage ratio of 1.25
6. Ongoing O&M and capital expenditures costs and schedule as estimated in Section 3.3 of this report.

These assumptions provide the basis for a relative comparison between the alternatives.

The results of this study are summarized in Table 1. The Watana/Devil Canyon alternative is the most cost effective per unit of energy. The Devil Canyon alternative does not provide a stable winter energy supply although its cost per kWh is lower than the other alternatives.

Table 1 Summary

Alternative	Ultimate Capacity (MW)	Construction Cost ($billion)	Energy (billion kWh/yr)	Schedule (years)	Cost per kWh ($)	
					First 50 Years	Second 50 Years
Watana	1,200	8.4	3.1	15 – 16	0.22	0.01
Low Watana	600	6.9	2.4	14 - 15	0.20	0.01
Watana/Devil Canyon	1,880	11.7	7.2	15 - 20	0.14	0.01
Staged Watana/Devil Canyon	1,880	12.8	7.2	14 - 23	0.18	0.01
Devil Canyon	680	5.0	2.9	14-15	0.13	0.02

Hydroelectric power has many economic and environmental benefits including long-term rate stabilization. Because the cost of the water to power a hydroelectric turbine is essentially free the cost per kilowatt hour is related to the construction and maintenance costs of the dam and powerhouse facilities. As we have seen recently, the price of fossil fuels can fluctuate dramatically over time whereas the cost of hydroelectric power decreases once the initial investment has been repaid and remains low and stable for the life of the project. Consequently the economic risk associated with hydroelectric power is substantially lower than thermal power. Additionally, the life cycle carbon dioxide production of hydroelectric facilities is orders of magnitude less than thermal power plants.

1 Background

The Susitna River has its headwaters in the mountains of the Alaska Range about 90 miles south of Fairbanks. It flows generally southwards for 250 miles before discharging into Cook Inlet just west of Anchorage. Contained entirely within the south central Railbelt region, the Susitna River is situated between the two largest Alaska population centers of Anchorage and Fairbanks.

The Bureau of Reclamation first studied the Susitna River's hydroelectric potential in the early 1950s, with a subsequent review by Corps of Engineers in the 1970s. In 1980, the Alaska Power Authority (APA; now the Alaska Energy Authority) commissioned a comprehensive analysis to determine whether hydroelectric development on the Susitna River was viable. Based on those studies, the APA submitted a license application to the Federal Energy Regulatory Commission (FERC) in 1983 for the Watana/Devil Canyon project on the Susitna River. The license application was amended in 1985 for the construction of the Staged Watana/Devil Canyon project at an estimated cost of $5.9 billion (1985 dollars).

Developing a workable financing plan proved difficult for a project of this scale. When this existing difficulty was combined with the relatively low cost of gas-fired electricity in the Railbelt, the declining price of oil throughout the 1980s, and its resulting impacts upon the State budget, the Power Authority's Board of Directors terminated the project in March 1986.

At that point, the State of Alaska had appropriated approximately $227 million to the project from FY79-FY86, of which the project had expended $145 million to fund extensive field work, biological studies, and activities to support the FERC license application. Though the Power Authority concluded that project impacts were manageable, the license application was withdrawn and the project data and reports were archived to be available for reconsideration sometime in the future.

In 2008, the Alaska State Legislature, in the FY 2009 capital budget, authorized the AEA to reevaluate the Susitna Hydro Project. The authorization also included a Railbelt Integrated Resource Plan (IRP), which will evaluate various sources of electrical power to satisfy the long term energy needs for the Railbelt portion of Alaska. To date the IRP has not yet been completed.

The Susitna and other hydroelectric projects are of particular interest to the AEA and the State because hydroelectric power, unlike gas-fired electricity, is not tied to the fluctuating price of fuel, and can provide long-term rate stability, which in turn allows for long-term growth planning.

1.1 Project Scope

The scope of this new study was to collect and review pertinent information from the original studies and license application from the 1980's. Using this past work as a basis, this reevaluation estimated project energy and projects costs; developed a project schedule; and, using this

information, evaluated in 2008 dollars the economics for the development alternatives generally described in the 1983 FERC license application.

Both the initial FERC license application and this reevaluation analyzed several project alternatives:

- **Watana.** This alternative consists of the construction of a large storage reservoir on the Susitna River at a site named Watana, with a new rock filled dam 885-foot-high, with a powerhouse containing 6 turbines, with a total installed capacity of 1,200 megawatts (MW).
- **Low Watana.** This alternative consists of the Watana dam constructed to a lower height of 700 feet, along with a powerhouse containing 4 turbines, with a total installed capacity of 600 MW.
- **Watana/Devil Canyon.** This alternative consists of the full-height Watana development, plus a second reservoir located downstream to re-regulate river flow, impounded by a new 646-foot-high concrete dam, at a site named Devil Canyon. The Devil Canyon powerhouse would have an installed capacity of 680 MW. After the FERC license is issued, these 2 dams and powerhouses would be constructed sequentially without delays. The combined Watana/Devil Canyon developments would have an installed capacity of 1,880 MW.
- **Staged Watana/Devil Canyon** *(low height Watana, plus Devil Canyon, plus full-height Watana).* This alternative would be the same as the previous alternative, but the Watana dam would be initially constructed to the lower height and the Watana powerhouse would only have 4 out of the 6 lower-head turbine generators installed. The Watana construction crew would demobilize and move downstream to construct the Devil Canyon dam and powerhouse, then either demobilize again, delay further construction, or return upstream to complete the Watana dam to its full height and install the remaining 2 units. The staged capacity of Watana would increase from 600 MW to 1,200 MW for a total project capacity of 1,880 MW.
- **Devil Canyon.** This alternative consists of the Devil Canyon dam, without Watana dam, with a Devil Canyon powerhouse containing 4 turbines, with a total installed capacity of 680 MW. Note that Devil Canyon was intended to be a regulating dam, paired with the Watana reservoir. Without the larger upstream Watana reservoir, the Devil Canyon alternative would have minimal storage for providing power in winter.

A total of 7 alternatives were evaluated. Only the 5 alternatives listed above are presented in this report. A Watana alternative with 6 turbines and a Devil Canyon alternative with 6 turbines were evaluated and found to have higher construction and capital costs with only a minimal increase in energy thus resulting in higher energy costs when compared to the same alternatives with 4 turbines. Thus the 6 turbine options for these alternatives were eliminated from further consideration.

Preliminary energy, cost, and schedule estimates for the 5 analyzed alternatives are described in Sections 2 through Section 4, economic evaluation in Section 5, and regulatory and environmental issues in Section 6.

2 Preliminary Energy Estimate

2.1 Hydrologic Analysis

To develop an updated energy estimate for the Susitna hydroelectric project the existing hydrologic record was updated. At the time the original study was issued in 1983 the hydrologic record contained data from 1950 to 1981. The project team recreated that record from synthesized gage record hydrology for the Watana/Devil Canyon dam sites, transposed from raw daily flow data from United States Geological Survey (USGS) gauge 1529000 at Gold Creek using a straight drainage area proration, and found correlation between the new record and the annual average flow from the original study. Based on this hydrology, a full record was developed for the period from 1950 to 2007. The hydrology of the upper Susitna Basin is dominated by melt water from snow and glaciers in the spring and summer, and substantial freezing during the winter months. As a result, a majority of the flow occurs between mid-April and mid-October.

A review of current literature indicates a lack of consensus on the manner in which precipitation and runoff might be affected by the impacts of either natural variability and/or potential man-made global climate changes. For this report we assume that future hydrologic conditions will be similar to those of our recent past experience.

2.2 Energy Model Analysis

Energy for each of the project alternatives was estimated using Computer Hydro-Electric Operations and Planning Software (CHEOPS), a proprietary energy modeling software. Hydrology was updated in conjunction with project civil, mechanical, and electrical performance data. In addition to daily flow, model inputs included: reservoir capacity and area curves, based on the 1985 FERC amendment; tailwater curves; spillway capacity, with minimum and maximum operation; and evaporation coefficients, all based on the 1985 FERC amendment. Total reservoir evaporation was estimated between 1 and 3 inches per month in summer, with negligible evaporation during the winter when frozen.

Equipment performance was based on manufacturer data obtained in 2008 specifically for this project. Average generic turbine performance curves were then developed for the model, peaking at 95 percent range of efficiency and 92 percent at full gate. Generator performance curves were also developed, peaking at 98 percent. The six 200-MW Watana turbines were rated at a design head of 680 feet and a minimum operating head of 545 feet. The four 170-MW Devil Canyon turbines were rated at 600 feet and a minimum operating head of 450 feet.

For the Watana/Devil Canyon alternative, the target elevations from the 1985 FERC amendment were used to simulate reservoir operation. In that paired configuration, the Devil Canyon power plant provides the base load while the Watana plant is used for peaking power. Alternative scenarios were also run for the Low Watana and Watana operating without Devil Canyon. In these cases, the target elevations for the Watana reservoir were designated to maximize for

winter generation. For the Low Watana alternative, four turbine generators would be installed; each rated at about 150 MW. Other key assumptions for the model included:

- Environmental flow constraints from 1985 as a baseline, despite the fact that new environmental regulations may change requirements on minimum flow and ramping rates
- Energy demand will be sufficient to consume all the energy produced by the project
- A forced outage factor of 1.5 percent for both Devil Canyon and Watana
- Transformer losses of 2 percent of the total generation
- Sedimentation should not have a significant impact on reservoir operation, though 1985 studies indicated 12 percent of the dead storage in the Watana Reservoir will be lost due to sedimentation after 100 years of operation, and no sedimentation rates have been included in the present model
- Firm energy is based on the low water year of the 57-year hydrologic record

The resulting preliminary energy estimates are presented in Figure 2.1 and Figure 2.2 and summarized in Table 2.1. Detailed input and results of these energy analyses are provided in Appendix A.

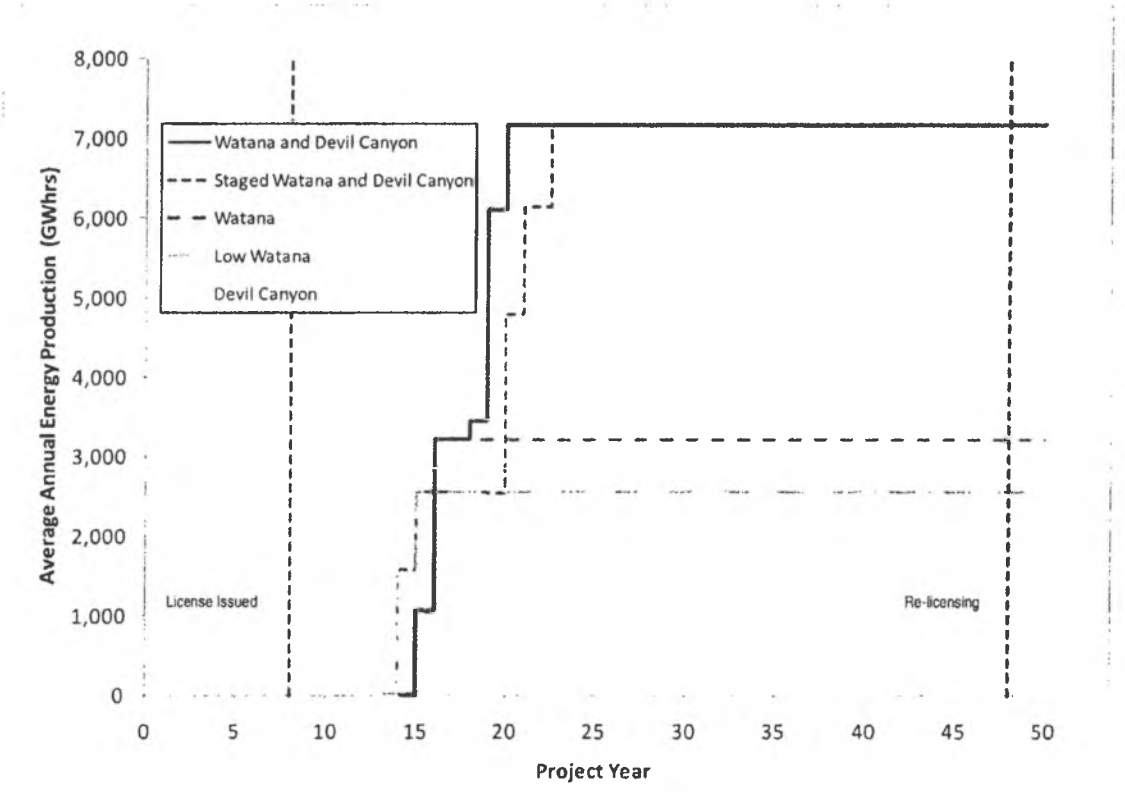


Figure 2.1 Energy Estimates for Susitna Project Alternatives

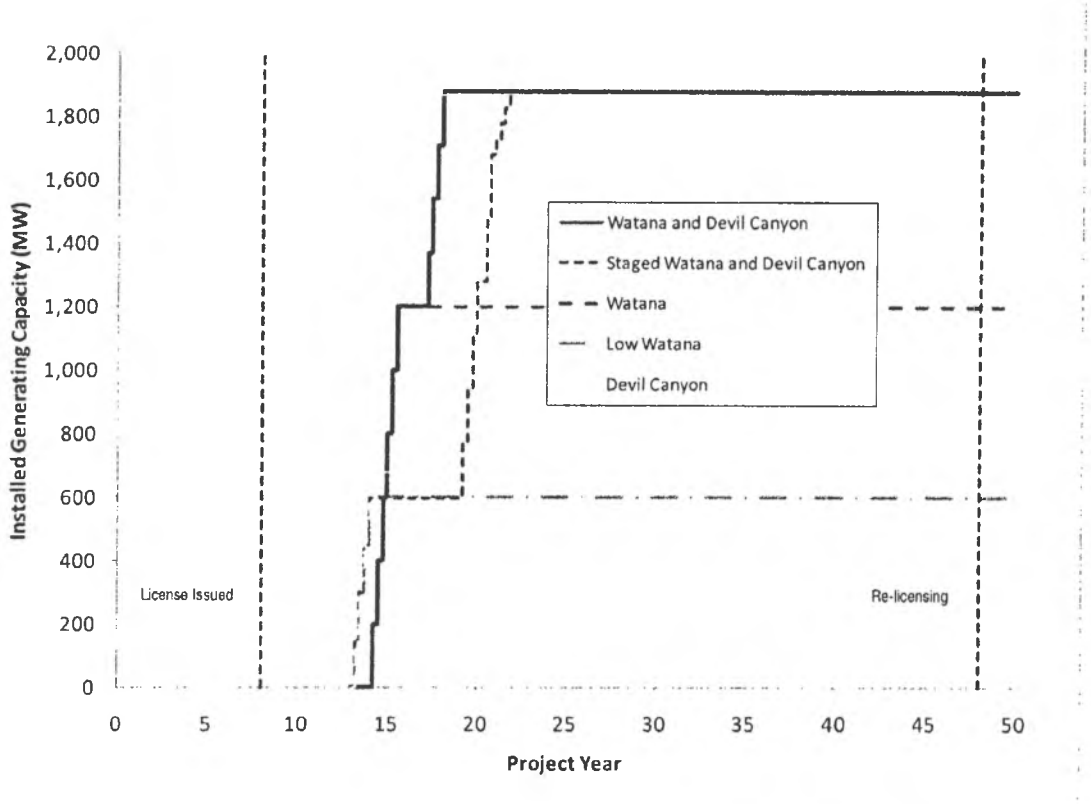


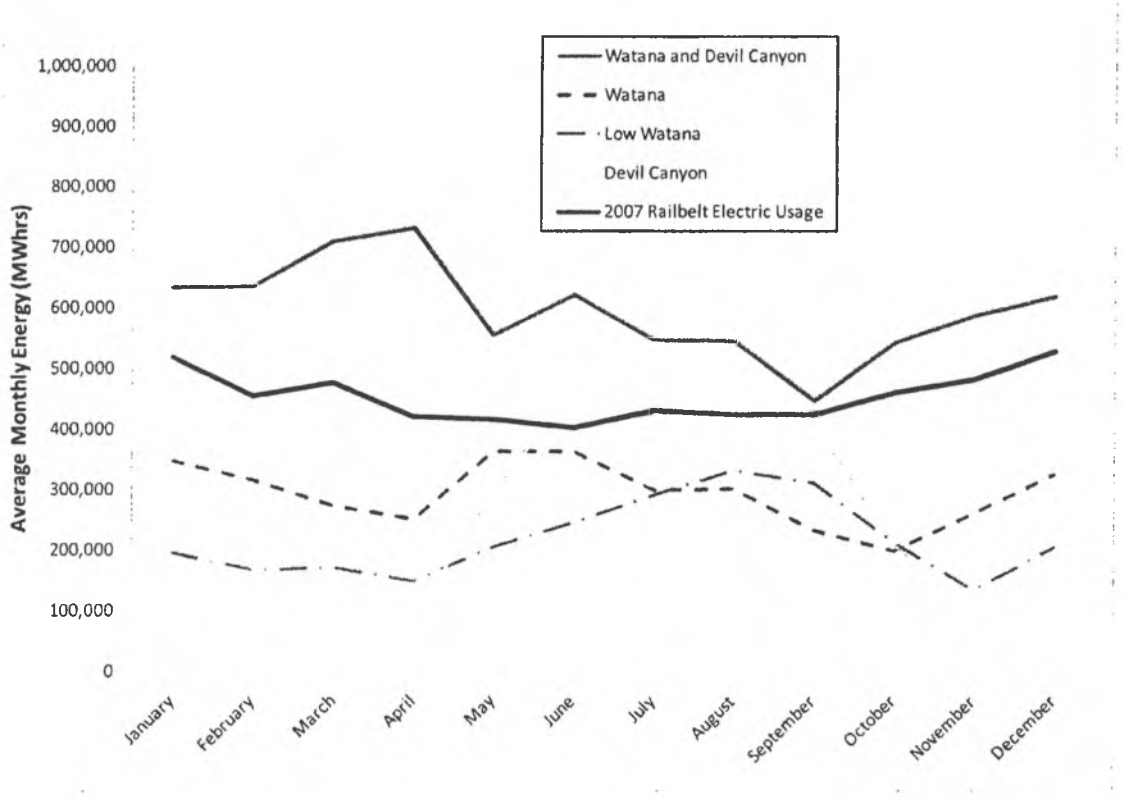
Figure 2.2 Capacity for Susitna Project Alternatives

Table 2.1 Preliminary Energy Estimate		
Alternative	**Estimated Average Annual Energy (Billion kWh/year)**	**Estimated Firm Energy* (Billion kWh/year)**
Watana	3.2	1.8
Low Watana	2.6	1.4
Watana/Devil Canyon	7.2	4.1
Staged Watana/Devil Canyon	7.2	4.1
Devil Canyon	2.9	2.3

*Firm energy is based on the low water year of the 57-year hydrologic record

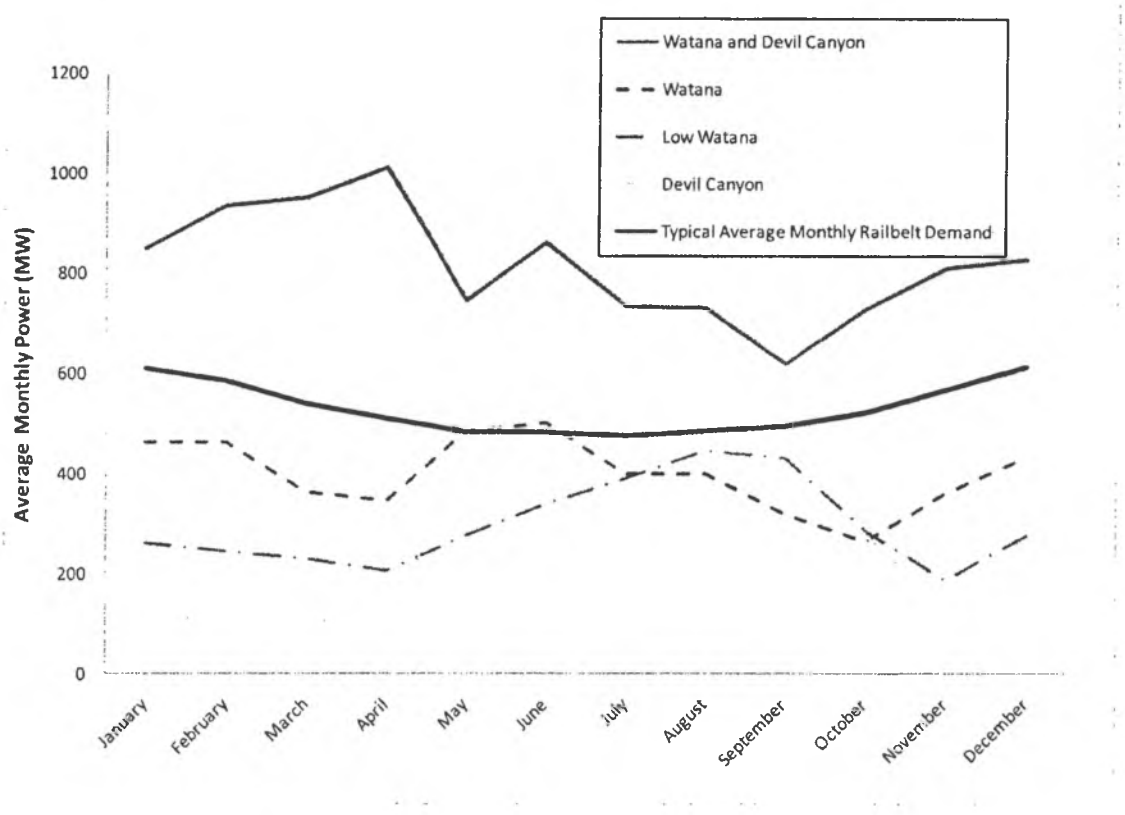
The energy production for the project alternatives will be influenced by seasonal flow variations. The Susitna development was originally designed as a cascade system to store energy for use

during the winter. The Watana reservoir provides storage capacity and peaking power with the Devil Canyon powerhouse providing base load power. This allows for water to be stored in the Watana reservoir during the spring and summer floods and run through the Devil Canyon powerhouse during the winter months. As can be seen in Figure 2.3 and Figure 2.4, the Devil Canyon reservoir alone does not provide enough storage capacity to allow for substantial energy to be generated during the winter months.



*Railbelt electricity usage obtained from the U.S. Department of Energy

Figure 2.3 Seasonal Energy for Susitna Alternatives with Rule Curve to Maximize Winter Generation



*Railbelt electricity demand obtained from the U.S. Department of Energy, 2007

Figure 2.4 Seasonal Capacities of Susitna Alternatives with Rule Curve to Maximize Winter Generation

3 Preliminary Cost Estimate

3.1 Original Cost Estimate

To develop an updated cost estimate for the Susitna hydroelectric project as conceptualized in the 1980s, project documents from that era, including project descriptions, drawings, and cost estimates were researched. A detailed cost estimate, prepared in the original feasibility study in 1982, was located. The estimate for the Watana/Devil Canyon alternative totaled $5.0 billion (in 1982 dollars). Also located was a 1986 study estimate for the staged Watana/Devil Canyon alternative at $5.5 billion (1986 dollars). These 2 original estimates were compared and found to be very similar, except for the intervening escalation and a few line-item differences; for example, an environmental mitigation line item was included in the 1986 cost estimate as part of licensing, but this item was not listed the 1982 estimate. Other changes from 1982 to 1986 included an increase in contingency from 17.5 percent to 20 percent and an increase in engineering from 12.5 percent to 15 percent.

3.2 Updated Cost Estimate

2008 cost estimates for each alternative were created based on quantities from the original 1982 estimate with a few modifications from the 1986 estimate. U.S. Cost, a company specializing in cost estimates for large projects, developed the unit prices for 2008. Cost estimates were developed using conservative assumptions; further review of existing infrastructure and industry practices may reduce costs.

For the water-to-wire turbine-generator equipment estimates, budget pricing was requested directly from manufacturers. The water-to-wire equipment includes: turbines, generators, turbine shutoff valves, and other miscellaneous mechanical/electrical equipment, and installation. A data sheet of head, flow, and power ratings was prepared for the 10 potential turbine-generators at Watana and Devils Canyon. The invitation was sent to Alstom, VA-Tech, Voith Siemens, and Toshiba; and pricing, performance, delivery, dimensions, and weights were requested. Of these, 3 budgetary offers were received, evaluated, and incorporated into the 2008 estimate. Transformer prices were also quoted from ABB.

A contingency of 20 percent of direct construction costs was used, which is typical for preliminary design. Use of this contingency was judged acceptable due to the advanced stage of the engineering studies performed in the 1980s. Project licensing, environmental studies, engineering design, and construction management were estimated at 11 percent of direct construction costs including contingency. A figure of 12 percent is typical, though due to economy of scale, the percentage has been adjusted slightly, pending more detailed design and service estimates in the future.

The unit prices in this report are typical for large projects in the United States. Variations in cost will likely be covered within the 20 percent contingency used in this estimate. The 2 largest line item construction costs are the gravel fill for the Watana dam and the concrete for the Devil Canyon. If the unit prices for these items were undervalued by as much as 25 percent each, the

effect on the total construction costs would only be 2 percent. The approach used for this report was to apply the unit prices consistently to the various alternatives. This approach allows a common platform from which to establish priority among the alternatives. Although future refinement of the estimated unit costs may affect the final economics of the project it should not affect the ranking of the alternatives amongst themselves.

The resulting preliminary construction cost estimate is shown in Table 3.1. Detailed construction cost estimates are provided in Appendix B.

In addition to construction costs, the project will incur other costs such as financing costs and interest before construction is complete. These costs are assumed to be rolled into the long term bonds that will be issued for each alternative. The sum of construction costs and financing costs, plus other related costs that are included in the debt service, are the capital costs of the project. The capital costs shown in Table 3.1 reflect the total debt that would be issued for each alternative.

Table 3.1 Preliminary Cost Estimate

Alternative	Estimated Construction Cost (billions)	Estimated Capital Cost (billions)
Watana	$8.4	$10.5
Low Watana	$6.9	$8.3
Watana/Devil Canyon	$11.7	$14.5
Staged Watana/Devil Canyon	$12.8	$15.9
Devil Canyon	$5.0	$6.0

3.3 Operations and Maintenance Cost Estimate

The economic analysis for this project will require estimates of operations and maintenance costs (O&M) and capital expenditures. The annual costs for these items are based on the following assumptions:

- Annual operation and maintenance for the power facilities is estimated at $10 million per year for each of the alternatives. This annual cost is based on other hydroelectric projects of comparable size and location. For the roads and other infrastructure, it is assumed that once the construction is completed, a portion of the maintenance would be subsidized by the project, equating to approximately $5 million per year and is the same for each of the alternatives.
- Capital expenditures will occur on the following schedule:

- Every 20 years, the turbine runners will require replacement due to cavitation. The replacement cost is estimated at approximately $5 million per turbine.
- Every 20 years, the governors will require upgrades. The replacement cost is estimated at approximately $0.5 million per turbine.
- Every 40 years, the generator rotor and stator will require rewinding. This work is estimated at approximately $10 million per turbine.
- Every 40 years, the transformers will require rehabilitation. This work is estimated at approximately $0.4 million per transformer. Watana has 9 transformers and Devil Canyon has 12, plus one spare transformer for each dam.
- Every 50 years, the spillways will require structural repairs. A total of $12.5 million is assumed for each dam or $25 for the two-dam alternatives.
- Every 50 years, the transmission lines will require rehabilitation. A total of $10 million is assumed for each project alternative.
- Every 50 years, the dam structures will require rehabilitation. A total of $25 million is assumed for each dam, or $50 million for two dams.
- The project FERC license will expire after 50 years from issuance. Five years before this expiration, a relicensing effort will begin, and both environmental and regulatory work will be required. A total of $100 million is assumed spread evenly over this 5 year period.

4 Preliminary Project Schedule

An updated schedule was developed for each of the project alternatives. These schedules extend from approval, through licensing, design, construction, and commissioning. The primary purpose of this schedule is to provide a timeline for estimated cost cash flow and estimated energy revenue to determine economic feasibility. This schedule assumes that:

- Construction times are estimated based on 1982 FERC license application.
- The licensing process from start to FERC order is estimated at 7 to 10 or more years. We have set a reasonable target of 8 years for the proposed project analysis, provided that the effort is begun immediately, ambitiously, fully funded, and conducted in parallel with environmental studies, engineering, and with active public outreach and cooperation by stakeholders.
- The FERC License Application will be based on the 1986 application, updated to reflect more than 20 years of regulatory changes and modern engineering and construction methods.
- Any environmental studies will be based on 1980 and 1986 studies, updated to reflect present site conditions, public interests, wildlife, and recreational needs.
- Construction will begin immediately upon issuance of the license.
- Roads and staging will be state permitted outside the FERC project and will begin several years before FERC license, including pioneer and permanent roads, airports, bridges, construction camps, staging areas, and towns. Building roads in this way is the quickest way to meet the projected timeline although there is some uncertainty whether permits could be obtained to construct these facilities before the project license is issued.
- Construction of diversion dams and tunnels will begin on issuance of the license, with upstream and downstream coffer dams and tunnels to divert the Susitna River during construction of main dams at Watana/Devil Canyon.
- Spillway construction will follow diversion dam and tunnel construction, and will include site preparation, approach channels, control structures, gates, stoplogs, chute, and flip buckets for main and emergency spillways.
- The full-height dam construction at Watana will require an 885-foot-high rock-fill dam following site preparation, grouting, and installation of a pressure relief system.
- The main dam construction at Devil Canyon will include a thin-arch concrete dam, preceded by site preparation, foundations, abutments, and thrust blocks. Rock-fill saddle dam construction will follow grouting and pressure relief system.
- The powerhouse and transmission will include power intake, tunnels/penstock, surge chamber, tailrace, powerhouse, turbine/generators, mechanical/electrical systems, switchyard, control buildings, and transmission lines.
- Reservoir filling will be based on the latest hydrologic data for inflow and turbine data for outflow.

- Devil Canyon construction will commence immediately upon completion of Watana for the Watana/Devil Canyon alternatives.

The resulting estimate of generation of first power and full power is shown in Table 4.1. Detailed schedules for all of the alternatives are provided in Appendix C.

Table 4.1 Power Generation Time Estimates

Alternative	Generation of first power (years)*	Generation of full power (years)*
Watana	15	16
Low Watana	14	15
Watana/Devil Canyon	15	20
Staged Watana/Devil Canyon	14	23
Devil Canyon	14	15

*From start of licensing

5 Economic Analysis

An economic analysis was developed for each of the project alternatives. This analysis used the energy, cost, and schedule information prepared in previous tasks to determine the cost of electricity per kilowatt hour (kWh) for each of the project alternatives, thereby identifying the economically preferred alternative.

For this preliminary analysis, the following major assumptions were used to compare each alternative:

7. No inflation
8. 100 percent financing with no capital contribution by the State
9. Bond interest rate is 5 percent with a term of 50 years
10. All energy will be sold
11. Debt coverage ratio of 1.25
12. Ongoing O&M and capital expenditures costs and schedule as estimated in Section 3.3 of this report.

These assumptions provide the basis for a relative comparison between the alternatives. AEA proposed the first 4 assumptions and the fifth assumption regarding debt coverage ratio is the same ratio as used in the 1980s studies. These assumptions will be modified as the study progresses so that the Susitna alternatives will be evaluated on the same basis as other power generation alternatives in the IRP.

The financial markets are currently under a great deal of stress and it is unlikely that bonds could be sold today under the assumptions noted above. However, it is anticipated that the bond market will be functioning normally at the time when substantial capital inputs are required for construction. Future analyses should consider potential financing mechanisms, such as those related to carbon markets or offset investments under a cap-and-trade program as proposed by the Obama-Biden Administration.

The assumption of no capital contribution by the State requires that construction financing or bridge loans are available until construction is complete and power generation begins. The bridge loan is assumed to roll over each year and convert into long-term debt at the beginning of the first full year of operation. The interest rate on the bridge loan is assumed to be 5 percent annually. Debt payments are assumed to start in the first full year of operation.

It is unlikely that the AEA-proposed 100 percent financing with no capital contribution by the State or another party could be achieved. The licensing and construction period for a major hydroelectric facility is very long and even if construction financing were available for these activities the lenders would in all likelihood require at least interest payments until electric generation started. Since the project would not have an income stream until generation starts, the State or another entity would be liable for the interest payments. An assumption of no capital

contributions or grants by the State of Alaska or the federal government results in a high cost of energy for a Susitna hydroelectric project. Grants from these entities could substantially reduce the cost of energy during the period when debt is being repaid.

A debt coverage ratio (DCR) of 1.25 requires that the net operating income be 1.25 times greater than the annual debt payments. A 1.25 ratio was used in the 1985 Susitna report and it is assumed that this ratio could be negotiated with the bond underwriters in the future. The surplus revenues generated by this DCR are placed in a reserve fund and the fund increases each year with accrued interest and an annual contribution from the DCR until such time as the reserve fund in year X plus the net income in year X+1 are large enough to pay off all the remaining debt. Thus the reserve fund decreases the length of time when debt payments are required.

As noted in Section 3.3 of this report, capital expenditures will be required during the life of the project following completion of construction activity for such activities as replacing turbine runners, rewinding generators, FERC relicensing, etc. These costs are assumed to be paid from a reserve fund that accrues modest amounts of surplus cash sufficient to cover the ongoing capital expenditures through the first 100 years of the project. The spreadsheet model seeks the minimum cost of energy that is sufficient to meet these capital expenditures and operations and maintenance costs. It is anticipated that through proper design and operations of the project there will be minimal loss of energy, if any, while these repair and replacement activities are ongoing. The analysis assumes no change in annual power generation for plant maintenance or repair and replacement.

Figure 5.1 shows the cost of electricity for each of the project alternatives from year 1 through year 100. The Watana-only alternatives average about $0.24 per kWh of electricity for the bond payment time interval, falling to about $0.01 per kWh after debt service is eliminated. The Low Watana alternative debt service is paid off sooner than the Watana alternative so the average cost of electricity for the first 50 years is lower for the Low Watana alternative.

The Watana/Devil Canyon alternative or the Staged Watana/Devil Canyon alternative result in higher costs for electricity than the other alternatives in the first few years of generation since much larger capital costs are incurred and there is limited power generation in the first few years compared to the capital expenditures. The DCR magnifies this peak electricity cost since net operating revenues must be 1.25 times the annual debt service and these alternatives are slowly increasing their generating capacity. A similar cost increase was identified in the 1980s studies.

When full generating capacity is achieved for the Watana/Devil Canyon alternative or the Staged Watana/Devil Canyon alternative, the cost of electricity is substantially lower than for the Watana-only alternatives at about $0.15 to $0.16 per kWh (Figure 5.1). However, for the Staged Watana/Devil Canyon alternative, the substantially-higher cost of energy during the first years of generation results in the average cost per kWh during the first 50 years being about $0.18 per kWh (Table 5.1). The Watana/Devil Canyon alternative has an average cost of electricity of about $0.14 per kWh for the first 50 years. Energy costs drop to slightly more than $0.01 per kWh for both of the multiple dam alternatives after the bonds are paid off.

The Devil Canyon alternative has a cost of power that is slightly lower ($0.13 per kWh) than the Watana/Devil Canyon alternative during the first 50 years and slightly higher cost of power after the debt is paid. As noted earlier in this report the Devil Canyon alternative has limited winter generation capacity, although the cost of energy is lower than the other alternatives.

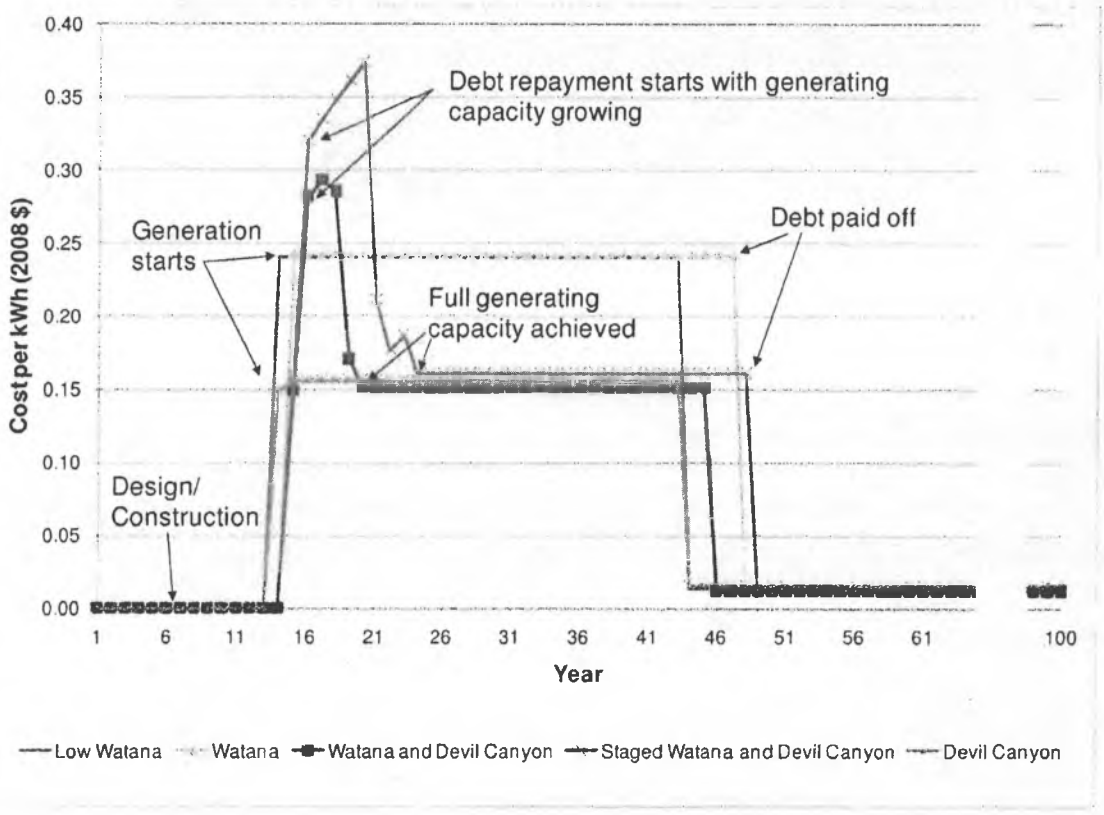


Figure 5.1 Cost of Electricity per Kilowatt Hour for Susitna Hydroelectric Alternatives

Based on the average cost of electricity during the first 50 years of the project and the second 50 years (Table 5.1), the Watana/Devil Canyon alternative or the Devil Canyon alternative would be preferred over the other alternatives, with the Watana/Devil Canyon alternative having slightly lower costs after the debt service period. If winter electricity is an objective of this project then the Watana/Devil Canyon alternative is preferable to the other alternatives. The average cost of electricity during the first 50 years is calculated as the average cost, starting with the first year of generation, and continuing through year 50. The average includes some years when the cost of electricity is very low following payment of the debt.

Table 5.1 Average Cost of Electricity Per Kilowatt Hour		
Alternative	**Cost Per Kilowatt Hour (2008 dollars)**	
	First 50 Years	**Second 50 Years**
Watana	$0.22	$0.01
Low Watana	$0.20	$0.01
Watana/Devil Canyon	$0.14	$0.01
Staged Watana/Devil Canyon	$0.18	$0.01
Devil Canyon	$0.13	$0.02

A sensitivity analysis was performed to estimate the effect of varying interest rates on the cost of power. Table 5.2 shows the average cost per kWh during the first 50 years for each alternative. A reduction in the interest rate from 5 percent to 3.5 percent results in a decrease of 3 cents to 5 cents per kWh depending on the alterative. However, an increase in the interest rate to 6.5 results in increases of six to nine cents per kWh.

Table 5.2 Average Cost of Electricity Per Kilowatt Hour at Varying Interest Rates			
Alternative	**Cost Per Kilowatt Hour, First 50 Years (2008 dollars)**		
	3.5%	**5%**	**6.5%**
Watana	$0.17	$0.22	$0.31
Low Watana	$0.15	$0.20	$0.28
Watana/Devil Canyon	$0.11	$0.14	$0.20
Staged Watana/Devil Canyon	$0.14	$0.18	$0.25
Devil Canyon	$0.10	$0.13	$0.18

Figure 5.2 through Figure 5.11 provide additional detail on each of the 5 alternatives that were evaluated. There are 2 graphs presented for each alternative. The first graph displays the cost per kilowatt hour for the first 100 years of the project and the second graph displays the construction cost expenditures in each year and the total cost of debt in any year. The vertical scales are the

same across all 5 alternatives (i.e., $0 to $0.40 per kWh for cost of electricity and $0 to $16 billion for construction expenditures and total debt) so that the relative difference between alternatives is more apparent.

The Devil Canyon alternative has the lowest total debt structure of the 5 alternatives, followed by the Low Watana alternative and then the Watana alternative. The Watana/Devil Canyon alternative has a lower total debt structure than the Staged Watana/Devil Canyon alternative because the construction period is shorter and the total capital costs are lower.

Table outputs for the models and a discussion of the model parameters are provided in Appendix D.

5.1 Watana

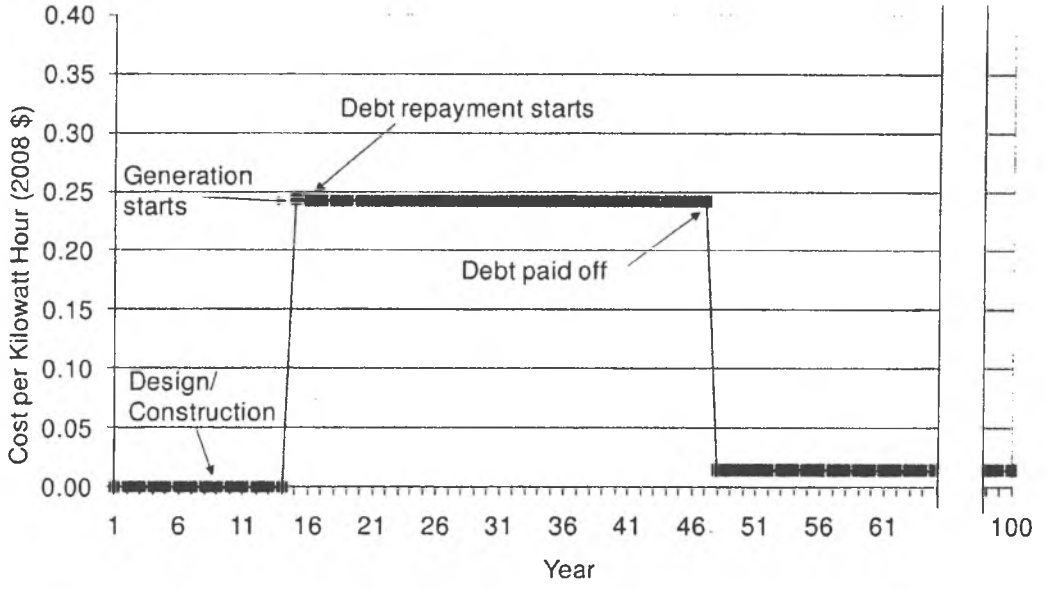


Figure 5.2 Watana Cost of Electricity

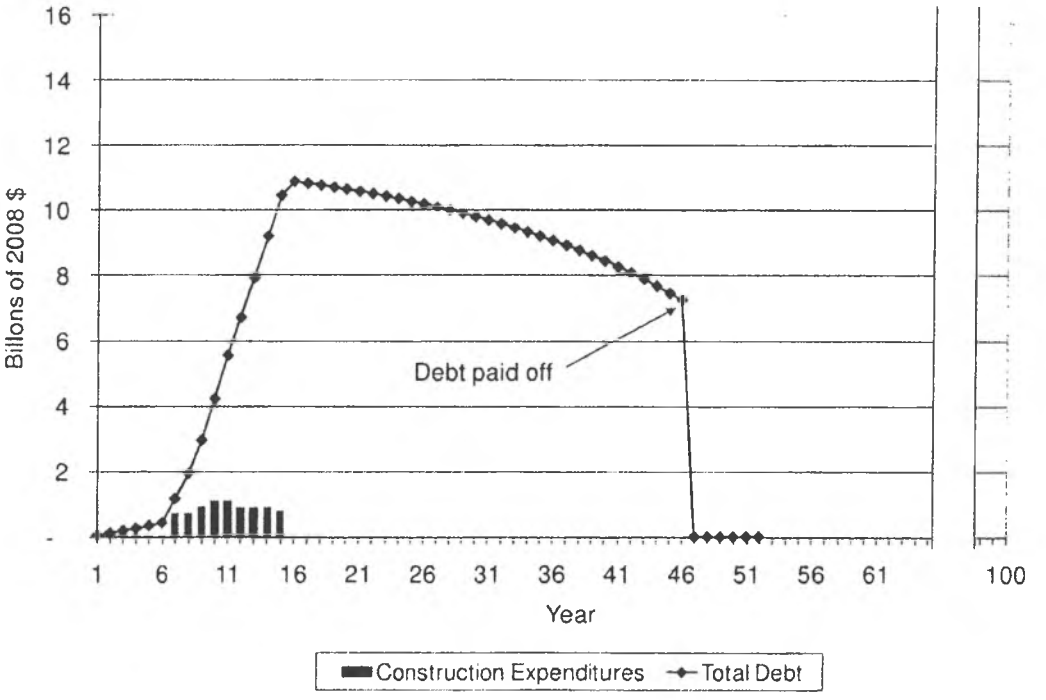


Figure 5.3 Watana Annual Construction Expenditures and Total Debt

5.2 Low Watana

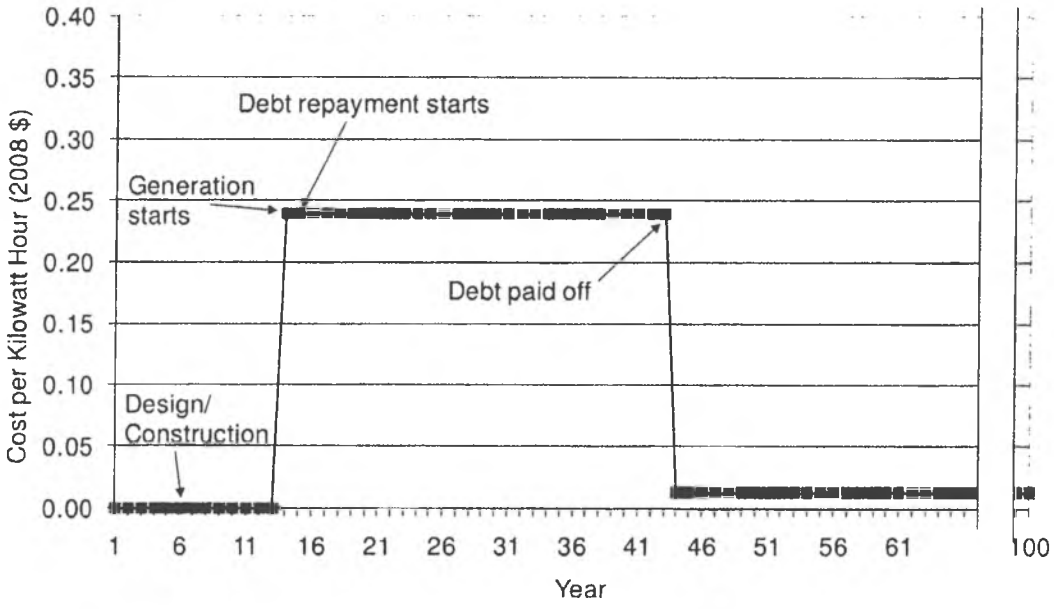


Figure 5.4 Low Watana Cost of Electricity

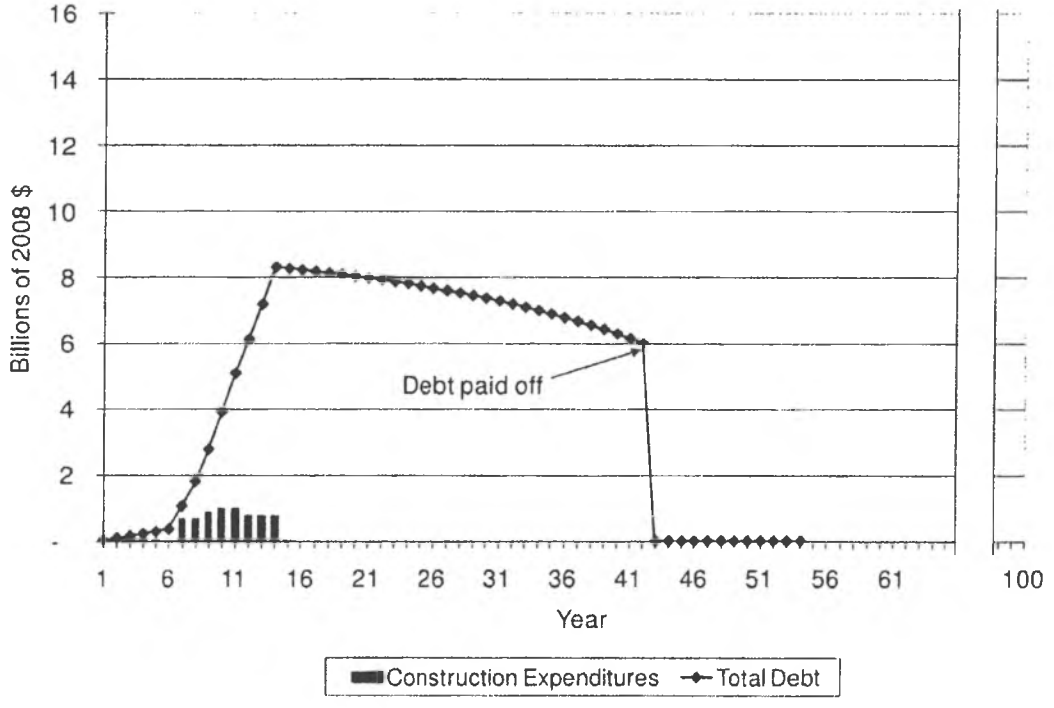


Figure 5.5 Low Watana Annual Construction Expenditures and Total Debt

5.3 Watana/Devil Canyon

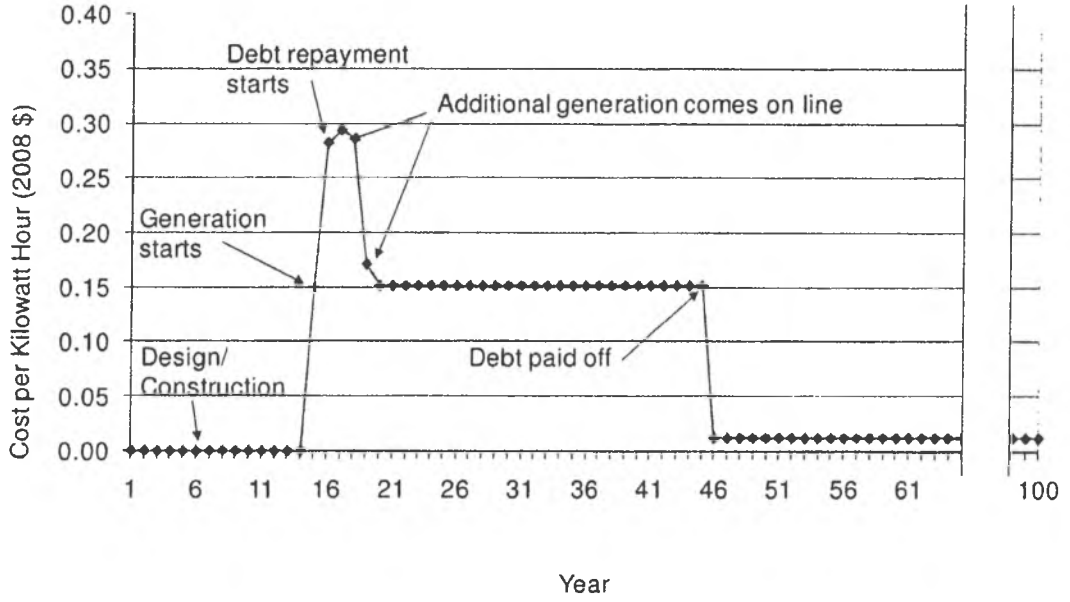


Figure 5.6 Watana/Devil Canyon Cost of Electricity

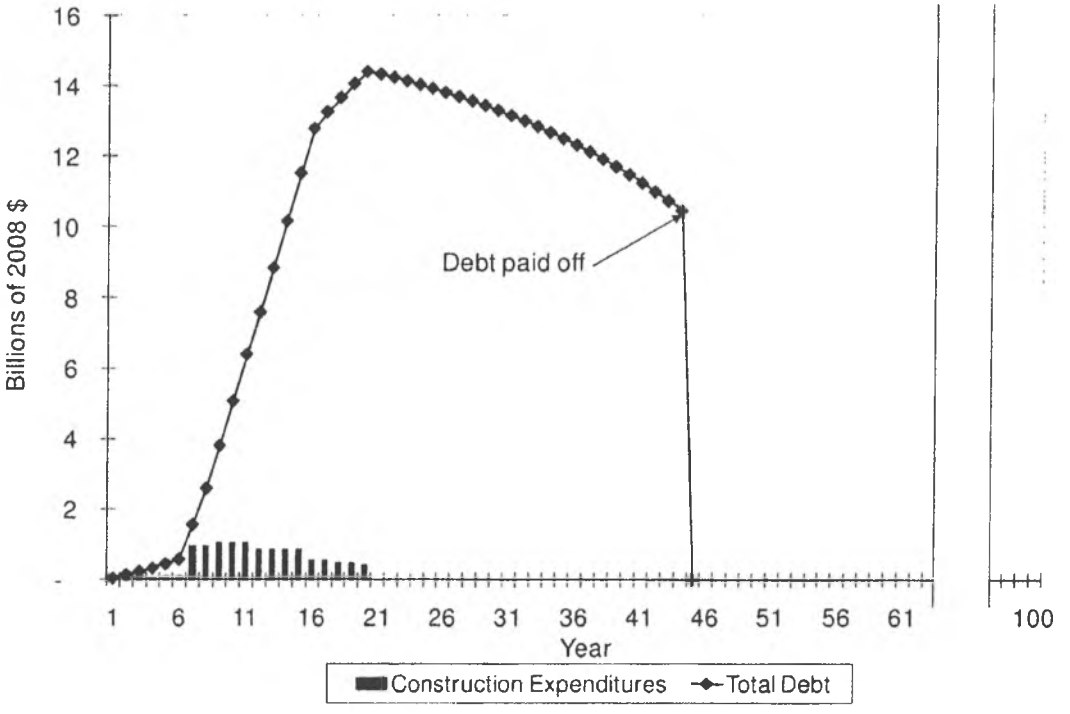


Figure 5.7 Watana/Devil Canyon Annual Construction Expenditures and Total Debt

5.4 Staged Watana/Devil Canyon

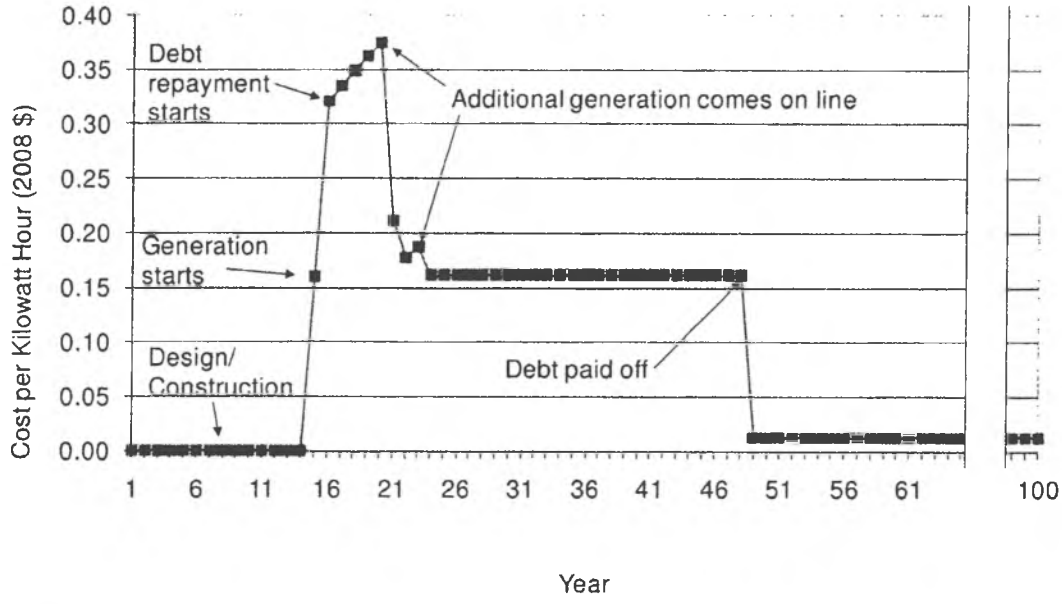


Figure 5.8 Staged Watana/Devil Canyon Cost of Electricity

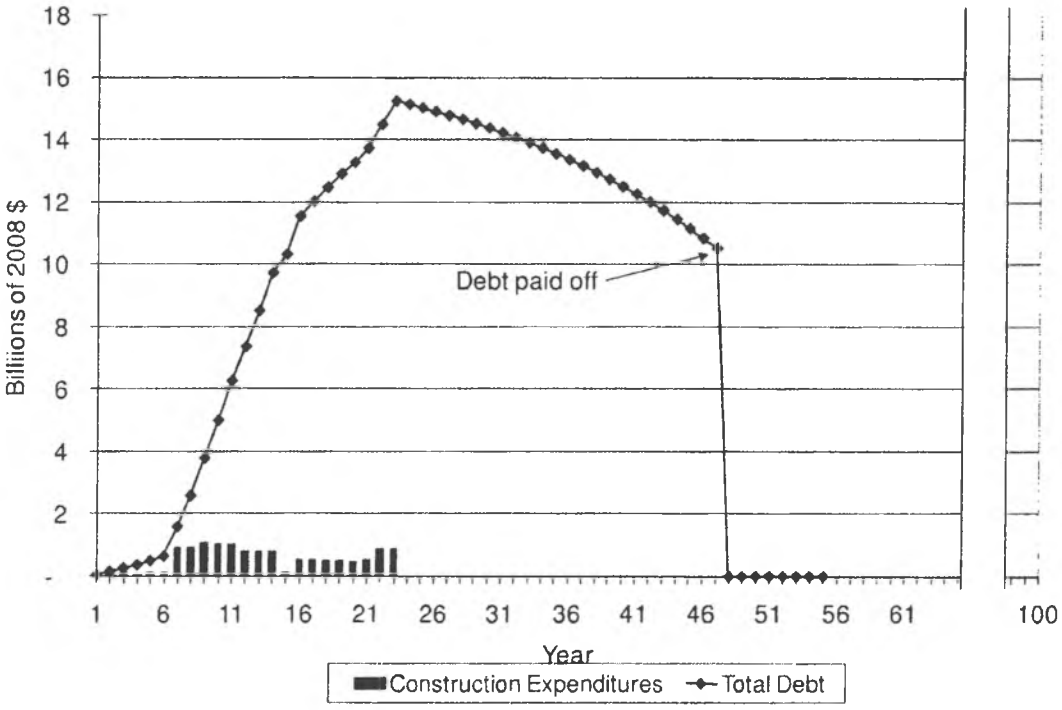


Figure 5.9 Staged Watana/Devil Canyon Annual Construction Expenditures and Total Debt

5.5 Devil Canyon

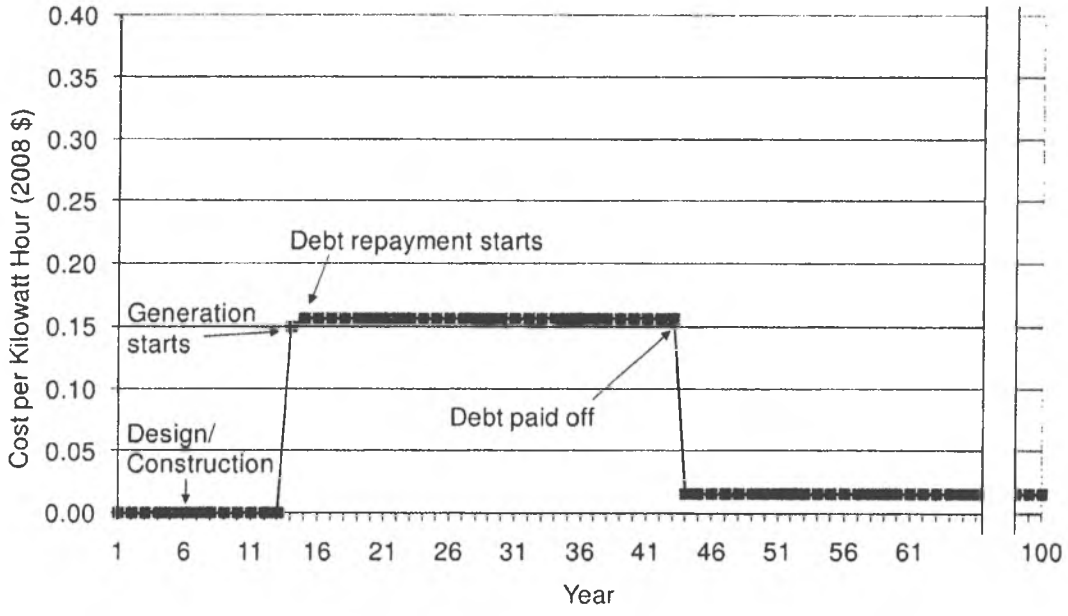


Figure 5.10 Devil Canyon Cost of Electricity

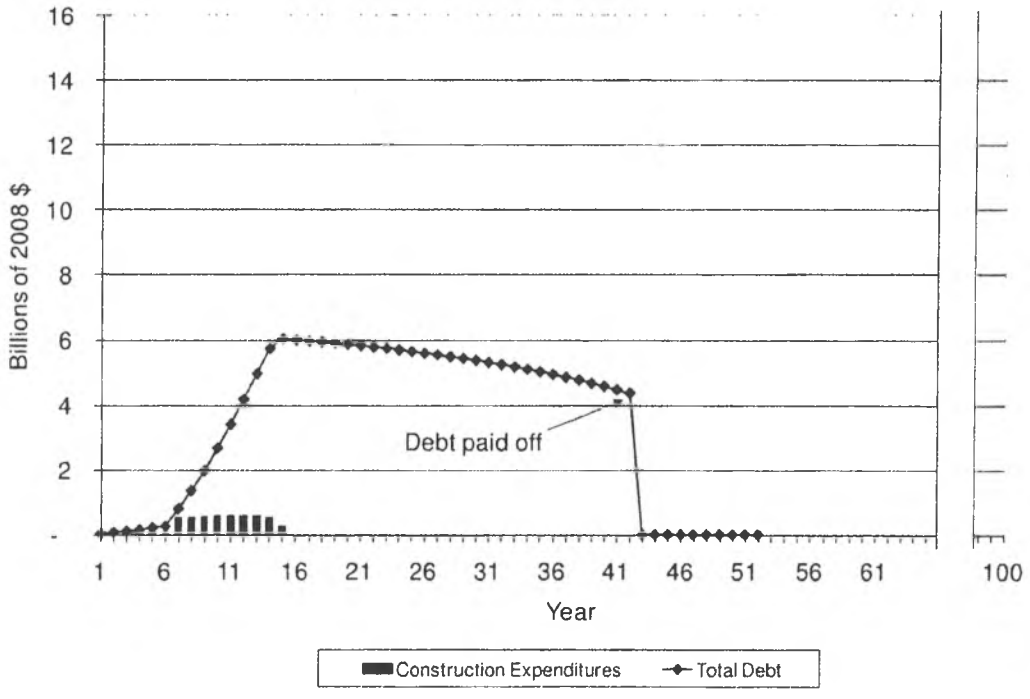


Figure 5.11 Devil Canyon Annual Expenditures and Total Debt

6 Regulatory and Environmental Issues

After the Susitna project was discontinued in 1986 a database of 3,573 documents was created. In September 2008, the 87 most-relevant documents were scanned into HDR's files, of which 18 were summarized. A synthesis of the 7 most-pertinent documents was completed. Because not all of the documents were summarized, some relevant information has likely been overlooked; however, most information was included in the synthesis.

These documents contain information on potential impacts of the proposed project and mitigation proposals for those impacts. Specifically, the documents deal with fisheries resources, botanical resources, wildlife resources, and cultural resources in the potential project area. The documents divide the Susitna River Basin into 4 geographic regions:

- Impoundment zones
- Middle Susitna River
- Lower Susitna River
- Access roads and transmission lines

The potential impacts and mitigation options are discussed for each category in each geographic region as much as possible. It is important to note that not all categories will be impacted in all geographic regions. Mitigation for the proposed impacts is divided into the following categories: avoidance, minimization, rectification, reduction, and compensation. Avoidance is always the preferred mitigation, though it is not usually feasible. Compensation is the only mitigation option for many of the impacts.

6.1 Fisheries Impacts

The fisheries resources have the potential to be impacted the most due to the project. In the impoundment zones, 82 miles of riverine habitat will be transformed into reservoir habitat. The potential exists for the displacement of approximately 20,000 Arctic grayling larger than 8 inches in length from the creation of the reservoirs.

Most of the potential impacts will occur in the middle Susitna River. There will be impacts due to changes in water quality, thermal activity, the water's suspended sediment load, reservoir draw-down fluctuations, impoundment zone inundation, flow regime, and fish habitat. These impacts will result in both positive and negative effects on fish populations. For example, the increase in winter water temperatures will lead to the creation of more overwintering habitat and thus greater fish survival; however, the cooler spring water temperatures will slow fish growth.

Mitigation for these impacts is proposed by compensation through land acquisition, habitat modification, and reservoir stocking.

6.2 Botanical Impacts

The project area contains 295 vascular plant species, 11 lichen genera, and 7 moss taxa. Low Watana inundation will permanently remove 16,000 acres of vegetation. Devil Canyon inundation will permanently remove 6,000 acres of vegetation. Watana inundation will permanently remove an additional 16,000 acres of vegetation. There will be a total of 38,000 acres of vegetation permanently removed. Most of the vegetation inundated will be spruce forest. An additional 836 acres of vegetation will be permanently removed due to access road construction. The transmission corridor will comprise a total of 11,000 acres. Of that area, only a negligible fraction of vegetation will be totally removed due to intermittent placement of control stations, relay buildings, and towers.

There will be limited botanical impacts downstream from the reservoirs. These involve changes to the vegetation due to a more stable environment. Due to flow regulation there will no longer be major flooding events, which destroy the riparian vegetation; instead; rather, there will be succession of the riparian vegetation and colonization of new floodplains. The increase in winter water temperatures will decrease the amount of ice scouring that occurs, which will result in effects similar to those caused by the decrease in flooding.

Botanical resource mitigation will consist largely of compensation for permanently removed vegetation.

6.3 Wildlife Impacts

Within the Susitna River Basin there are 135 bird species, 16 small-mammal species, and 18 large-mammal and furbearing species. There will be 5 classes of potential impacts to terrestrial vertebrates:

- Permanent habitat loss, including flooding of habitat and covering with gravel pads or roads
- Temporary habitat loss and habitat alteration resulting from reclaimed and revegetated areas such as borrow pits, temporary right of ways, transmission corridors, and from alteration of climate and hydrology
- Barriers, impediments, and hazards to movement
- Disturbances associated with project construction and operation
- Consequences of increased human access not directly related to project activities

Mitigation for the proposed impacts involve mostly compensation since there will be permanent habitat loss for most species.

6.4 Cultural Resource Impacts

Within the proposed project area, 297 historic and prehistoric archaeological sites were located. An additional 22 sites were already on file. Sites located within 500 feet of the reservoir's maximum extent may be indirectly impacted due to slumping from shoreline erosion. Indirect impacts may also result from vandalism due to increase in access to the sites. The project has the potential to impact 140 sites. None of these sites will occur in the proposed road corridor or transmission lines. The majority of these sites are relatively small prehistoric sites.

Mitigation for the lost cultural resources will mostly occur through data recovery. Preservation would also be used for some sites. Options to consider include construction of protective barriers to minimize erosion, controlled burial, or fencing of the site to restrict access.

Currently, there are a variety of federal, state, and local land use plans that encompass the Susitna Basin.

6.5 Carbon Emissions

According to the United Nations working group on carbon emissions from freshwater reservoirs the worst case carbon emissions from a reservoir in a boreal climate is 6.7[1] grams per square meter per year. For the Watana/Devil Canyon alternative this equates to 465,000 metric tons of carbon per year or 0.065 metric tons per MWhr. The US Department of Energy reports the average carbon emissions due to electric generation for the State of Alaska to be 0.626[2] metric tons per MWhr. Operation of the Susitna project has the potential to eliminate up to 4 million metric tons of carbon production per year.

[1] United Nations Educational, Scientific and Cultural Organization. Scoping Paper: Assessment of the GHG Status of Freshwater Reservoirs. April 2008

[2] http://www.eia.doe.gov/cneaf/electricity/st_profiles/alaska.html

7 Summary

Table 7.1 provides an estimate of capacity, construction cost, energy, schedule, and cost per kWh for each of the alternatives. Environmental and regulatory issues are substantial and will require comprehensive investigation, though no fatal flaws are apparent based on this initial review. All of these estimates are preliminary, pending more detailed engineering, environmental, and regulatory studies.

Table 7.1 Summary

Alternative	Ultimate Capacity (MW)	Construction Cost ($billion)	Energy (billion kWh/yr)	Schedule (years)	Cost per kWh ($)	
					First 50 Years	Second 50 Years
Watana	1,200	8.4	3.1	15 – 16	0.22	0.01
Low Watana	600	6.9	2.4	14 - 15	0.20	0.01
Watana/Devil Canyon	1,880	11.7	7.2	15 - 20	0.14	0.01
Staged Watana/Devil Canyon	1,880	12.8	7.2	14 - 23	0.18	0.01
Devil Canyon	680	5.0	2.9	14-15	0.13	0.02

Hydroelectric power has many economic and environmental benefits including long-term rate stabilization. Because the cost of the water to power a hydroelectric turbine is essentially free the cost per kilowatt hour is related to the construction and maintenance costs of the dam and powerhouse facilities. As we have seen recently, the price of fossil fuels can fluctuate dramatically over time whereas the cost of hydroelectric power decreases once the initial investment has been repaid and remains low and stable for the life of the project. Consequently the economic risk associated with hydroelectric power is substantially lower than thermal power. Additionally, the life cycle carbon dioxide production of hydroelectric facilities is orders of magnitude less than thermal power plants.

8 Recommendation

The Watana/Devil Canyon alternative is the most cost effective per unit of energy. The Devil Canyon alternative does not provide a stable winter energy supply although its cost per kWh is lower than the other alternatives.

A primary assumption of this report is that all power from these alternatives can be used at the time it is produced. Determination of the need for this power will be dependent upon further studies in conjunction with the Railbelt IRP.

Appendix A

Energy Analysis Input and Results

For the purposes of this submittal, the appendices have been attached as PDFs.

Appendix B

Detailed Cost Estimates

For the purposes of this submittal, the appendices have been attached as PDFs.

Appendix C

Detailed Schedules

For the purposes of this submittal, the appendices have been attached as PDFs.

Appendix D

Economic Analysis Input and Results

For the purposes of this submittal, the appendices have been attached as PDFs.

HB _____

An Act creating the Susitna Power Authority

Sec. 44.89.010 Purpose

The purpose of the authority created in this chapter is to develop and own and operated electric power and transmission and related facilities in the Susitna Basin.

Sec. 44.89.020 Establishment of authority

(a)There is established a Susitna Power Authority. The authority is a public corporation and an instrumentality of the State within the Department of Commerce and Community Development, but the authority has a separate and independent legal existence from the state. The exercise of authority of the powers in this chapter is considered an essential governmental function of the state.

(b)The authority may not be terminated as long as it has bonds, notes, or other obligations outstanding. Upon termination of the authority, its rights and property pass to the state.

Sec. 44.89.030 Board of directors of authority

(a)The authority shall be governed by a board of directors consisting of the following:

(1)Five members, appointed by the governor for which shall have experience in electric utility, management, finance, construction or operations;

(2)Members shall serve for staggered terms of 5 years, and may be reappointed to additional terms. The Initial board members terms for three of the seats shall be for two, three and four years each. All appointments for members thereafter shall be for a five year term. Such members may only removed for cause.

(b)If a vacancy occurs in a public members seat, the governor shall make an appointment, effective immediately, for the unexpired portion of that members term.

Sec. 44.89.040 Operation of authority

(a)The powers of the authority are vested in the board.

(b)The members constitute a quorum.

(c)The board shall elect a chairman, and other officers, to serve at the pleasure of the board.

(d)Action may be taken on the affirmative vote of 3 board members.

(e)The public members of the board shall receive a stipend of $300 a day while performing business of the authority.

Sec. 44.89.050 Executive Director

The authority shall employ an executive director who may not be a member of the board. The executive director shall serve at the pleasure of the board. The board shall establish the duties and compensation of the executive director.

Sec. 44.89.060 Employment of personnel; exception from State Personnel Act.

The executive directory may hire employees of the authority. The board shall prescribe the duties and compensation of authority employees.

Sec. 44.89.070 Legal Advisor

The authority may retain legal counsel to advise the authority on legal matters, or may contract with the department of law for legal counsel.

Sec. 44.89.080 Powers and duties

(a)Except as otherwise explicitly made applicable to the authority, the performance of the authority's duties and the exercise of ints powers, including its powers to issue bonds and otherwise incur debt, shall be govern med exclusively by the chapter . In furtherance of its purposes, the authority may

(1)own, acquire, construct, develop, create, construct, equip, operate, maintain, extend and improve any and all assets of any kind related to the generation and transmission of electricity within the Susitna River Basin.

(2)sue and be sued;

(3)adopt a seal;

(4)adopt, amend, and repeal regulations under AS44.62 and establish bylaws.

(5)make and execute agreements, contract, and all other instruments with any public or private person, government unit, corporation, cooperative, municipality or other business entity lawfully conducting business in the United States for the exercise of its powers and functions under this chapter and for the analysis, licensing, financing, design, construction, maintenance, improvement or operation of facilities, properties, or projects of the ;authority, including making and executing contractions with any person, firm, corporation, governmental agency, or other entity of the purpose

(A)incurring indebtedness, obtaining investments in the authority's projects, acquiring or

granting lump sum payments for services in advance or in arrears, grants and other financing; and

(B)entering into public-private partnerships or service contracts in any form;

(6)in its own name acquire, lease sell, rent or convey real and personal property;

(7)issue and refund bonds in accordance with this chapter, in order to pay the cost of any electrical generation, transmission and related facilities; the authority may also secure payment of the bonds as provided in this chapter;

(8)incur other indebtedness, including lines of credit and indebtedness to the Rural Utilities Services, or any other governmental agency, and secure that indebtedness as provided in this chapter;

(9)apply for and accept gifts, grants, or loans from a federal agency or an agency or instrumentality of the state, or from a municipality, private organization, or other source, including obtaining title to state, local government, or privately owned land, directly or through a department of the state having jurisdiction of the land;

(10)fix and collect charges for the generation and transmission of electricity, and related services, including any necessary costs preliminary to construction.

(11)bring civil actions, refer criminal actions to the appropriate authority, and take other actions or enter into agreements with law enforcement or property owners or managers to enforce property rights or other rights of the authority.

(12)pledge, encumber, transfer, or otherwise obligate revenue derived by the authority from any source, including charges for the generation and transmission of electricity, and related facilities or services;

(13)deposit or invest its funds, subject to agreements with bondholders;

(14)procure insurance against any loss in connection with its operation;

(15)contract for and engage the services of consultants, experts, financial, engineering and technical advisors that the authority considers necessary for the exercise of its powers and functions under this chapter;

(16)apply for, obtain, hold, and use permits, licenses, or approvals from appropriate agencies of the state, the United States, a foreign country and any other proper agency in the same manner as any other person;

(17)perform reconnaissance studies and engineering, survey ,and design studies with respect to the facilities for the generation and transmission of electricity and appurtenant facilities;

(18)exercise powers of eminent domain or file a declaration of taking as necessary for any facilities for or related to the generation and transmission of electricity;

(19)confer with municipalities, other governments, and electrical cooperatives, concerning electrical generation and transmission facilities;

(20)do all acts and things necessary to carry out the powers expressly granted or necessarily implied in this chapter; nothing in this chapter limit's the powers of the authority that are expressly granted or necessarily implied.

(b)the authority shall

(1)prepare an annual report of its operations to include a financial and income statement, a statement of changes in financial position, a reconciliation of changes in equity acounts, a summary of significant accounting principles, an auditor's report, comments regarding the year's business, and prospects for the next year; the report shall be completed by the twentieth day of the regular session of the Legislature, to the Legislative Budget and Audit Committee and the presiding offices of each house of the Legislature.

(2)be exempt from AS 37.07 (Executive Budget Act);

(3)establish a personnel management system for hiring employees and setting employee-benefit packages;

(4)establish procedures, rules, and rates governing per diem and travel expenses of the employees of the authority in substantial conformity to statutes, procedures, rules, and rates applicable to state employees of similar state entities;

(5)coordinate the exercise of its powers to plan, design, construct, operate and maintain electrical generation and transmission and related facilities;

(6)have the exclusive authority to determine and fix charges for the generation and transmission of electricity and related services that it owns, constructs or operates;

(7)be exempt from the AS 36.30 (State Procurement Act);

(8)be exempt from regulation under AS 42 (Public Utilities);

(9)be exempt from AS 35.

Sec. 44.89.090 Assets funds and revenue of the authority

(a)The Department of Revenue shall separately account for all funds, assets and revenue of the authority.

(b)The deposit or investment of money in the authority's funds may be made by the board. The interest earned on or profits derived from the deposit, investment, or sale of an investment by the authority are funds of the authority.

Sec. 44.89.100 Bonds of the Authority

(a)Notwithstanding any other provision of law, the authority may borrow money and issue and refund bonds on which the principal and interest are paid out of an secured by the gross revenue derived by the authority for the ownership, use, and operation of its facilities and services, and other revenue of the authority under this chapter and any other revenue or money that the legislature may appropriate, except a state tax or license. Before issuing bonds, the authority shall submit to the state bond committee a secription of the bond issue and a preliminary prospectus, offering circular, or official statement relating to the bond issue., and shall contain a finding on the affect of the state or its political subdivisions to market bonds.

(b)The bonds of the authority may be sold in the amount or series at the time determined by its board of directors. Bonds or a series of bonds may not be sold if the effective interest rate over the life of the bonds exceeds 11 percent a year or a rate of interest that is 125 percent of the rate of the Bond Buyer Index of 20 Municipal Bond Average Yields for the week previous to the date of the sale of the bonds, whichever is higher.

(c)The authority may issue bonds in an aggregate amount not to exceed $12,000,000,000, plus the cost of issuance.

(d)The amount of refunding bonds that can be issued by the authority and bond premiums may not be included in the aggregate amount, but may be in addition the the amount authorized by (c) of this section.

Sec. 44.89.110 Trust indentures and trust agreements; funds and reserves.

(a)in the discretion of the authority, an issue of bonds may be secured by a trust indenture or trust agreement between the authority and a corporate trustee, by a secured loan agreement or other instrument, or by a resolution giving powers to a corporate trustee, by means of which the authority may

(1)make agreement with the trustee or the holders of the bonds that the authority determines to be necessary or desirable, including agreements as to the

(A)application, investment, deposit, use and disposition of

(i)the proceeds of bonds of the authority;

(ii)money or other property of the authority;

(iii)money or other property in which the authority has an interest;

(B)fixing charges for the generation and transmission of electricity and related facilities and services;

(C)assignment by the authority of its rights in in any contract with respect to its facilities or services or in a mortgagee or other security interest created with respect to its facilities;

(D)terms and condition under which the authority may issue additional bonds;

(E)vesting in a trustee of rights, powers, duties, money, or property in trust for the benefit of the bondholders, including the right to enforce payment, performance and all other rights of the authority of the authority or of the bondholders, under a lease, contract, power sales agreement, contract of sale, mortgage, security agreement, or other trust by injunction or other proceeding or by taking possession by agent or otherwise, and operating electrical generation and transmission and facilities and services and applying the same in accordance with the trust agreement;

(2)pledge, mortgage, or assign money leases agreement, property, or other rights of assets of the authority either presently in hand or to be received in the future, or both; and

(3)provide for any other matters that affect the security or protection of the bonds.

(b)Notwithstanding any other provision of this chapter, the trust agreement must contain an agreement by the authority that the authority will at all time maintain charges sufficient to

(1)pay the costs of operation and maintenance of its facilities and the principal of and interest on bonds issued under the trust agreement as the bonds severally become due and payable;

(2)provide for debt service coverage as considered necessary by the authority for the marketing fits bonds; and

(3)provide for renewals, replacements, and improvements of its facilities , and to maintain reserves required by the terms of the trust agreement.

(c)For the purpose of securing one or more issues of its bonds, the authority may establish one or more special funds, called "capital reserve funds", and shall pay into those funds the proceeds of the sale of its bonds and any other money that is available to the authority of the purposes of those funds. The funds shall be established only if the authority determines that the establishment would enhance the marketability of the bonds. All money held in a capital reserve fund, except as provided in this section, shall be used

as required solely for the (1)payment of the principal of and interest on bonds or of the sinking fund payments with respect to those bonds, (2)the purchase or redemption of bonds, or (3)the payment of a redemption premium required to be paid when those bonds are redeemed before maturity, However, money in a fund may not be withdrawn from the fund at any time in an amount that would reduce the amount of the fund to less than the capital reserve requirement set out in (d)of this section, except for the purpose of making, with respect to those bonds, payment, when due, of principal, interest, redemption premiums, and the sinking fund payments for the payment of which other money of the authority is not available. Income or interest earned by or increment to a capital reserve fund due to the investment of the funs of any other amounts in the fund may be transferred by the authority to other funds or accounts of the authority to the extent that the transfer does not reduce the amount of the capital reserve fund below the capital reserve fund requirement.

(d)If the authority decides to issue bonds secured by a capital reserve fund, the bonds may not be issued in the amount in the capital reserved fund is less than the amount of the capital reserve fund requirement, if any, establish shed by resolution of the authority, unless the authority at the time of issuance of the obligation, deposits in the capital reserve fund from the proceeds of the obligations to be issued or from other sources an amount that, together with the amount then in the fund, will not be less than the capital reserve fund requirements.

(e)In computing the amount of a capital reserve fund for the purposed of this section, securities in which all or a portion of the fund is invested shall be valued by some reasonable method established by the authority by resolution. Valuation on a particular date shall include the amount of any interest earned or accrued to that date.

(f)If the authority decides to issue bonds secured by a capital reserve fund, the bonds may not be issued until 30 days after the authority has mailed notification to the state bond committee and the Legislative Budget and Audit Committee by certified mail of its intention to establish a capital reserve fund to secure the bond issue. The notification must include the amount of the capital reserve fun to be established, the amount of bonds proposed to be issued, and the total cost for which the bonds are to be issued. The notification shall be accompanied by an estimate by the authority of the need to withdraw money from the capital reserve fund during the term of the bond issued, the amount that may be necessary to withdraw, and the time at which withdrawals are estimated to be needed. By January 30 of each year, the authority shall prepare, and provide to the state bond committee and the Legislative Budget and Audit Committee, a revised estimate, considering the same factors, and a statement of all withdrawals that have occurred from the date of issuance of the bonds to the end of the preceding calendar year.

(g)Nothing in this section creates a debt or liability of the state.

(h)Notwithstanding any other provision of law, the authority ay establish other funds and reserves as the board of director may determine reasonable and prudent for the issuance of bonds or for the conduct of the business and affairs of the authority. The interest

earned on or profit derived from these funds and reserves shall be the property of the authority.

Sec. 44.89.120 Validity of pledge.

It is the intention of the legislature that a pledge madein respect of bonds shall be perfected and shall be valid and binding from the time the pledge is made, that the money or property so pledged and after that received by the authority shall immediately be subject to the lien of the pledge without physical delivery or further act, and that the lien of the pledge shall be valid and binding against all parties having claims of any kind in tort, contract, or otherwise against the authority irrespective of whether the parties have noticed. Neither the resolution, trust agreement, or any other instrument by which a pledge is created need be recorded or filed under the provisions of the uniform Commercial Code in order to be perfected or to be valid, binding, effective against the parties. This section does not affect title to or conveyances of real property and does not limit the applicability of AS 40.17.080(b).

Sec. 44.89.130 Nonliability on bonds

(a)Neither the members of the board nor a person executing the bonds of the authority is liable personally on the bonds or is subject to personal liability or accountability by reason of the issuance of the bonds.

(b)The bonds issued by the authority do not constitute an indebtedness or other liability of the state or of a political subdivision of the state other than the authority, but shall be payable solely from the income, receipts, or other money or property of the authority. All documents published by the authority or to which the authority is a signatory and used in of for the issuance of bonds by the authority must state that they are prepared by or for the authority.

(c)The authority may not pledged the faith or credit of the state or of a political subdivision of the state other that the authority, and the issuance of a bond by the authority does not directly, indirectly, or contingently obligate the state or a political subdivision of the state to apply money from, levy, or ledge any form of taxation to the payment of the bond or to make payments due on the bonds from any source of funds not pledged for repayment of the bonds.

Sec. 44.89.140 Pledge of State.

The state pledges to and agrees with the holders of bonds issued under this chapter and with a federal agency that loans or contributes money in respect to electrical generation and transmission and related facilities that the state will not limit or alter the rights and powers vested in the authority under this chapter to fulfill the terms of a contract made by the authority with the holders or federal agency or in any way impair the rights and

remedies the holders under the bonds, together with the interest on them, with interest on unpaid installments of interest, and all costs and expenses in connection with an action or proceeding by or on behalf of the holders, are fully met and discharged. The authority may include this pledge and agreement of the state, insofar as it refers to holders of bonds of the authority, in a contract with the holders and, insofar as it relates to a federal agency, in a contract with the federal agency.

Sec. 44.89.150 Exemption from taxation

The real and personal property of the authority and its assets, income and receipts are declared to be the property of a political subdivision of the state and are exempt from all taxes and special assessments of the state or a political subdivision of the state. All Bonds of the authority are declared to be issued by a political subdivision o the state and for an essential public and governmental purpose. The bonds, the interest on the bonds, the income from the bonds and the transfer of the bonds, and all assets, income, and receipts pledged to pay or secure the payment of the bonds or interest on the bonds are, at all times, except from taxation b or under the authority of the state, except for inheritance and estate taxes and taxes on transfers by or in contemplation of death. Nothing in this section affects or limits an exemption from license fees, property taxes, or excise, income, or other taxes provided under any other law, nor does it create a tax exemption with respect to the interest of any business enterprise or other person, other than the authority in any property, assets, income, receipts, project, or lease, regardless of whether financed under this chapter.

Sec. 44.89.160 Bonds legal investments for fiduciaries

The bonds of the authority are securities in which all public officers and bodies of the state and all municipalities and municipal subdivision, all insurance companies and association and other persons carry on any insurance business, all banks, bankers, trust companies, savings banks, savings association, including savings and loan association and building and loan association, investment companies and other persons carry on banking business all administrators, guardians, executors, trustee, and other fiduciaries , and other persons who are now or may afterward be authorized to invest in bonds or other obligations the state may property and legally invest money, including capital int heir control or belonging to them. Notwithstanding any other provision of law, the bonds of the authority are also securities that me be deposited with any be received by all public officers and bodies of the state and all municipalities and municipal subdivisions for any purposes for whittle deposit of bonds or other obligations the state is now or may afterward by authorized..

Sec. 44.89.170 Audit

The legislative auditor annually shall audit, or cause to have audited, the financial records of the authority. The form an content of the financial records shall be in accordance with generally accepted accounting procedures. The financial records shall be available to the legislative auditor any any reasonable time., do

Sec. 44.89.180 State appropriations not effected.

The chapter does not prevent the state from making appropriations for or in aid of the acquisition, design, construction, or operation of electrical generation and transmission and related facilities.

Sec. 44.89.190 Insurance

The authority shall keep in force public liability insurance in an amount reasonably calculated to cover potential claims for bodily injury, death or disability, and property damage that may arise from or be related to its operation and activities, naming the state as an additional insured.

Sec. 44.89.200 Safeguarding of money

The authority all maximize revenue from and deposit all money in depositories under guidelines issued by the commissioner of revenue and otherwise safeguard the money under guidelines as the commissioner of revenue may from time to time issue..

Sec. 44.89.210 Fidelity bond

The authority shall obtain a fidelity bond in an amount determined by the board, for the member of the board any official responsible for authority accounts and finances. A bond must be in effect for the tenure of the bonded person.
[use terms of *19.75.321*]

Sec. 44.89.220 Bond terms

(a)the bonds of the authority mature at the time fixed by the board. The bonds may be subject to redemption before their fixed maturities as determined by the board, or the the authority's executive directed when delegated that responsibility on AS 44.89.230, and with the premium fixed by the board, but a bond many not be subject to redemption before its fixed maturity date unless the right to redeem that bond is expressly mention on

the face of the bond. The bonds

(1)may be denominations determined by the board;

(2)may be issued in coupon form or in fully registered form, and may be registrable as to principal or both principal and interest, and under regulations and condition the board provides;

(3)are payable as to principal and interest at the place determined by the board;

(4)shall be signed on behalf of the authority as the board may direct; the signatures may be facsimile signatures; each of the interest coupons, if any, attached to the bonds shall be signed by the facsimile signatures of the officials as the board may direct;

(5)shall have the seal of the authority impressed, printed, or lithographed ont hem; and

(6)shall be issued under and subject to the terms, condition, and covenants, providing for the payment of the principal of a interest on the bonds and the other terms, conditions, covenants, and protective features safeguarding this payment and relating to the operations, maintenance or capital improvements as found necessary by the board, which covenants may include a provision requiring the setting aside and maintenance of certain reserves to secure the payment of the principal and interest or for operations, maintenance or capital improvements.

(b)The board may select a trustee or trustees for the holders of the bonds or any series of the bonds, for the safeguarding and disbursement of any of the money in any of the funds created under this chapter or for the duties of authentication, delivery, and registration of the bonds as the board may determine. The board shall fix the rights, duties, powers, and obligations of the trustee or trustees.

(c)In determining the matters and questions relating to the issuance and sale of the bonds and the fixing of the maturities, terms, condition, covenants, and other subjects of the bonds as provided in (a) and (b) of this section, the decisions of the board shall b e those found to be reasonably necessary for the best interests of the authority and the construction, operation and maintenance of its facilities, and those that will accomplish the most advantageous sale of the bonds, giving due regard to (1)necessary or normal costs of maintenance and operation; (2)renewals and replacements of and repairs to the toll facilities; (3)all improvements to electrical generation and transmission and related facilities; (4)the future growth and expansion of all of the facilities; and (5)the possibility of additional revenue bond financing for electrical generation and transmission and related facilities. A decision of the board as expressed in any bond resolution is final when any bonds have been issued under the bond resolution.

(d) A bond resolution may provide that the bonds issued must contain a recital that the bonds are issued under this chapter, and any bonds containing this recital are conclusively considered to be valid and to have been issued in conformity with this chapter.

(e)The validity of the authorization and issuance of bonds is not affected by any proceeding for the acquisition or construction of the additions, improvements, or facilities for which the bonds have been issued or by any contract in connection with the acquisition or construction.

Sec. 44.89.230 Bond resolution

(a)When issuing bonds of the authority, the board shall adopt the bond resolution and approve all other documents and proceedings necessary for the issuance, sale , and delivery of the bonds or any part or series of them. The bond resolution shall fix the aggregate principal amount and denomination, date, maturities, place or laces of paymen, rights of redemption, if any terms, form, condition, and covenants of the bonds or each of them. The board shall also determine and provide for the date and manner of sale of the bonds, and shall provide where the notice of sale, if any, is to be published.

(b)The board may delegate to the authority's executive director the authority to approve final principal maturities and dates, interest rates, redemption rights, and interest payment dates under the terms and conditions the board determines by resolution.

Sec. 44.89.240 Enforcement by holder

The holder of any bonds or the trustee for the holders of bonds or any series of them, may by appropriate proceedings in state court, compel the transfer, setting aside, and payment of money and the enforcement of all of the terms, conditions, and covenants as required and provided in AS 44.89.220 and AS 44.89.230 and in the bond resolution.

Sec. 44.89.250 Bond negotiability

The bonds and the coupons attached to them are fully negotiable instruments under the laws of the state.

Sec. 44.89.260 Refunding

(a)The bonds or any part of them may be refunded at or before their maturity by the issuance of refunding revenue bonds of the authority if, in the opinion of the board, refunds is advantageous to and in the best interest of the authority.

(b)The board shall adopt the resolution authorizing refunding and all other documents and proceedings necessary for the issuance, exchange or sale, and delivery of the bonds.

All provisions of AS 44.89.100-.160 except AS 44.89.100(c) and AS 44.89.220-.270 applicable to revenue bonds are applicable to the refunding bonds and to the issuance, sale, or exchange of the bonds, except as otherwise provided in this section.

(c)Refunding bonds may be issued in a principal amount sufficient to provide money for the payment of all bonds to be refunded by them, and in addition, for the payment of all expenses incident to the calling, retiring, or paying of the outstanding bonds, and the issuance of the refunding bonds. These expenses include, without limitation,

(1)the difference in amount between the pay value of the refunding bonds and any amount less than par for which the refunding bonds are sold;

(2)any amount necessary to be made available for the payment of interest on the refunding bonds from the date of sale of the bonds to the date of payment of the bonds to be refunded or to the date on which the bonds to be refunded will be paid under the call of the bonds or agreement with holders of the bonds;

(3)the premium, if any, necessary to be paid in order to call or retire the outstanding bonds; and

(4)the interest accruing on the outstanding bonds to the date of the call or retirement and other costs of issuance and refunding.

Sec. 44.89.270 Bonds as legal investments

Bonds of the authority, including electrical generation and transmission and related facilities bonds, are legal investments for all banks, trust companies, savings banks, savings and loan associations, and other persons carrying on a banking business, all insurance companies and other persons carrying on an insurance business, and all executors, administrators, trustee, and other fiduciaries. The bonds may be accepted as security for deposits of all money of the state and its political subdivisions.

Sec. 44.89.280 Exemption from local regulation

Notwithstanding any contrary provision of law, the activities of the authority are exempt from land use planning, zoning, permitting, or other similar governmental powers of political subdivision of the state.

Sec. 44.89.290 Statutory construction

This chapter shall be liberally construed in order to carry out the purposes for which it was enacted. All existing laws in conflict with this chapter are supersedes as necessary to accomplish the purposes of this chapter.

Sec. 44.89.300 Definitions

(a)"Electrical generation and transmission and related facilities", for purposes of this chapter means facilities for the generation of electricity from renewable sources, including hydroelectric, wind power and geothermal, and facilities for the transmission of electricity from any source whatsoever, and any other facilities reasonably necessary to accomplish the generation and transmission of such electricity.

AIDEA
Alaska Industrial Development and Export Authority

ALASKA ENERGY AUTHORITY

January 26, 2011

The Honorable Neal Foster
The Honorable Lance Pruitt
Co-Chairs, House Energy Committee
Alaska State Legislature
State Capitol Rm 434
Juneau, Alaska 99801-1182

RE: HB 103, "An Act relating to procurement for the Alaska Energy Authority; establishing the Alaska Railbelt energy fund and relating to the fund; relating to and repealing the Railbelt energy fund; relating to the quorum of the board of the Alaska Energy Authority; relating to the powers of the Alaska Energy Authority regarding employees and the transfer of certain employees of the Alaska Industrial Development Export Authority to the Alaska Energy Authority; relating to acquiring or constructing certain projects by the Alaska Energy Authority; relating to the definition of 'feasibility study' in the Alaska Energy Authority Act; and providing for an effective date."

Dear Representatives Foster and Pruitt:

On January 18, 2011, House Bill 103 (Companion Bill SB 42) was introduced by request of the Governor and referred to the House Special Committee on Energy. Alaska's Energy Policy target is to reach 50 percent of its electricity generation through renewable energy by 2025. A new large hydroelectric project is needed to achieve this goal. This legislation would authorize the Alaska Energy Authority (AEA) to move forward on pursuing such a project to supply electricity to the railbelt region of the state. In November 2010, AEA released its "Preliminary Decision Document" identifying the Susitna Hydroelectric project as the recommended project to pursue.

HB 103 authorizes AEA to 1) acquire, construct and own new power projects 2) hire staff in exempt service 3) adopt regulations establishing its own procurement process 4) create subsidiary corporations for the purpose of acquiring, constructing, owning, maintaining and operating power projects and 5) defines the Board of Director's quorum as four of seven members.

We respectfully request you to schedule HB 103 for a hearing in your committee and we urge favorable action on this bill. A copy of HB 103, the sectional analysis and a summary of the seven related fiscal notes are attached. We will be happy to meet with you and other members of the committee to provide any other information you may require. Thank you for considering our request.

Sincerely,

ALASKA ENERGY AUTHORITY

Michael C. Harper
for Acting Executive Director

Attachments (3)

3/8/11 TESTIMONY ON HB 103: POWER PROJECT; ALASKA ENERGY TO HOUSE SPECIAL COMMITTEE ON ENERGY BY BECKY LONG, TALKEETNA

I thought that it would be valuable for the Committee to hear a synopsis of the Alaska Energy Authority (AEA) meetings from a public viewpoint. I attended the recent AEA open house/presentations on Railbelt Large Hydro in Talkeetna, Palmer, and Anchorage and have notes from a friend from the Fairbanks meeting. The meetings focused on the comparisons between the Chakachomna and the Susitna hydro proposed projects and detailing why Susitna is the recommended choice.

There was a good turnout at the meetings showing high interest amongst the public. The Fairbanks and Talkeetna meetings each had about 150 people attending, Palmer had around 80 and Anchorage had around 120 people. The public wrote questions on AEA file cards after the presentation. There was no opportunity for the public to comment officially.

I kept track of the questions asked from the file cards. 43 questions were asked in Fairbanks, 42 in Anchorage, 43 in Palmer and 101 questions in Talkeetna. At all the meetings, there were very good questions asked. I divided the questions into subject content overall for all the meetings.

The most asked question, 17%, was why the Susitna Dam is the only alternative being offered to fulfill the 50% renewable energy mandate and why isn't AEA pursuing energy efficiency, solar and wind in future plans. The February 2010 Railbelt Electrical Efficiency Landscape in Alaska study was quoted often. The study showed that a 50% improvement in the Railbelt's electrical efficiency could generate an increase up to $947 million in economic output, $290 million in wages, $53 million in business income and 9350 new jobs and would mean up to 425 megawatt reduction in electrical demand through efficiency could occur. However, AEA consistently said that Su Hydro is the only answer to 50% renewable by 2025.

The second most asked question, 12%, had to do with project funding, state financing, and ratepayers' future costs. People were very interested in the financial implications of this mega project and the state's return on such an investment. A concern was that there will be so much state financial commitment to one project and will other important renewable projects be neglected? ***Already we see that besides the $10 million 2010 legislative appropriation, AEA wants $65 million to pursue Susitna hydro feasibility studies and licensing application. The Governor's budget right now for other renewable energy projects is a pitiful $41.5 million.*** Also cost overruns were a concern.

The third most asked question regarded the public process. AEA consistently replied that they would not have the authority to pursue Susitna unless HB 103 is passed. They also consistently said there will be a lot of chances for the public to comment during the Federal Energy Regulatory Commission licensing process. People were particularly concerned in Talkeetna, that the state process through the AEA and the legislature has occurred without public comment. Why has there been no public process on the state level? Yes, there is a huge federal public process on down the line, but the momentum is now to commit significant state resources to this mega project.

Fisheries questions were asked a lot along with seismic, sedimentation, dam configuration, wildlife, climate change, access, threats to human safety, studies from the 1980's, and hydrology.

I realize that there are data gaps, and AEA is studying those gaps. Some particular questions that AEA and HDA consultants could not answer were on dam failure, that is if the dam breaks how long before

the flood reaches Trapper Creek and Talkeetna. Other specific study needs are on reservoir induced seismicity for the Susitna Reservoir, genetic studies of the 100 king salmon found above the dam, sedimentation studies, spring migration of caribou, economic impact studies on Talkeetna, archaeological studies, and effects on spring ice flow.
I guess it is probably obvious that I oppose the Susitna Dam, so I won't go into that.

In conclusion, I know that AEA and its consultants have a large body of knowledge that puts a positive spin on fisheries, seismic, hydrology, and environmental impacts; but even they admit there are a lot of unanswered questions. And we, the members of the public, have a lot of our own knowledge and experience about river altering projects. **And we know there are always unforeseen consequences beyond what the scientists can predict, and we have to live with the consequences. Nothing alters a river as totally as a dam.**

Thank you for this chance to testify.

ORPC
OCEAN RENEWABLE POWER COMPANY

D. Douglas Johnson
PROJECTS DIRECTOR, ALASKA

725 Christensen Drive, Suite A
Anchorage, AK 99501

DIRECT 907 339 7939
CELL 907 250 7269
OFFICE 207 772 7707

djohnson@oceanrenewablepower.com

April 12, 2011
Reps. Bill Stoltze and Bill Thomas, House Finance Co-Chairmen
State Capitol Rooms 515 and 505
Juneau, AK, 99811

Re: HB 103

Dear Chairmen,

I am writing in support of the elements of HB 103 that give the Alaska Energy Authority (AEA) a greater degree of autonomy in their ability to resource appropriately. As a developer of renewable energy projects in Alaska, ORPC needs the assistance of AEA's professional staff and resources to further our nascent industry and support the development of our projects here in Alaska. HB 103 provides AEA an independent framework for more efficiently and effectively supporting its mission of lowering the cost of energy to Alaskans.

Thank you for your time and service. I look forward to advancing this new form of energy with your help.

Sincerely,

D. Douglas Johnson

Alaska Ratepayers, Inc.

P. O. Box 210556
Anchorage, AK 99521
907-952-1502

Affordable and Predictable Electric Rates for Alaska

REVISED TESTIMONY Feb. 24, 2011 by Richard G. Wilson on behalf of Alaska Ratepayers, Inc. before the House Energy Committee on HB 103/SB 42 on Feb. 24, 2011:

Based on further research following submitting testimony on Feb 17, 2011 (attached), Alaska Ratepayers finds that amending HB 103/SB 42 to add certain powers to AEA will fall short of meeting the goals of ratepayers: affordable, predictable electricity.

Instead, **a separate Susitna Power Authority is required**. A substitute bill to HB 103/SB 42 with the required powers is attached ("Susitna Power Authority"). We previously provided this draft to the Committee and understand it is in Committee packets.

Our reasoning follows:

Building Susitna (Watana) Hydro has been determined by the State of Alaska as the only way of reaching the goal of 50% renewable sources of electric energy by 2050.

Because Alaska Power Authority statutory authority to build and own projects was eviscerated in 1993, forward motion awaits action by the Legislature to reenact authority in the Executive Branch. The proposed House Bill 103 (SB 42) adds certain authority to the current Alaska Energy Authority, but falls short.

Alaska needs to create a separate Susitna Power Authority, with its own Board and staff, and with fully restored project development and financing powers. Typically an authority sponsoring a major hydro development project, like some of our State entities, has a Board with fixed terms and project appropriate qualifications; ability to pay competitive compensation and efficiently secure its resources.

Alaska Ratepayers' research concludes this authority is necessary for the Board of the Susitna Power Authority to accomplish the following:

- Focus effort, and avoid distractions that a multi-function agency must deal with
- Narrow the mission to delivering Susitna electricity affordably and timely
- Clarify and simplify management, financial, and bonding responsibilities
- Enable timely completion, avoiding unnecessary project delays
- Achieve lowest cost energy to ratepayers
- Comply with large hydro industry best practices standards

- Models used by BC Hydro and New York Power Authority are typically used, creating an autonomous hydro authority empowered to efficiently design, responsibly secure permits, and deliver low cost electricity. This **avoids wasteful delays, saves money, and ultimately brings rates down.**

- **Transmission projects too**. Planning, designing and licensing Watana dam is under way and will take several years. But critical transmission line improvements (reliability) are needed now. These near term projects require the same legislative authority as are required to build a hydroelectric dam. So postponing or phasing in required authority does not make economic sense.

In its three years Alaska Ratepayers has found we can all learn from visiting other hydro projects in the U. S. and Canada. We recommend arranging a legislative visit to two or three large hydro projects to confirm or deny our findings.

One might wonder about our credibility in offering such bold recommendations. Alaska Ratepayers is a volunteer group of Alaskans who give their time--with no outside funding--to see a landmark improvement in lives of our neighbors and their children. Our members' experience includes decades of service in public administration as electric utility board members, State commissioners, lawyers, city managers and project developers, as well as decades of business experience in engineering, resource development, fisheries and other forms of business.

We are available to work with the Committee Chairs on specific authorizing language and thank you for allowing us to present ratepayer views.

Attached: "Susitna Power Authority," Alaska Ratepayers' draft substitute bill to HB 103/SB 42

From: Denis Ransy [mailto:conga33@hotmail.com]
Sent: Tuesday, March 08, 2011 8:35 AM
To: LIO Mat-Su
Subject: Testimony for HB 103, House Energy Committee 3 pm 3/8

Hello, Mat Su LIO.
Could you please forward my testimony on HB 103 to the House Special Committee on Energy members for their committee hearing today at 3 pm.

Thank you,
Denis Ransy, Talkeetna

To the House Special Committee on Energy:

I oppose HB 103 because it would authorize AEA to move forward with the licensing process for a Susitna Dam. I oppose the Susitna Dam for the following reasons.

1. There are three earthquake faults nearby and a subduction plate zone directly beneath the dam site. Only madment would build a dam in such a place. Remember, we live below this thing.

2. There is no way this will not negatively affect fisheries. Temperature, flow, and turbidity changes will wreck havoc with all species.

3. The water table for the entire valley may be affected. There would be a lot less water running underground, possibly causing many wells to go dry.

4. This project would consume nearly all money meant for truly renewable projects.

5. 80 square miles of land will be drownded and changed forever.

6. There were at least ten issues "requiring more study" at the Talkeetna meeting. Study these issues before going any farther with funding or permitting.

Denis Ransy
Talkeetna

From: Barbara Mannix [mailto:bmannix@mtaonline.net]
Sent: Monday, March 07, 2011 8:06 PM
To: LIO Mat-Su
Subject: Susitna Dam

To Whom it may concern,

I am writing to voice my concern over the proposed Susitna Dam project. Having recently attended the "informational meeting" here in Talkeetna, I was amazed at the profound lack of information that was available and yet the legislature seems ready to make decisions.

I find it deeply concerning that many other states are making plans to take out their dams due to a myriad of environmental problems and yet we are making plans to impact a pristine wilderness area and spend an astronomically huge amount of money with still massive amounts of unknowns.

I would far prefer to see money spent to grant incentive programs toward energy efficiency in all new buildings, monies allotted to make present homes and structures more energy efficient, smaller scale energy programs for specific areas and incentives for communities to be more conservative and practice efficiency.

Has anyone considered that expensive power may not be such a horrible thing? The earth is finite- at some point we need to realize that cheap power simply encourages mindless consumption which in turn, creates a need for more power and more devastating impacts to the land and all it's life forms.

As humans we erroneously believe (quite pompously, I might add) that by carrying out our "studies" that we can somehow understand the incredible complexities of nature and the interconnectedness of all things and in this case the complexities of a major river and all the life it sustains down to the micro systems.

You are contemplating a staggering amount of money for this project. Why not invest in less impact-full measures? Wind and solar are certainly feasible options for specific areas

Please, let's learn from the mistakes of others and be a state that is forward thinking and creative in our approach. Let's use this money to develop the technologies for truly sustaining energy that doesn't destroy.

HB 197

<TARGET><BILL>HB 197</BILL><SUBJECT>HB 197</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska State Legislature

Session:
State Capitol Rm. 421
Juneau, AK 99801
Phone: (907) 465-3438
Fax: (907) 465-4565

Interim:
716 W 4th Avenue
Anchorage, AK 99501-2133
Phone: (907) 269-0100
Fax: (907) 269-0105

Representative Lance Pruitt
Co-Chair, House Energy Committee

Sponsor Statement

HB 197(ENE)
HOME ENERGY RATING SYSTEM

Non-governmental third parties are currently attempting to get themselves identified in federal legislation as the Home Energy Rating System verifying agency. They would control state policy on this issue and compete for federal funds that could be available to the states, and could come through the states. Based on the investment that Alaska has made through the Alaska Housing Finance Corporation (AHFC) in developing its own Home Energy Rating System, it seems appropriate that Alaska should run the program, not a non-governmental third party.

HB 197 authorizes the Alaska Housing Finance Corporation (AHFC) to act as the authorizing agency relative to approving any Home Energy Rating System (HERS) to be utilized in the state. This will enable AHFC to ensure that any HERS utilized in Alaska is appropriate for Alaska climates. In addition, AHFC would be able to verify appropriate software for national recognition. The HERS is directly related to measuring a home's ability to meet the Building Energy Efficiency Standards (BEES), which are required by state law.

LEGAL SERVICES

DIVISION OF LEGAL AND RESEARCH SERVICES
LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA

(907) 465-3867 or 465-2450
FAX (907) 465-2029
Mail Stop 3101

State Capitol
Juneau, Alaska 99801-1182
Deliveries to: 129 6th St., Rm. 329

MEMORANDUM March 17, 2011

SUBJECT: Sectional Summary (Work Order No. 27-LS0628\A)

TO: Representative Lance Pruitt
Attn: Jeremiah Campbell

FROM: Lisa Moritz Kirsch
Legislative Counsel

You have requested a sectional summary of the above-described bill.

As a preliminary matter, note that a sectional summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents. If you would like an interpretation of the bill as it may apply to a particular set of circumstances, please advise.

Section 1. Designates the Alaska Housing Finance Corporation as the authorizing agency to approve any home energy rating system used in Alaska, and includes a legislative finding that recognition of the Alaska Housing Finance Corporation as Alaska's authorizing agency serves a public purpose in benefiting the people of Alaska.

Section 2. Provides an effective date of July 1, 2011.

LMK:plm
11-162.plm

Alaska State Legislature

Session:
State Capitol Rm. 421
Juneau, AK 99801
Phone: (907) 465-3438
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Representative Lance Pruitt
Co-Chair, House Energy Committee

Summary of Changes from HB 197 Version A to CSHB 197(FIN) Version B

HB 197
Home Energy Rating Systems

Changed "may" to "shall on page 1 line 9. This change was made to clearly define AHFC's scope of responsibility.

Removed "any" from page 1 line 9. There was concern that having "any" in the bill would put homebuilders, who used a system that wasn't approved, in violation of the law.

Changed "system" to "systems" on page 1 line 10. This was done to imply that more than one system may be approved for use in the state.

27-LS0628\B
Kirsch
4/1/11

CS FOR HOUSE BILL NO. 197(FIN)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - FIRST SESSION

BY THE HOUSE FINANCE COMMITTEE

Offered:
Referred:

Sponsor(s): REPRESENTATIVE PRUITT

A BILL

FOR AN ACT ENTITLED

"An Act recognizing the Alaska Housing Finance Corporation as the authorizing agency to approve home energy rating systems for the state; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* **Section 1.** AS 18.56.010 is amended by adding a new subsection to read:

(h) The legislature finds that recognizing the Alaska Housing Finance Corporation as the state's home energy rating system authorizing agency serves a public purpose in benefitting the people of the state. The Alaska Housing Finance Corporation shall act as the authorizing agency for purposes of approving home energy rating systems used in the state.

* **Sec. 2.** This Act takes effect July 1, 2011.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version: **HB197**
() Publish Date

Identifier (file name): HB197-DOR-AHFC-03-24-11
Title: Home Energy Rating System
Sponsor: Representative Pruitt
Requester: House Special Committee on Energy

Dept. Affected: Revenue
Appropriation: Alaska Housing Finance Corp.
Allocation: AHFC Operations
OMB Component Number: 110

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other (please identify)							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost _____

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version (if initial version, please note as such)

initial version

Prepared by: Cary Bolling, Officer Governmental Relations — Phone 907-350-2479
Division: Alaska Housing Finance Corporation — Date/Time 3/24/11 1:30 PM
Approved by: Dan Fauske, CEO — Date 3/24/2011
Alaska Housing Finance Corporation

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

BILL NO. HB197

Analysis

HB 197 recognizes Alaska Housing Finance Corporation (AHFC) as the authorizing agency to approve home energy rating systems (HERS) utilized in Alaska.

AHFC currently has its own AkWarm home energy rating system and software that has been in use, and continuously updated, since 1996. It is specifically designed for Alaska and is recognized by the Alaska building, real estate and home loan industries and is directly tied to AHFC programs, including the Home Energy Rebate and Weatherization programs, interest rate reductions for home loans and Alaska Building Energy Efficiency Standards. The software is available to all at no cost.

In the event that another home energy rating system is submitted to AHFC for approval, that software will require review and testing to ensure Alaska's varied and extreme climatic conditions are appropriately addressed and compatible with AkWarm. The cost of testing and review is expected to be covered by the requestor and U.S. Department of Energy funds. As a result, there is no fiscal impact to AHFC anticipated for this bill.

AARP Alaska
3601 C Street
Suite 1420
Anchorage, AK 99503

T 1-866-227-7447
F 907-341-2270
TTY 1-877-434-7598
www.aarp.org/ak

March 28, 2011

The Honorable Neal Foster, Co-Chair
House Special Committee on Energy
Alaska Capitol, Room 434
Juneau, AK 99801-1182

The Honorable Lance Pruitt, Co-Chair
House Special Committee on Energy
Alaska Capitol, Room 421
Juneau, AK 99801-1182

RE: HB 197 (Pruitt)—Support

Dear Co-Chairs Foster and Pruitt:

On behalf of the members of AARP in Alaska, we encourage you and your colleagues on the House Special Committee on Energy to support HB 197, sponsored by Co-Chair Pruitt.

AARP supported the expansion of the home energy program authored by Senator Hoffman and carried out over the past several years by the Alaska Housing Finance Corporation. At that time we called the legislation "historic" for the impact it would have on the wallets of our members as well as Alaskans of all ages.

Since that time, we have heard nothing but extremely positive comments from Alaskans who are now saving significant amounts of money on their utility bills and all of us can be proud of the energy being saved by Alaskans who have had their homes audited by a rater and then complied with their recommendations.

AHFC developed a cadre of trained raters and a system that could be used statewide for accurate ratings. This is a system that works well and has been used by thousands of Alaskans in every part of our state.

HB 197 would officially recognize AHFC as our home energy rating system authorizing agency.

We know that citizens often complain about "the government." We don't know anyone who complains about AHFC and the good work they have done on weatherization and home energy savings. AHFC serves, in AARP's opinion, as an agency that has its act together. They know their mission and they know how to accomplish it.

AARP requests an "AYE" vote on HB 197.

Should you have any questions about our position, please feel free to contact me (586-3637) or Patrick Luby, AARP Advocacy Director (907-762-3314).

Jennie Chin Hansen, President
Addison Barry Rand, Chief Executive Officer

Thank you for your consideration.

Sincerely,

Marie Darlin

Marie Darlin, Coordinator
AARP Capital City Task Force
415 Willoughby Avenue, Apt. 506
Juneau, AK 99801
586-3637 (voice)
463-3580 (fax)

CC: Representative Lynn
Representative Olson
Representative Saddler
Representative Peterson
Representative Tuck
Senator Hoffman



ALASKA STATE HOMEBUILDERS ASSOCIATION

March 31, 2011

Representative Pruitt
State Capital Building
Juneau, Alaska 99801-1182

Re; Support of HB-197

Representative Pruitt

On behalf of the ASHBA (Alaska State Home Building Association) we write you this letter stating our support for HB-197 (Home Energy Rating System).

The ASHBA is an organization that works and operates in the private sector of the construction industry. The association currently has 700 plus members working and operating throughout the State.

We feel it is the appropriate time for the introduction and passage of HB-197. We feel this bill will assist the construction community as well as the public in establishing good energy standards for our state.

We appreciate you taking the time to sponsor this legislation and if you need help through testimony or other please do not hesitate to ask.

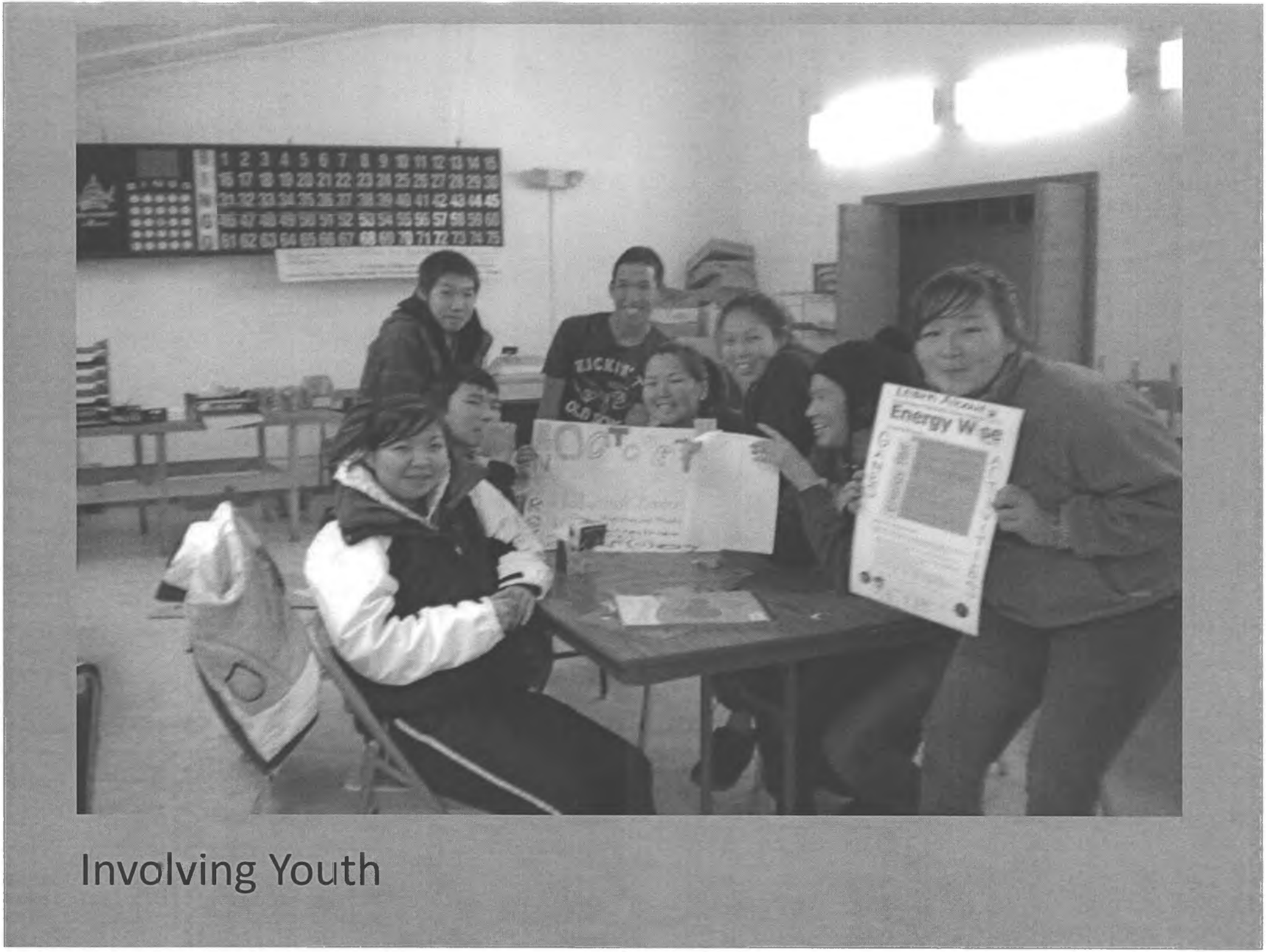
Thank you,

Dave Owens	Alan Wilson	Paul Michelsohn Jr.
President	Co-Chair	Co-Chair
ASHBA	Legislative Committee	Legislative Committee

8301 SCHOON ST • SUITE 200 • ANCHORAGE, ALASKA • 99518
(907) 522-3931 • FAX (907) 522-3757



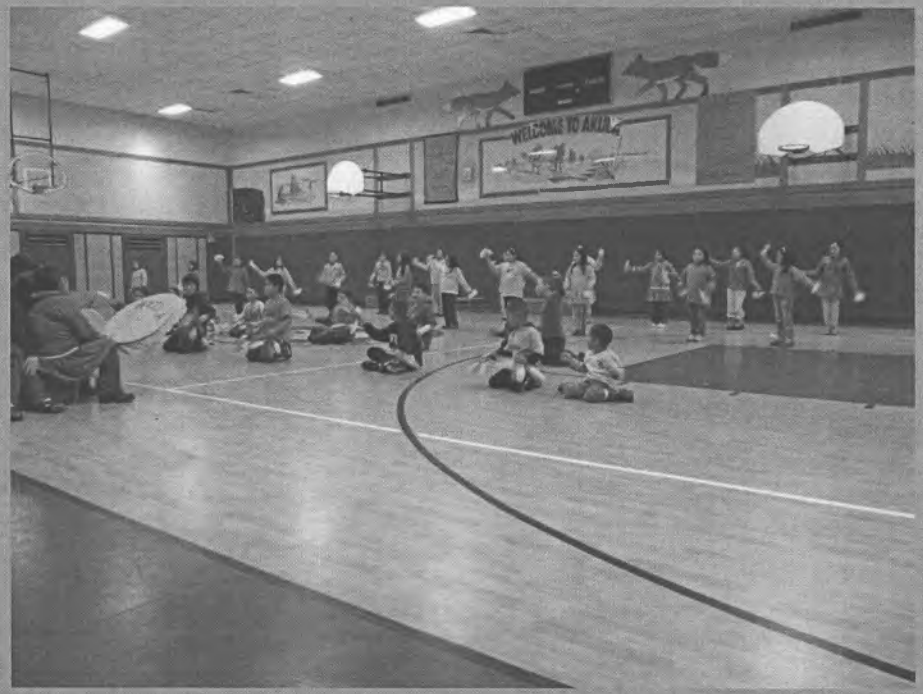
Energy presentations

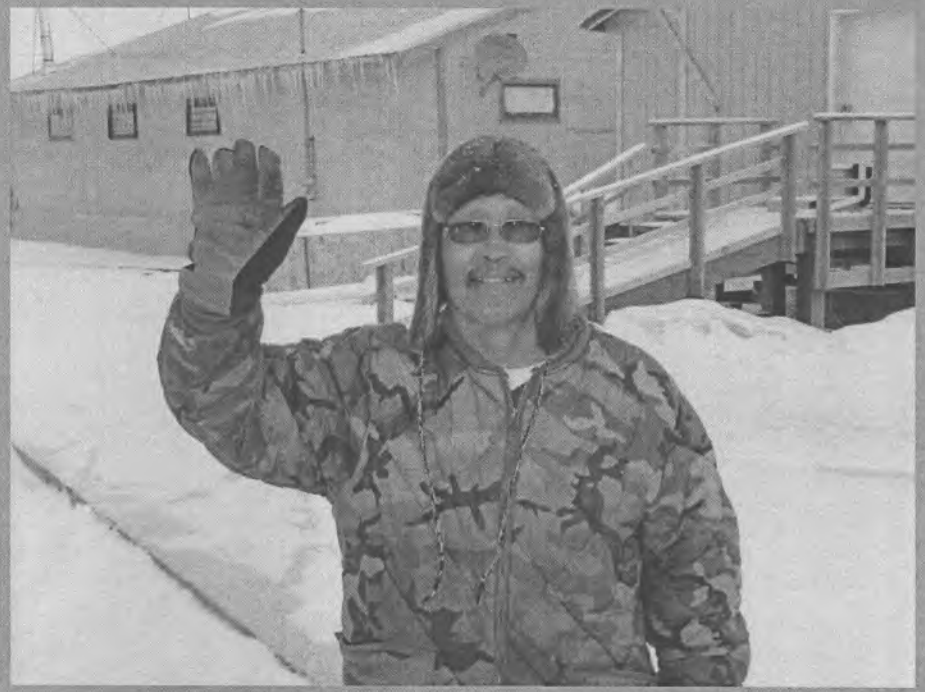


Involving Youth

COMMUNITY INVOLVEMENT

- Tribal Council
- City Council
- School
- Church Group
- AmeriCorps/VISTA
- Youth Groups
- Parks and Recreation
- Other Energy Projects



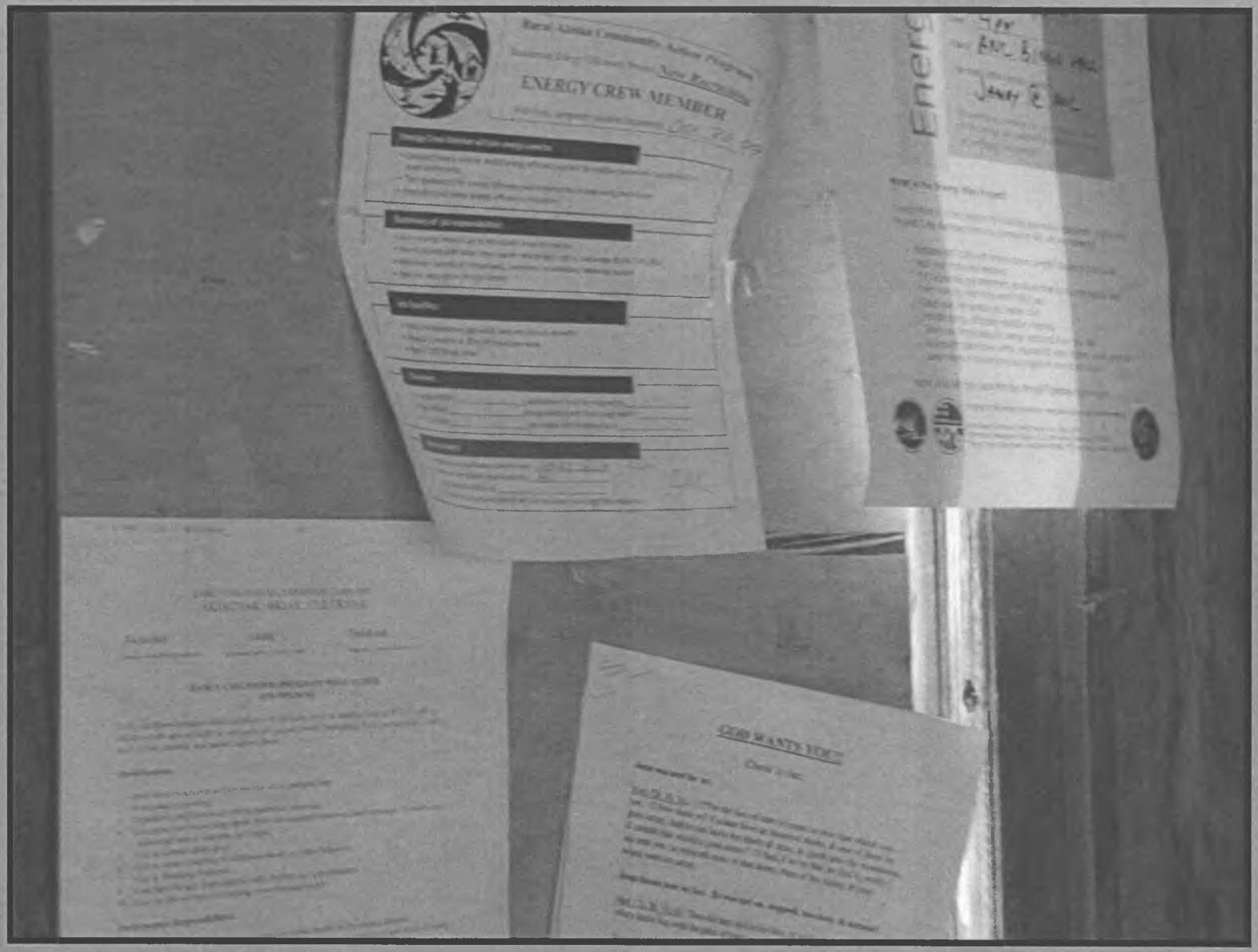




Freight arrives



Organized storage



Local Recruitment of Crew



Crew getting tools



Hands-on training – Kill-a-Watt meter



Crews Learn How to Read Energy Bills, Calculate Costs



Crew Leaders Teach Crews and Practice Installation



Home Visits Begin



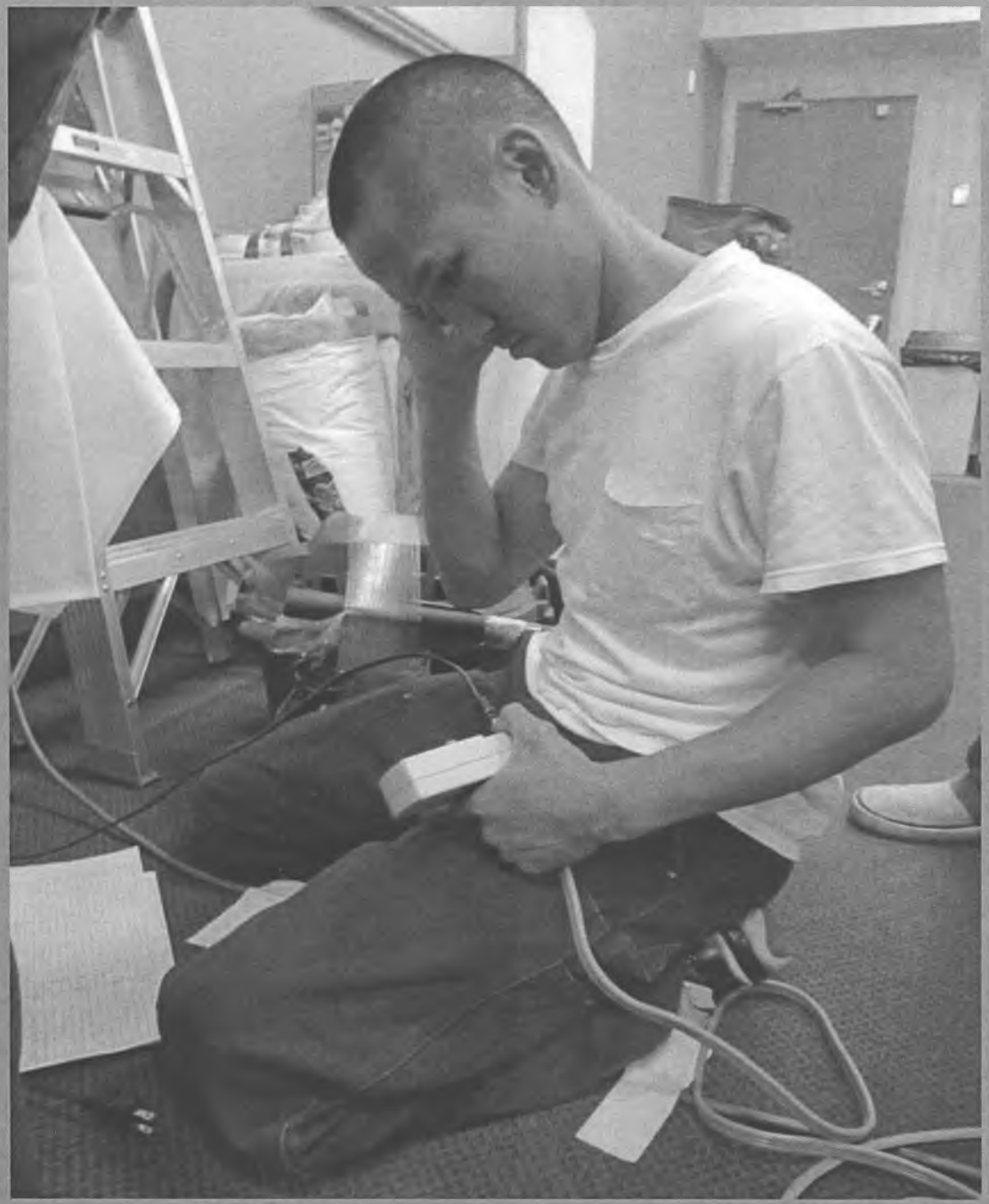
Residents Participate in Energy Use Survey



Crews Show Residents How to Save Energy and Money



Crews Review Energy Bills with Residents



Crews Test Appliances with Kill-a-Watt Meters

HB 250

<TARGET><BILL>HB 250</BILL><SUBJECT>HB 250</SUBJECT><COMM>HENE27</COMM></TARGET>

REPRESENTATIVE BILL THOMAS
ALASKA STATE LEGISLATURE DISTRICT 5
e-mail: Representative.Bill.Thomas@legis.state.ak.us
webpage: www.akrepublicans.org/thomas/

State Capitol
Juneau AK, 99801-1182
907-465-3732
888-461-3732
FAX 907-465-2652

Sponsor Statement for HB 250
Relating to the Renewable Energy Fund and Recommendation Program

In 2008, the Alaska Legislature passed HB 152 which established an energy fund for renewable projects across the state. Since then, the program has gone through four rounds of grant applications and issued grants for more than 200 renewable energy projects across the state. With an emphasis towards issuing grants for those who see the highest energy costs, these grants have had a significant impact in the cost of energy for many small communities who otherwise would be totally dependent on diesel fuel.

AEA, along with the Renewable Energy Fund Advisory Committee, evaluates each grant application based on various criteria including the current cost of energy in the area, availability of matching funds, and the overall feasibility of the project. By 2013 it is estimated that the Renewable Energy Grant Fund will displace six million gallons of diesel fuel each year.

The program is set to expire in 2013. HB 250 reauthorizes the program until 2018. It also continues the legislative intent that was made in 2008 to fund the program at $50,000,000 a year.

I urge your support of HB 250.

27-LS1060\D
Nauman
1/30/12

CS FOR HOUSE BILL NO. 250( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES THOMAS, PEGGY WILSON, AND MILLETT, Austerman, Edgmon, Herron, Miller

A BILL

FOR AN ACT ENTITLED

"An Act relating to the renewable energy grant fund and recommendation program; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

LEGISLATIVE INTENT. It is the intent of the legislature that, each fiscal year for the next five fiscal years, $50,000,000 be appropriated to the renewable energy grant fund for projects recommended by the Alaska Energy Authority under AS 42.45.045.

*** Sec. 2.** Section 5, ch. 31, SLA 2008, is amended to read:

Sec. 5. AS 42.45.045 is repealed June 30, **2018** [2013].

*** Sec. 3.** This Act takes effect immediately under AS 01.10.070(c).

27-LS1060\X
Nauman
3/29/12

SENATE CS FOR CS FOR HOUSE BILL NO. 250(FIN)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY THE SENATE FINANCE COMMITTEE

Offered:
Referred:

Sponsor(s): REPRESENTATIVES THOMAS, PEGGY WILSON, AND MILLETT, Austerman, Edgmon, Herron, Miller, Petersen, Gara, Tuck, Cissna, Tammie Wilson, Guttenberg, Costello, Seaton, Pruitt, Muñoz, Lynn, Kawasaki, Saddler, Gruenberg, Johnson

A BILL

FOR AN ACT ENTITLED

"An Act relating to the renewable energy grant fund and recommendation program; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

LEGISLATIVE INTENT. It is the intent of the legislature that, each fiscal year for the next 10 fiscal years, $50,000,000 be appropriated to the renewable energy grant fund for projects recommended by the Alaska Energy Authority under AS 42.45.045.

*** Sec. 2.** AS 42.45.045(i) is amended to read:

(i) An advisory committee is established and consists of **nine** [SEVEN] members, appointed as follows:

(1) five members shall be appointed by the governor to staggered three-year terms, with one representative to be appointed from each of the following groups:

(A) small Alaska rural electric utilities;

(B) large Alaska urban electric utilities;

(C) Alaska Native organizations;

(D) businesses or organizations engaged in the renewable energy sector; and

(E) the Denali Commission established under P.L. 105-277, 42 U.S.C. 3121 note;

(2) **two members** [ONE MEMBER] of the house of representatives shall be appointed by the speaker of the house of representatives; and

(3) **two members** [ONE MEMBER] of the senate shall be appointed by the president of the senate.

*** Sec. 3.** Section 5, ch. 31, SLA 2008, is amended to read:

Sec. 5. AS 42.45.045 is repealed June 30, **2023** [2013].

*** Sec. 4.** This Act takes effect immediately under AS 01.10.070(c).

REPRESENTATIVE BILL THOMAS
ALASKA STATE LEGISLATURE DISTRICT 5
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AS 44.99.115. Declaration of state energy policy.

The State of Alaska recognizes that the state's economic prosperity is dependent on available, reliable, and affordable residential, commercial, and industrial energy to supply the state's electric, heating, and transportation needs. The state also recognizes that worldwide supply and demand for fossil fuels and concerns about global climate change will affect the price of fossil fuels consumed by Alaskans and exported from the state to other markets. In establishing a state energy policy, the state further recognizes the immense diversity of the state's geography, cultures, and resource availability. Therefore, it is the policy of the state to

(1) institute a comprehensive and coordinated approach to supporting energy efficiency and conservation by

(A) encouraging statewide energy efficiency codes for new and renovated residential, commercial, and public buildings;

(B) decreasing public building energy consumption through conservation measures and energy-efficient technologies; and

(C) initiating and supporting a program to educate state residents on the benefits of energy efficiency and conservation, including dissemination of information on state and federal programs that reward energy efficiency;

(2) encourage economic development by

(A) **promoting the development of renewable and alternative energy resources, including geothermal, wind, solar, hydroelectric, hydrokinetic, tidal, and biomass energy, for use by Alaskans**;

(B) promoting the development, transport, and efficient use of nonrenewable and alternative energy resources, including natural gas, coal, oil, gas hydrates, heavy oil, and nuclear energy, for use by Alaskans and for export;

(C) working to identify and assist with development of the most cost-effective, long-term sources of energy for each community statewide;

(D) creating and maintaining a state fiscal regime and permitting and regulatory processes that encourage private sector development of the state's energy resources; and

(E) promoting the efficiency of energy used for transportation;

(3) support energy research, education, and workforce development by investing in

(A) training and education programs that will help create jobs for Alaskans and that address energy conservation, efficiency, and availability, including programs that address workforce development and workforce transition; and

(B) applied energy research and development of alternative and emerging technologies, including university programs, to achieve reductions in state energy costs and stimulate industry investment in the state;

(4) coordinate governmental functions

(A) by reviewing and streamlining regulatory processes and balancing the economic costs of review with the level of regulation necessary to protect the public interest;

(B) by using one office or agency, as may be specified by law, to serve as a clearinghouse in managing the state's energy-related functions to avoid fragmentation and duplication and to increase effectiveness; and

(C) by actively collaborating with federal agencies to achieve the state's energy goals and to meet emissions, renewable and alternative energy, and energy production targets.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **CSHB 250 (ENE)**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB250-DCCED-AEA-03-09-12
Title: Extend Renewable Energy Grant Fund
Sponsor: Representatives Thomas, P.Wilson, Millett
Requester: House Finance Committee

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: AEA Statewide Project Dev and AEE
OMB Component Number: 2888

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services		2,155.0	2,155.0	2,155.0	2,155.0	2,155.0	2,155.0
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**0.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF		155.0	155.0	155.0	155.0	155.0	155.0
1173	GF MisEarn (UGF)		2,000.0	2,000.0	2,000.0	2,000.0	2,000.0	2,000.0
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**0.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

This fiscal note has been updated to include, for informational purposes, $155.0 UGF fiscal note increment related to SCS CSHB 152 FIN SLA2008. Additionally, an analysis of available investment earnings on the renewable energy fund was performed and is noted in the analysis.

Prepared by: Sara Fisher-Goad, Executive Director — Phone: 907-771-3000
Division: Alaska Energy Authority — Date/Time: 3/9/12 4:00 PM
Approved by: JoEllen Hanrahan, Director Administrative Services — Date: 3/10/2012
Commerce, Community and Economic Development

(Revised 1/17/2012 OMB)

Analysis

This legislation adds legislative intent language related to the continuation of the renewable energy grant fund and recommendation program (AS.42.45.045) at funding levels of $50 million each fiscal year to be appropriated to the renewable energy grant fund for projects recommended by the Alaska Energy Authority (AEA); and extends the program an additional 5 years to June 30, 2018.

Costs of Administering the Fund:
The renewable energy grant fund and recommendation program was established by legislation for the fiscal year ending June 30, 2009 (HB152 SLA 2008 CH 31). The associated fiscal note provided an increment of $226.0 for the first year and $155.0 for subsequent years through FY2013 to AEA's Statewide Project Development and AEE component. The $155.0 increment represented the costs associated with a new grant manager and advisory committee costs. This increment is reflected in the fiscal note for informational purposes.

Starting in FY2011, investment earnings on the renewable energy grant fund, not to exceed $2 million, were appropriated to AEA for the costs of administering the renewable energy grant fund and recommendation program (FY2011: SB230 SLA 2010 CH 43 Sec 28 Pg 160 Lines 26-29; FY2012: HB108 FSSLA 2011 CH 3 Sec 13 Pg 72 Lines 2-4). Based on an average net return on investments of 3.2%, we project that the net investment earnings will support the costs of administering the funds through FY2018. Additionally, an accumulation of investment earnings on the fund in FY2009 and FY2010 prior to appropriation to AEA for administrative costs are available.

In FY2011, the actual costs of administering the renewable energy grant fund and recommendation program were $1.2 million. Estimated costs for FY2012 are $1.6 million. Costs include AEA project management, grant management, as well as finance and administrative support. Costs also include contractual services related to the technical analysis and evaluation of applications and project proposals. At June 30, 2011, four renewable energy fund application periods were complete; $150 million had been appropriated for 133 renewable energy projects and approximately 126 grants were being managed. In FY2012, $36.6 million was appropriated for an additional 74 projects ($36.6 million included $10 million of re-allocated funds).

This fiscal note assumes a continuation of current funding levels estimated at up to $2 million annually for the costs of administering the renewable energy grant fund and recommendation program.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **CSHB 250 (ENE)**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB250-DCCED-AEA-03-14-12
Title: Extend Renewable Energy Grant Fund
Sponsor: Representatives Thomas, P.Wilson, Millett
Requester: House Finance Committee

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: AEA Statewide Project Dev and AEE
OMB Component Number: 2888

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services		2,155.0	2,155.0	2,155.0	2,155.0	2,155.0	2,155.0
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**0.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF	(155.0)	155.0					
1173	GF MisEarn (UGF)	(2,000.0)	2,000.0					
1210	Ren Energy (DGF)	2,155.0		2,155.0	2,155.0	2,155.0	2,155.0	2,155.0
1178	temp code (UGF)							
TOTAL		**0.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**	**2,155.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required,*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

This fiscal note realigns the fund sources available to cover the costs of administering the renewable energy grant fund program. This fiscal note reflects a reduction of general fund and miscellaneous earning included in the FY2013 Governor's budget request and identifies earnings available from the Renewable Energy Fund as the alternate funding source.

Prepared by: Sara Fisher-Goad, Executive Director — Phone 907-771-3000
Division: Alaska Energy Authority — Date/Time 3/14/12 12:00 PM
Approved by: Susan K. Bell, Commissioner — Date 3/14/2012
Commerce, Community, and Economic Development

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. CSHB 250 (ENE)

Analysis

This legislation adds legislative intent language related to the continuation of the renewable energy grant fund and recommendation program (AS.42.45.045) at funding levels of $50 million each fiscal year to be appropriated to the renewable energy grant fund for projects recommended by the Alaska Energy Authority (AEA); and extends the program an additional 5 years to June 30, 2018.

Costs of Administering the Fund:
The renewable energy grant fund and recommendation program was established by legislation for the fiscal year ending June 30, 2009 (HB152 SLA 2008 CH 31). The associated fiscal note provided an increment of $226.0 GF for the first year and $155.0 GF for subsequent years through FY2013 to AEA's Statewide Project Development and AEE component. The $155.0 increment represented the costs associated with a new grant manager and advisory committee costs. This GF increment is included in the FY2013 Governor's budget request (Fund Code 1004).

Starting in FY2011, investment earnings on the renewable energy grant fund, not to exceed $2 million, were appropriated to AEA for the costs of administering the renewable energy grant fund and recommendation program (FY2011: SB230 SLA 2010 CH 43 Sec 28 Pg 160 Lines 26-29; FY2012: HB108 FSSLA 2011 CH 3 Sec 13 Pg 72 Lines 2-4). The FY2013 Governor's budget request includes a request for a continuation of this funding through miscellaneous earnings (Fund Code 1173).

In FY2011, the actual costs of administering the renewable energy grant fund and recommendation program were $1.2 million. Estimated costs for FY2012 are $1.8 million. Costs include AEA project management, grant management, as well as finance and administrative support. Costs also include contractual services related to the technical analysis and evaluation of applications and project proposals. At June 30, 2011, four renewable energy fund application periods were complete; $150 million had been appropriated for 133 renewable energy projects and approximately 126 grants were being managed. In FY2012, $36.6 million was appropriated for an additional 74 projects ($36.6 million included $10 million of re-allocated funds).

AEA has projected the net investment earnings on the Renewable Energy Fund through FY2018 to determine whether earnings on the Fund would be available to support the costs of administering the program. Based on certain assumptions made on funding levels, cash outflows and an average net return on investments of 3.2%, we project that the net investment earnings will support the costs of administering the funds through FY2018. Additionally, an accumulation of investment earnings on the fund in FY2009 and FY2010 prior to appropriation to AEA for administrative costs are available.

This fiscal note assumes a continuation of current funding levels estimated at up to $2.2 million annually for the costs of administering the renewable energy grant fund and recommendation program and reflects a reduction of general fund and miscellaneous earnings included in the FY2013 Governor's budget request being replaced by earnings available from the Renewable Energy Fund.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **HB 250**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB250-DCCED-AEA-01-20-12
Title: Extend Renewable Energy Grant Fund
Sponsor: Representatives Thomas, P.Wilson, Millett
Requester: House Energy Committee

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: AEA Statewide Project Dev and AEE
OMB Component Number: 2888

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services		2,000.0	2,000.0	2,000.0	2,000.0	2,000.0	2,000.0
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**0.0**	**2,000.0**	**2,000.0**	**2,000.0**	**2,000.0**	**2,000.0**	**2,000.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1173	GF MisEarn (UGF)		2,000.0	2,000.0	2,000.0	2,000.0	2,000.0	2,000.0
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**0.0**	**2,000.0**	**2,000.0**	**2,000.0**	**2,000.0**	**2,000.0**	**2,000.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial Version

Prepared by: Sara Fisher-Goad, Executive Director — Phone: 907-771-3000
Division: Alaska Energy Authority — Date/Time: 1/20/12 4:30 PM
Approved by: Susan K. Bell, Commissioner — Date: 1/21/2012
Commerce, Community, and Economic Development

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. HB 250

Analysis

This legislation adds legislative intent language related to the continuation of the renewable energy grant fund and recommendation program (AS.42.45.045) at funding levels of $50 million each fiscal year to be appropriated to the renewable energy grant fund for projects recommended by the Alaska Energy Authority (AEA); and extends the program an additional 10 years to June 30, 2023.

Costs of Administering the Fund:
The renewable energy grant recommendation program was established by legislation for the fiscal year ending June 30, 2009 (HB152 SLA 2008 CH 31). The associated fiscal note provided an increment of $226.0 for the first year and $155.0 for subsequent years through FY2013 to AEA's Statewide Project Development and AEE component.

Starting in FY2011, interest earnings on the renewable energy grant fund, not to exceed $2 million, were appropriated to AEA for the costs of administering the renewable energy grant fund program (FY2011: SB230 SLA 2010 CH 43 Sec 28 Pg 160 Lines 26-29; FY2012: HB108 FSSLA 2011 CH 3 Sec 13 Pg 72 Lines 2-4). A continuation of funding is included in the FY2013 Governor's budget.

In FY2011, the actual costs of administering the renewable energy grant fund program were $1.2 million. Estimated costs for FY2012 are $1.6 million. Costs include AEA project management, grant management, as well as finance and administrative support. Costs also include contractual services related to the technical analysis and evaluation of applications and project proposals. At June 30, 2011, four renewable energy fund application periods were complete; $150 million had been appropriated for 133 renewable energy projects and approximately 126 grants were being managed. In FY2012, $36.6 million was appropriated for an additional 74 projects ($36.6 million included $10 million of re-allocated funds). This fiscal note assumes a continuation of current funding levels estimated at up to $2 million annually for the costs of administering the renewable energy grant fund program.

Alaska Renewable Energy Fund
Grant Recommendation Program

Preliminary Assessment of Project Performance

February 4, 2012

Background

Alaska Energy Authority (AEA) has at least one year of operational data for 14 of the 21 Renewable Energy Fund (REF) projects that were producing energy at the end of 2011. The following assessment is based on the technical and economic performance of these 14 projects summarized in table 1.

This assessment is preliminary. It

- Reports on only a portion of the 73 construction projects that have been funded by the REF since inception. Status of all projects funded by the REF is available in the 2012 REF Program Status Report at http://www.akenergyauthority.org/RE_Fund_Applications-V.html .
- Is based on one year of production (2011). As is common to most energy projects, some of the projects—particularly biomass and small wind systems—require additional time for operators to debug and integrate the equipment into the existing fossil system.
- Does not address non-fuel operation and maintenance (O&M) cost increases or savings. For the purposes of this assessment, the costs of O&M for diesel-fired power and heat generation is assumed to be equal to that of renewable energy generation.
- Does not address positive or negative impacts on overall system efficiency. For example, higher penetration of wind energy into a diesel power system may decrease diesel generation efficiency. More detailed study is required to assess such an impact in a particular location.
- Does not address impacts on the cost of electricity, the Power Cost Equalization program, air quality, greenhouse gas emissions, fuel spills, economic development, community stability, or other more complex environmental and socioeconomic issues.

Despite these limitations, however, AEA believes it is appropriate to focus, at least initially, on quantity and value of fuel displacement as a program metric given the overwhelming impact that fossil fuel usage has on energy cost.

AEA maintains an ongoing program to monitor energy production, operation and maintenance issues, and economic performance of construction projects funded by the REF and other programs. As more data becomes available AEA will expand the analysis of project performance to include additional projects, assess cost of electricity impacts on ratepayers, and analyze distribution of benefits to the public. AEA will continue to coordinate this work with the University of Alaska and make results publicly available.

As part of the REF program evaluation that is in progress, AEA contractor Vermont Energy Investment Corporation is conducting an assessment of program impact versus cost that will address project cost versus savings, jobs, development of infrastructure, and other public benefits. A draft report will be available in March, while the final report is due in June.

Overall Results

Table 1 indicates that the 14 projects displaced 1.46 million gallons of diesel in 2011—approximately 84% of the amount of fuel that was expected by AEA, UAA Institute of Social and Economic Research (ISER), and private economists that reviewed REF applications. (This expected amount of fuel is termed "Goal" in the table.)

The value of the fuel displaced in 2011 was $4.87 million. Dividing the total unsubsidized cost of all projects ($55.6 million) by the $4.87 million in savings 2011 indicates a simple payback of 11 years for projects that AEA expects have a 20-year useful life (except for the hydro project that is assumed to have a 50-year life). Dividing the total REF grant for these projects ($20.65 million) by the $4.87 million in savings indicates a payback on the grant portion of the projects of 4 years.

2011 fuel prices may be rather low in the long run. Based on the USDOE Energy Information Administration's mid-case projection of the cost of crude and other (see Alaska Fuel Price Projections 2011-2035 ftp://ftp.aidea.org/ReFund-5/4_Program_Update/Fuel_price_projection_2011-2035_final.pdf), ISER estimates that the average price of fuel in rural areas will increase by 42% during the next 20 years over 2011 levels.

The following sections provide more detailed information on project performance. Information is organized by renewable energy resource.

Biomass

The Tok School Biomass system reported fuel displacement for 2011 at 48% of the estimated displacement from their application. The Tok boiler only operated from January to May in 2011, when it was shut down to be retrofitted for steam, and a steam turbine-generator was added to the system. The heating system was not restarted until January 2012. Therefore thermal production was substantially less than expected. During 2013 the wood-fired system is expected to produce both heat and power during the year. The Alaska Gateway School District has used fuelwood harvested in wildfire mitigation efforts to date. Thus biomass fuel cost has been limited to handling and processing.

The Native Village of Eyak processed 75 cords of local logs in 2011. Although this is only 13% of the original goal, payback time of the REF investment appears short.

The Gulkana Central Wood Heating system displaced fuel at 40% of the goal. This is a basic biomass system with minimal instrumentation, so the estimates for displaced fuel are derived from quantity of harvested wood. This system's lower-than-expected performance may be caused by less than 100% utilization of the system. AEA will monitor the system with the Native Village of Gulkana. Despite this apparent underperformance, the project saved the Village approximately $24,000 in fuel cost. Similar to Tok, the project is firing the boiler with wood stored from earlier harvest operations.

Geothermal

The City and Borough of Juneau's ground source heat pump is performing at 126% of its fuel displacement goals using figures from a recent preliminary report prepared by the CBJ for AEA. Simple payback is 8 years for total cost and 4 years for REF funding. The CBJ report assesses economics more fully and includes costs of increased power consumption and benefits of reduced snow removal costs.

Heat Recovery

Golden Valley Electric Association's (GVEA's) heat recovery facility at its North Pole power plant is performing well, if somewhat below the original goal. Having saved $172,000 in naptha fuel during 2011, the $1 million project promises to be highly economic.

McGrath Heat Recovery System reported fuel displacement for 2011 at 72% of goal. In late 2011, the new McGrath Clinic was connected to the district heating system and will increase the fuel displaced by approximately 5,400 gallons. The system is operating well and saved the community $157,000 in fuel during 2011.

Hydroelectric

The City and Borough of Wrangell's electric boilers are operating as planned and displaced $230,000 of fuel in 2011.

Gustavus Electric Company's Falls Creek hydro project produced 117% of its energy goal. The 50-year, $8.4 million project offset fuel worth $583,000 in 2011. It should be noted that hydropower is subject to yearly weather, and annual energy may vary by +/- 20% of the predictions based upon a "normal" water year.

Solar

GVEA's McKinley Village solar thermal project offset less than a third of the amount of fuel expected during 2011. GVEA staff and contractors established a data collection system for the $193,000 demonstration project, however, and are working on understanding and improving performance.

Wind

The AEA wind program publishes a quarterly report card of all utility-scale wind projects in the state. The first report card was released in late September 2011, while the second report was completed in early January 2012.

Wind energy varies seasonally with greater wind turbine output in the winter and less in the summer. Therefore a 12-month average is needed to accurately assess wind project performance.

Kodiak Electric's Pillar Mountain Wind Farm continues to meet or exceed energy goals. In 2011 it displaced over 870,000 gallons of diesel fuel, saving $2.9 million. With a total installed cost of $21.4 million, payback by fuel savings is 7 years.

Alaska Environmental Power's Delta wind project resolved some key equipment issues last summer and produced 82% of its energy goal. The project, which displaced 95,900 gallons of naptha worth $256,000 in 2011, appears to be on track to reach its energy goal in 2012.

Alaska Village Electric Cooperative installed a third Northwind 100 turbine with funding from the REF in Toksook Bay. Based on prorated generation figures the project generated at 77% of goal and saved $43,000 in fuel.

The privately owned Banner Peak Wind project experienced equipment issues and produced at only 28% of its capacity in 2011. No state funds were used for the wind farm. The REF-funded intertie, however, performs as expected and will provide additional benefit when Nome Joint Utility System installs larger wind turbines if REF round 5 funding is received.

Unalakleet Valley Electric Company's project produced near its expected energy goal. However system cost payback remains high. UVEC and AEA staff is working to improve system performance and turbine downtime. The project saved $211,000 in fuel during 2011.

Figure 1. 2011 Energy production and diesel cost savings vs goals from RE Fund projects with at least 12 months of operation.

Resource	Grantee	Project Name	Energy Performance					Economic Performance					
			2011 Energy Production		Diesel Displaced (gal x 1000)		Actual / Goal	Project Cost ($ x 1000)		2011 Fuel Savings ($ x1000)	Simple Payback (Years) on:		Project Life
			Electrical (MWh)	Thermal (mmBtu)	2011 Actual	Goal		Total Cost	REF Funding		Total Cost	REF Funding	
Biomass	Alaska Gateway School District	Tok Wood Heating	-	3.2	24.4	50.4	48%	3,260	3,245	92	35	35	20
	Native Village of Eyak	Cordova Wood Processor	-	1.5	11.4	88.7	13%	78	75	42	2	2	20
	Gulkana Village Council	Gulkana Central Wood Heating	-	0.8	5.9	14.6	40%	500	500	24	21	21	20
Geothermal	City and Borough of Juneau	Juneau Airport GS Heat Pump	-	5.1	37.1	29.5	126%	1,026	513	131	8	4	20
Heat Recovery	Golden Valley Electric Assoc	North Pole Heat Recovery	-	5.2	61.5	89.6	69%	1,022	817	172	6	5	20
	McGrath Light & Power Co	McGrath Heat Recovery	-	2.9	23.0	32.0	72%	1,179	712	157	8	5	20
Hydro	City and Borough of Wrangell	Wrangell Hydro Electric Boilers	-	6.9	66.0	69.6	95%	2,082	2,000	230	9	9	20
	Gustavus Electric Co	Falls Creek Hydroelectric	1,933	-	138.1	118.3	117%	8,400	750	483	17	2	50
Solar	Golden Valley Electric Assoc	McKinley Village Solar Thermal	-	0.1	1.8	5.7	31%	194	193	7	27	27	20
Wind	Kodiak Electric Association	Pillar Mountain Wind	12,448	-	870.7	852.0	102%	21,400	4,000	2,873	7	1	20
	Alaska Env Power	Delta Area Wind	1,425	-	95.9	117.0	82%	2,802	2,000	256	11	8	20
	Alaska Village Electric Coop	Toksook Wind Farm	187	-	12.6	16.3	77%	1,253	1,038	43	29	24	20
	Nome Joint Utility Systems	Banner Pk Wind Transmission	955	-	53.9	191.3	28%	6,390	801	152	42	5	20
	Unalakleet Valley Electric Co	Unalakleet Wind Farm	958	-	58.2	61.9	94%	6,000	4,000	211	28	19	20
TOTAL			**17,907**	**25.8**	**1,460.4**	**1,736.8**	**84%**	**55,585**	**20,645**	**4,872**	**11**	**4**	

Notes:

1. Includes projects in operation for at least 12 months
2. Assumes that operation and maintenance costs of new and existing projects are the same.
3. Assumes no impact on existing oil-fired system efficiency.

From: Peter Crimp
To: Weston Eiler (Weston_Eiler@legis.state.ak.us)
Cc: Sara Fisher-Goad
Subject: Assessment of projected REF savings

Attached is a spreadsheet that gives projected average annual energy production, fossil fuel displacement, and savings for 63 construction projects funded by the Alaska Renewable Energy Fund (REF) program. Five additional construction projects are funded by the program, but are not presented because they are not yet scheduled for completion. (See the REF program Status Report at http://www.akenergyauthority.org/re-fund-5/4_Program_Update/StatusReport2012.pdf for additional information). Notes at the bottom of the chart explain how the information was compiled.

This information follows up a 2-4-12 report (attached) that AEA provided to the Senate Finance Committee that provided a preliminary assessment of performance of projects with 12 months of operation during 2011. The current deliverable includes all projects scheduled for construction. Since only a subset of the projects have representative operational data, future performance is projected based on the original economic analyses performed by contracted economists under coordination of ISER with modifications by AEA given additional information that became available after the projects were analyzed.

Net Savings are estimated as Fuel Savings minus O&M costs. Payback time in years is estimated based on total or REF Funding quantity divided by net savings.

Results:

1. Average net savings per year for the round 1-4 projects is estimated at $35.3 million/yr. Given a total installed cost of $358 million, payback time for all projects is 10 years.
2. Project life is greater than total project cost payback time for 58 of the 63 projects. This indicates that most projects are economic, whether or not they are subsidized by the REF program.
3. Project life is greater than REF grant payback time for 60 of the 63 projects.

Please contact me if I can answer any questions on this analysis.

Sincerely,
Peter Crimp
* * *
Deputy Director –
Alternative Energy & Energy Efficiency
Alaska Energy Authority
(907) 771-3039

Alaska Renewable Energy Fund
Projected Energy Production and Cost Savings from Round 1-4 Projects
March 28, 2012

ALASKA ENERGY AUTHORITY

Resource	ID	Grantee	Project Name	Energy and Fuel					Cost Savings						In Operation 2011
				Energy Production		Fuel Displaced (x 1000)			Project Cost ($ x 1000)		Net Savings ($ x 1000/yr)	Cost / Savings Payback Time (Years)		Project Life (Years)	
				Electrical (MWh/yr)	Thermal (mmBtu/yr)	Diesel (gal/yr)	Natural Gas (MCF/yr)	Diesel Equivalent (gal/yr)	Total Cost	REF Funding		Total Cost	REF Funding		
BIOMASS	49	Alaska Gateway School District	Tok Wood Heating Construction		6,990	50	0	50	3,260	3,245	183	18	18	20	x
	15	Cheesh'na Tribal Council	Chistochina Central Wood Heating Construction		1,832	13	0	13	512	500	35	14	14	20	
	53	Chena Power, LLC	Biomass-fired Organic Rankine Cycle System	3,098	1,035	201	0	201	4,613	2,000	520	9	4	20	
	33	Chilkoot Indian Association	Haines Central Wood Heating Construction		5,320	38	0	38	225	189	149	2	1	20	
	605	City of Craig	Biomass Fuel Dryer Project		6,621	48	0	48	600	350	129	5	3	20	
	476	City of Tanana	City-Tribe Biomass Energy Conservation		1,609	12	0	12	508	413	52	10	8	20	
	649	Copper River School District	Kenny Lake School Wood Fired Boiler		2,774	20	0	20	565	565	46	12	12	20	
	112	Delta/Greely School District	Delta Junction Wood Chip Heating		7,282	53	0	53	2,868	2,000	151	19	13	20	
	2	Gulkana Village Council	Gulkana Central Wood Heating Construction		2,031	15	0	15	500	500	23	22	22	20	x
	445	Gwitchyaa Zhee Utility Company	District Wood Heating in Fort Yukon		19,040	137	0	137	3,606	2,318	538	7	4	20	
	681	Lake and Peninsula Borough	Lake and Peninsula Wood Boilers		541	4	0	4	493	370	24	21	16	20	
	623	Matanuska Susitna Borough	Susitna Valley High School Wood Heat		2,885	21	0	21	756	750	40	19	19	20	
	68	Municipality of Anchorage	Anchorage Landfill Gas Electricity Construction	24,183		0	311,378	2,301	7,395	2,000	1,219	6	2	20	
	26	Native Village of Eyak	Cordova Wood Processing Plant		1,803	13	0	13	138	138	43	3	3	20	x
	211,636	Southeast Island School District	Thorne Bay Wood Boiler		2,427	18	0	18	580	478	32	18	15	20	
GEO-THERMAL	705	City and Borough of Sitka	Japonski Island Boathouse Heat Pump		374	3	0	3	165	125	9	18	14	20	
	999	City and Borough of Juneau	Juneau Airport Ground Source Heat Pump		5,143	37	0	37	1,026	513	148	7	3	20	x
	111	City and Borough of Juneau	Juneau Aquatic Ctr Ground Source Heat Pump Constr		15,140	109	0	109	1,950	1,450	141	14	10	20	
	453	City of Seward	Alaska Sealife Center Ph II Seawater Heat Pump		7,196	52	0	52	287	287	117	2	2	20	
HEAT RECOVERY	307	City of Ambler	Ambler Heat Recovery Construction		1,229	9	0	9	500	435	47	11	9	20	
	448	City of Saint Paul Electric Utility	Saint Paul Fuel Economy Upgrade		2,501	18	0	18	98	98	100	1	1	20	
	271	City of Unalaska	Unalaska Heat Recovery Construction	1,662		128	0	128	1,920	1,300	546	4	2	20	
	22	Cordova Electric Cooperative	Cordova Heat Recovery Construction		7,874	57	0	57	3,770	1,780	256	15	7	20	
	105	Golden Valley Electric Association	North Pole Heat Recovery Construction	1,476		92	0	92	1,050	840	237	4	4	20	x
	687	Inside Passage Electric Cooperative	Hoonah Heat Recovery Project		7,905	57	0	57	1,005	475	220	5	2	20	
	235	Kotzebue Electric Association	Kotzebue Electric Heat Recovery Construction	1,213	12,649	185	0	185	1,216	916	978	1	1	20	
	61	McGrath Light & Power Company	McGrath Heat Recovery Construction		4,438	32	0	32	954	712	196	5	4	20	x
	244	North Slope Borough	Point Lay Heat Recovery Construction		15,199	110	0	110	4,257	396	694	6	1	20	
HYDRO	672	Alaska Electric Light & Power Company	Snettishsham Transmission Avalanche Mitigation	936		72	0	72	3,344	2,000	258	13	8	50	
	23	Alaska Power and Telephone	North Prince of Wales Island Intertie Project	1,356		104	0	104	6,155	3,752	279	22	13	50	x
	9	City and Borough of Wrangell	Wrangell Hydro Based Electric Boilers Construction		11,903	86	0	86	2,082	2,000	374	6	5	50	x
	469	City of Akutan	Akutan Hydroelectric System Repair and Upgrade	420		32	0	32	1,491	1,391	113	13	12	50	
	58	City of Atka	Chuniisax Creek Hydroelectric Construction	568		44	0	44	7,167	996	239	30	4	50	
	37, 620	City of Ketchikan	Whitman Lake Project	7,926		528	0	528	25,000	700	2,113	12	0	50	
	688	City of Pelican	Pelican Hydroelectric Upgrade Project	1,000		77	0	77	5,521	1,897	270	20	7	50	
	21, 407	Cordova Electric Cooperative	Humpback Creek Hydroelectric Construction	3,764		290	0	290	21,300	8,000	1,211	18	7	50	x
	10	Gustavus Electric Company	Falls Creek Hydroelectric Construction	1,766		118	0	118	8,400	750	540	16	1	50	x
	653	Kodiak Electric Association	Terror Lake Unit 3 Hydroelectric Project	6,456		455	0	455	15,908	3,752	1,997	8	2	50	
	104, 629	Southeast Conference	Reynolds Creek Hydroelectric Project	7,351		565	0	565	27,000	4,000	1,877	14	2	50	

Resource	ID	Grantee	Project Name	Energy and Fuel					Cost Savings						In Operation 2011
				Energy Production		Fuel Displaced (x 1000)			Project Cost ($ x 1000)		Net Savings ($ x 1000/yr)	Cost / Savings Payback Time (Years)		Project Life (Years)	
				Electrical (MWh/yr)	Thermal (mmBtu/yr)	Diesel (gal/yr)	Natural Gas (MCF/yr)	Diesel Equivalent (gal/yr)	Total Cost	REF Funding		Total Cost	REF Funding		
OCEAN/RIVER	660	Ocean Renewable Power Company	Cook Inlet TidGen Project	1,840		0	23,484	174	8,051	2,000	43	186	46	15	
SOLAR	641	Alaska Village Electric Cooperative	Kaltag Solar Construction	7,351		1	0	1	100	90	3	29	26	30	
	108	Golden Valley Electric Association	McKinley Village Solar Thermal Construction	32		2	0	2	194	190	11	18	17	30	x
WIND	102	Alaska Environmental Power	Delta Area Wind Turbines-Construction	1,750		117	0	117	2,802	2,000	468	6	4	20	x
	70	Alaska Village Electric Cooperative	Quinhagak Wind Farm Construction	649		50	0	50	4,839	3,882	237	20	16	20	x
	71	Alaska Village Electric Cooperative	Toksook Wind Farm Construction	166		13	0	13	1,253	1,038	58	22	18	20	x
	72	Alaska Village Electric Cooperative	Mekoryuk Wind Farm Construction	478		34	0	34	4,031	3,156	165	24	19	20	x
	302	Alaska Village Electric Cooperative	Emmonak/Alakanuk Wind Design and Constr	637		45	0	45	10,733	8,000	157	68	51	20	x
	303	Alaska Village Electric Cooperative	Shaktoolik Wind Construction	360		33	0	33	2,728	2,466	153	18	16	20	
	317	Aleutian Wind Energy	Sand Point Wind Construction	1,855	2,122	158	0	158	1,078	640	884	1	1	20	x
	122, 604	City of Bethel	Bethel Wind Power Project Times Four	817		63	0	63	3,198	2,598	418	8	6	20	
	486	City of Pilot Point	Pilot Point Wind Power & Heat	240		23	0	23	1,571	1,421	151	10	9	20	
	90	City of St. George	St. George Wind Farm Construction	511		39	0	39	2,000	1,500	154	13	10	20	
	616	Golden Valley Electric Association	GVEA Eva Creek Wind Turbine Purchase	55,510		3,469	0	3,469	93,300	1,463	6,890	14	0	20	
	103	Kodiak Electric Association	Pillar Mountain Wind Project - Construction	12,200		859	0	859	21,400	4,000	3,851	6	1	20	x
	85, 518	Kotzebue Electric Association	High Penetration Wind-Battery-Diesel Hybrid	4,267		328	0	328	10,809	8,000	1,627	7	5	20	
	107	Kwig Power Company	Kwigillingok High Penetration Wind-Diesel	743		69	0	69	3,200	1,600	348	9	5	20	
	89	Nikolski IRA Council	Nikolski Wind Integration Construction	84	366	10	0	10	451	409	63	7	7	20	
	52	Nome Joint Utilities	Newton Peak Wind Farm	4,267		328	0	328	4,444	4,000	1,470	3	3	20	
	47	Nome Joint Utility Systems	Nome Banner Peak Wind Farm Transmission Constr	1,030		69	0	69	890	801	311	3	3	20	x
	110	Puvurnaq Power Company	Kongiganak High Penetration Wind-Diesel	1,167		90	0	90	3,300	1,700	493	7	3	20	x
	503	TDX Corporation	St. Paul Wind Diesel Project	1,600		123	0	123	2,100	1,900	628	3	3	20	
	273	Tuntutuliak Comm Svcs Assoc	Tuntutuliak High Penetration Wind-Diesel	518		63	0	63	3,360	1,760	193	17	9	20	
	50	Unalakleet Valley Electric Co	Unalakleet Wind Farm Construction	1,200		80	0	80	4,223	4,000	396	11	10	20	x
			TOTAL	**162,447**	**156,229**	**9,968**	**334,862**	**12,443**	**358,240**	**112,995**	**35,318**	**10**	**3**		

Notes:

1. Fuel savings and operation & maintenance (O&M) net cost figures are total present value over 20 years divided by 20. A real discount rate of 3% is assumed.
2. Estimated performance of projects is based on assumptions of round 1-4 economic analyses coordinated by ISER and modified by AEA given updated information.
3. Performance assumptions are subject to adjustment as new performance and actual price information becomes available.
4. Fuel prices are estimated based on updated Energy Information Administration Annual Energy Outlook 2012 Early Release. See http://www.iser.uaa.alaska.edu/Publications/Fuel_price_projection_2011-2035_final.pdf

Ms. Fisher-Goad,

I have included previous emails to help refresh your memory and help you see from an outsiders perspective that AEA is not lowering the cost of energy in Alaska nor is it promoting sustainable rural energy systems. AEA is part of the problem providing resources to rural power systems which do not maintain their facilities and penalizing companies and communities where their electrical infrastructure is properly maintained and managed.

Let us examine the facts at face value, AEA has provided the community run electrical system of Ruby with multiple generators, buildings and an electrical grid multiple times based on need over the course of many years. The community of Ruby will be raising their electrical rate to $1.13/kwh, yet Tanana who has not received any AEA assistance for their electrical system, power rate remains at $0.5693/kwh for the highest rate class. So a company without AEA assistance Tanana is able to produce electricity for half of the cost of a company with AEA assistance. AEA is an enabler, rewarding a companies who do not maintain or invest in their facilities by providing them with new infrastructure and penalizing customers like those in Tanana with a properly maintained and managed electric company. The customers in Tanana pay for the full cost of power because they have an electrical system that is properly maintained and managed yet companies that live on State assistance, like Ruby, are rewarded with new infrastructure for allowing their infrastructure which was previously installed to go into disrepair. What is fair or equitable about that? What is AEA doing to ensure that the State's investment is protected in these communities like Ruby where the state has built infrastructure multiple times to ensure that the system is sustainable and the state will not be requested to build the system again in a couple of years? AEA is part of the rural Alaska Energy problem.

AEA and its staff have a very limited understanding rural Alaska. AEA staff people as shown by the following are very removed and do not understand Alaska. Let's look at specifics:

1) AEA defining Tanana as a Class 7 wind zone (AK_Energy_Model_Tanana) and then denying multiple requests for funding on projects (Summary_Project_Evaluation_R2_Tananarejection) which will lower the cost of electricity in Tanana because the projects do not follow the centralized beaurcratic top down planning process dictated by AEA. AEA then later comes out and states that, "Tanana does not have economically viable wind resources." This is after rejecting multiple requests because they did not pursue wind, a resource which is not economically developable in the area, which I have told AEA multiple times and have been ignored. So because AEA messed up and does not know what they are talking about, the residents of Tanana are penalized being denied funding. Not exactly fair or a demonstration of the competency of AEA.
2) AEA has insisted on pursuing the Susitna Hydro project, a project that will cost somewhere in the neighborhood of $5 billion dollars and will displace electricity costing about $0.15/kwh. Jackson Creek hydro development which has already received a sterling endorsement from AEA's predecessor would cost in the neighborhood of $5 million and displace electricity costing $0.56/kwh but is discouraged by AEA. Let's examine AEA's objections: a) environmental issues associated with licensing a dam are very significant today. b) Building a dam on permafrost is a significant challenge from an engineering perspective. c) Thermal issues associated with hydro projects restrict their development and lands North of there. Talk about removed from reality. AEA is willing

to pursue the development of Susitna for $5 Billion dollars with all of the same issues and objections associated with Jackson Creek which would cost $5 million dollars, but is unwilling to pursue Jackson Creek development. AEA is very removed and disconnected from reality, let's look at the objection to Jackson Creek development: a) Licensing, because of the size and the fact that the area to be developed is on Native land, Jackson Creek hydro is exempt from most of the licensing requirements. b) Mr. Ott's statement regarding building a dam on permafrost is correct, there are issues with building on permafrost, this however does have any effect on the Jackson Creek project since it does not set on permafrost. Any engineer working in Alaska with any competence should know that Southern facing steep well drained slopes such as Jackson Creek, typically do not have permafrost issues. c) Thermal issues such as frazil ice are very real engineering concerns in Northern climates, however it is an issue with the Susitina project just as it would be with Jackson Creek. There are hundreds of traditional hydro electric projects above the Arctic Circle, just look at Norway. So while "thermal issues" are real concerns in Northern climates it is not a show stopper, there are a lot of examples of hydro electric systems operating above the Arctic Circle without problems.

3) AEA pursuit of biomass is a good idea at face value but really needs some on the ground study which has not been done before it is pursued. As a result of the biomass project at the Tanana laundrymat residents of Tanana have already seen an increase in the cost of wood for heat. The installation of three more systems in the community will only put a greater demand on the resource causing wood for residential heating to go up in price and become less plentiful. We already have an example of the use of biomass in Tanana from the 1900s. Jetté (1910) records the Koyukon Athabascan name for the village as Hohudodetlaatl Denh, literally, 'where the area has been chopped" The forest around Tanana is still recovering from the days of Fort Gibbon, local trees in the Tanana area are typically at most 6-8" in diameter, it has taken almost 100 years for the trees to get this big. So for AEA to aid in the development of biomass development without a though long term study of the implications, is irresponsible.
4) Tanana Power has actually developed a kinetic hydro energy conversion device that works. The device in one summer season has produced and put more electrical energy on the grid than all the other devices in Alaska combined throughout their entire existence. AEA has failed even to provide even minor assistance to Tanana Power for this project, instead spends money pursuing things like nuclear energy for rural applications a non starter at face value.

My goal is not to bash AEA, however, AEA has provided multiple examples of incompetence within the organization and the rewarding of incompetence through the organization. Given that this is unfair to my customers and the state as a whole I see no other alternative but to take this fight to the legislature but am providing AEA one last chance to explain themselves before doing so. I look forward to your thoughtful response.

Sincerely,

Don Eller

From: Sara Fisher-Goad [mailto:SFisherGoad@aidea.org]
Sent: Monday, March 21, 2011 1:15 PM
To: nalaska@yukontel.com
Cc: Mike Harper; David Lockard; Douglas Ott; Barbara Triplett; Ronald Brown; Shauna Howell; Peter Crimp
Subject: RE: AEA and rural power

Dear Mr. Eller-
Thank you for your e-mail. I appreciate hearing from people as familiar as you are with rural Alaskan energy issues. Be assured, AEA project staff have in-depth rural Alaska experience. Our engineering staff includes people born in Alakanuk and McGrath. We also have employees who have worked for a decade or more in Kotzebue, the Lake Iliamna region, and Barrow. In my experience, AEA employees have gained their knowledge of rural Alaska with hands-on years of experience, not one or two-day trips in a community.

AEA has energy programs and projects that run the gamut from energy efficiency to bulk fuel tank farm construction, from PCE to the study of advanced small nuclear reactors, and from loans for rural bulk fuel purchases to investigating hydropower potential on the Susitna River. AEA's website www.akenergyauthority.org provides a great deal of information regarding how AEA allocates its resources to lower the cost of energy in Alaska. The "Program and Project Fact Sheets" link on our web page provides specific information on various AEA programs. I also invite you to come to our offices and meet with me and Mike Harper, Deputy Director - Rural Energy to discuss your concerns about AEA programs.

I do want to address a couple of specifics from your email:

Your points regarding the value of nuclear power in Alaska are valuable, and I have shared them with the authors of that study. AEA was appropriated funds last year to partner with ACEP to develop a feasibility study of potential nuclear power in Alaska. The summary you referenced is draft only and several of your comments and concerns are shared by AEA staff. Last year, legislation also passed allowing the state to consider nuclear power projects as potential energy projects in Alaska. As a key agency for energy project planning and financing, AEA supports analyzing all energy technologies. Since the Nuclear Regulatory Commission has not approved a small modular nuclear reactor design, this technology's potential use in Alaska is many years away.

The biomass resource is a critical concern when AEA considers wood boiler projects. Our grant process requires a resource assessment as an early part of project development. In Tanana, AEA staff met recently with Tanana Chiefs Resource Specialist Will Putnam and State Forester Doug Hanson to plan for these projects. If you would like to be added to the stakeholder list for that process, please contact Ron Brown, AEA biomass project manager (rbrown@aidea.org).

Your comments on the wind resource around Tanana are in agreement with recent wind data AEA has gathered using a high resolution wind model. With only a class 2 wind resource, Tanana does not appear to be a promising site for wind development.

Unfortunately, it appears the hydro resource near Tanana is not conducive to development either. Mr. Douglas Ott is AEA's hydropower program manager. (no relation to Ron Ott, principal of the former Ott Water Engineers, whose firm prepared the 1978 hydropower reconnaissance report on Jackson Creek.) Mr. Ott has prepared the following summary of the hydro prospects for Jackson Creek :

The creek is seasonally intermittent and located in a flat valley with steep hillsides. The scheme studied in 1978 report included a dam and reservoir on Jackson Creek and a 5 mile long penstock to a 850kW powerhouse. Regulations and licensing requirements for hydropower projects have become much more stringent since 1978. Environmental issues associated with licensing a dam are very significant today.

Building a dam and creating a reservoir on permafrost is a significant challenge from an engineering perspective. Further, a 5 mile long penstock is beyond the range of that considered economic for intermittent hydro operation. Lastly, thermal issues associated with hydro projects restrict their development in the Interior and lands north of there. For all these reasons, AEA does not recommend further consideration of hydro development on Jackson Creek.

The Yukon River at Ruby was the site of the first hydrokinetic demonstration in Alaska. However, this technology is several years from commercialization, would only provide seasonal power, and has significant technological and environmental hurdles to cross. I understand that you have invested significant resources into a prototype hydrokinetic device. Ms. Barbara Triplett, AEA's ocean and river energy program manager, can add you to AEA's hydrokinetic working group list if you are interested (btriplett@aidea.org).

I understand you have worked with a number of AEA program managers to gather information regarding wind, geothermal, river in-stream and hydropower; the City of Tanana has also received a grant from AEA for a street lighting retrofit to LED lamps.

I applaud your efforts to pursue alternative energy sources for Tanana. I agree, rural residents know best what their needs are and how to meet them; please consider AEA a resource to help you in your efforts.

Sincerely,

Sara Fisher-Goad

AEA Executive Director

From: Don Eller [nalaska@yukontel.com]
Sent: Wednesday, March 16, 2011 1:23 PM

There are real and practical solutions for rural power, traditional hydro-electric is one such solution but is immediately discounted by AEA as are coal fired boilers. Attached is the Jackson Creek hydro study and the recommendation to AEA that the best energy alternatives for Tanana is the development of Jackson Creek Hydro. Yet anytime suggestions are made to AEA to develop the hydro resources around Tanana, AEA immediately discounts them pushing for much higher cost energy fads of the day like wind and biomass development. It is interesting to note that much of the early work on hydro in Alaska was done by Mr. Ott. Douglas Ott is also the project manager for traditional hydro projects at AEA. I am unsure if they are the same person but if they are the change in attitude from when Mr. Ott was a consultant making money of rural hydro development and now that he is a program manager for AEA amounts to an about face.

It is always easy to tear down and criticize others actions, this is communication with you is not meant to do that. This communication is an attempt to bring about structural changes of the way the State of Alaska handles rural energy by demonstrating the problem areas and providing logical alternatives the state has proposed in the past. I understand your job is dealing with energy throughout the state of Alaska so the specifics of Tanana are not on the top of your priority list.. Affordable energy in Tanana however is my priority and having been born and raised in Tanana and worked there throughout my life, no one knows more about what is the best energy resource for Tanana, than me. Unfortunately I cannot get those who have control of the purse strings to listen.

As always you and anyone at AEA staff are welcome in Tanana any time to review and inspect what an efficient power generation system installed in rural Alaska with private dollars should look like.

Don

Don Eller
Yukon Tech. Inc.
6270 Beechcraft Rd.
Wasilla, Alaska 99654

907 745-5363

!DSPAM:16,4d87c05a40044646080157!

No virus found in this message.
Checked by AVG - www.avg.com
Version: 10.0.1153 / Virus Database: 1498/3520 - Release Date: 03/21/11

Ruby Electric
P.O BOX 90
Ruby, Alaska 99768
PH# (907)468-4401
FAX# (907)468-4443

RECEIVED JUL : 3 2010

June 30, 2010

Ruby Electric Customer:

Due to the increase in fuel costs we had to increase the KW charge from .76 to .84. This will be effective on the next billing cycle, next month.

Reminder, at the conclusion of the next month we will have our first $100.00 drawing for current electrical customers. I have hi-lited overdue amounts due that will need to be paid in addition any amounts in your 1-30 will need to be paid so it does not move over to 31-60 days . Any current residential customers (no balances in 31-60 or over) with no overdue city charges will be eligible.

Sincerely,

Jennie Peter

Jennie Peter
City Clerk

RUBY ELECTRIC CO.
P.O BOX 90
Ruby, Alaska 99768
PH# (907)468-4401
FAX# (907)468-4443

RECEIVED AUG 1 1 2011

July 31, 2011

Ruby Electric Customers:

In receiving our fuel this summer there was a substantial price increase on the price of fuel that directly effects our KW rate. With our fuel increase it would generate an increase of KW rate to $1.13.

The City Council has decided to wait until the fall fuel shipment is delivered to make any adjustments to the KW rate. We are in hopes the cost will be less so that our increase will not be so high. Therefore, at this time there will be no increase.

Unfortunately, there will have to be an increase to the KW rate this fall based on the price of fuel however the rate is unknown at this time.

This letter however will serve as notice to our customers notifying you of the rate increase.

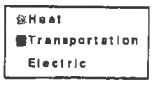
Thank you,

Jennie Peter

Jennie Peter
City Clerk

Tanana

Energy Used







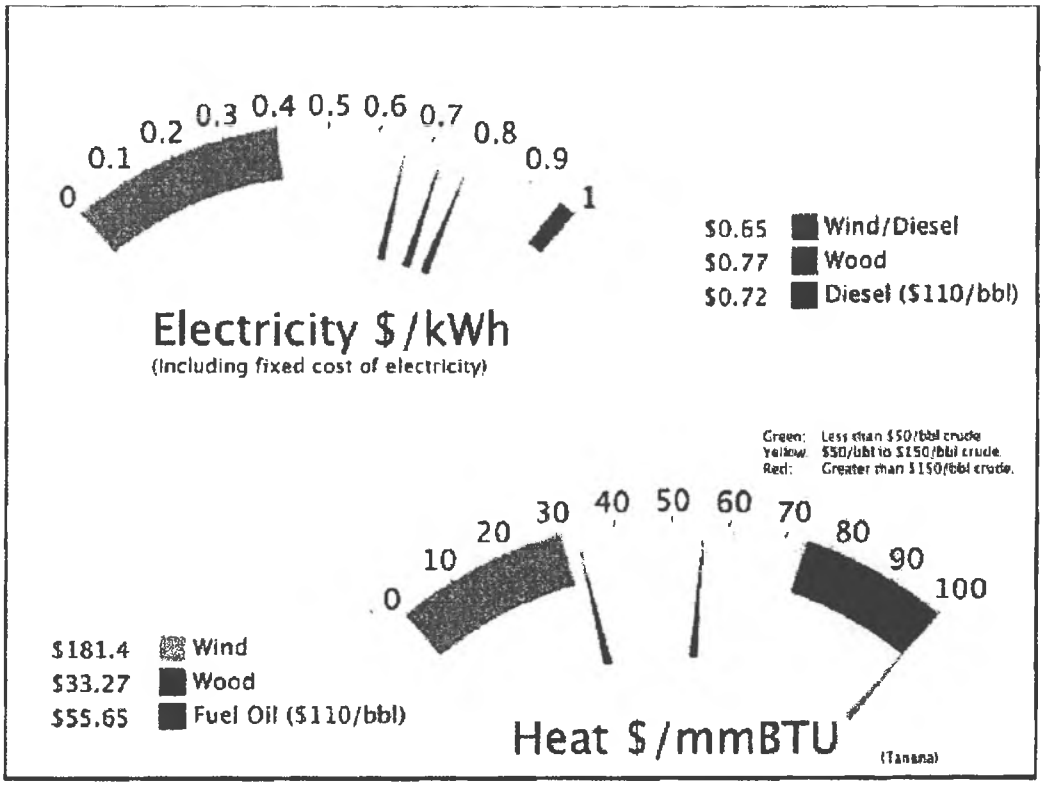
Total: **$5,309** Per capita

Heat **$1,632** Per capita

Transportation **$590** Per capita

Electricity: **$3,087** Per capita

POPULATION: 258



Tanana

Regional Corporation
Doyon, Limited
House 6
Senate : C

POPULATION 258 LATITUDE: 65d 10m N LONGITUDE: 152d 04m **Unorganized**

LOCATION Tanana is located in Interior Alaska about two miles west of the junction of the Tanana and Yukon Rivers, 130 air miles west of Fairbanks.

ECONOMY Two-thirds of the full-time jobs in Tanana are with the city, school district or native council. There are a number of positions with local businesses and services. BLM firefighting, trapping, construction work and commercial fishing are important seasonal cash sources. 17 residents hold commercial fishing permits. Subsistence foods include salmon, whitefish, moose, bear, ptarmigan, waterfowl and berries.

HISTORY Due to its location at the confluence of the Tanana and Yukon Rivers, Tanana was a traditional trading settlement for Koyukon and Tanana Athabascans long before European contact. In 1880, Harper's Station, an Alaska Commercial Company Trading Post, was established 13 miles downriver from the present site. In 1881, Church of England missionaries from Canada built a mission 8 miles downriver. Between 1887 and 1900, an elaborate school and hospital complex, the St. James Mission, was constructed. It became an important source of services and social change along both rivers. In 1898, Fort Gibbon was founded at Tanana to maintain the telegraph line between Fairbanks and Nome. A post office was also established, and several other trading posts developed around the turn of the century. Gold seekers left the Yukon after 1906. Ft. Gibbon was abandoned in 1923. The St. James Hospital was transferred to the BIA administration in the 1920s. During World War II, an air base was established near Tanana as a refueling stop for the lend-lease aircraft program. New hospital facilities were built in 1949; and during the 1950s, hospital administration was transferred to the U.S. Public Health Service. The City of Tanana was incorporated in 1961. The hospital complex was a major employer during this period, employing 54 persons with a payroll of $1.6 million, but was closed in 1982. During 1982, Tanana incorporated as a First Class City in order to assume control of the local school system. The hospital facilities were remodeled for use as a health clinic, counseling center, tribal office, and Regional Elders's Residence.

Current Energy Status PCE

Electric (Estimates based on PCE)

Estimated Local Fuel cost @ $110/bbl **$5.15** /kw-hr

Current efficiency	**13.41**	kW-hr/gal	Fuel COE	**$0.40**	/kw-hr	Estimated Diesel OM	**$24,030**
Consumption in 200	**93,988**	gal	Est OM	**$0.02**	/kw-hr	Other Non-Fuel Costs:	**$365,086**
Average Load	**137**	kW	NF COE:	**$0.30**	/kw-hr	Current Fuel Costs	**$483,963**
Estimated peak loa	**274.31**	kW	Total	**$0.73**		**Total Electric**	
Average Sales	**1,201,467**	kW-hours				**$873,079**	

Space Heating (Estimated)

2000 Census Data		2008 Estimated Heating Fuel used:	**68,484**	gal	
Fuel Oil:	**41%**	Estimated heating fuel cost/gallon	**$6.15**		
Wood:	**59%**	$/MMBtu delivered to user	**$55.77**	**Total Heating Oil**	
Electricity:	**0.0%**	Community heat needs in MMBtu	**8,218**	**$421,125**	

Transportation (Estimated)

Estimated Diesel:	**24,742**	gal	Estimated cost	**$6.15**	**Total Transportation**
					$152,141

Energy Total **$1,446,344**

Possible Upgrades to Current Power Plant

Power Plant - Performance Improvement to higher efficiency

Upgrade needed:
Powerhouse Upgrade
Status **Pending**
Acheivable efficiency **14** kW-
New Fuel use **90,016**

Capital cost	**$100,000**		
Annual Capital cost	**$8,377**	$0.01	/kw-hr
Estimated Diesel OM	**$24,030**	$0.02	
New fuel cost	**$463,511**	$0.39	
Avg Non-Fuel Costs:	**$389,116**	$0.30	
New cost of electricity		**$0.70**	per kW-hr

Savings **$12,076**

Diesel Engine Heat Recovery

Heat Recovery System Installed? **Y**
Is it working now? **Y**
BLDGs connected and working:
Powerhouse Only

			Value
Water Jacket	**14,098**	gal	**$86,693**
Stack Heat	**0**	gal	**$0**

Capital cost	**$384,037**		
Annual ID	**$32,169**		
Annual OM	**$7,681**		
Total Annual costs	**$39,850**		
Heat cost	**$25.58**	$/MMBtu	

Savings **$46,842**

Alternative Energy Resources

Wind Diesel Hybrid

Installed KW	**400**
kW-hr/year	**830746**
Met Tower?	**no**
Homer Data?	**yes**
Wind Class	**7**
Avg wind speed	**8.50** m/s

			Heat Cost $/MMBtu :
Capital cost	**$3,071,563**	per kW-hr	
Annual Capital	**$206,457**	$0.25	$72.82
Annual OM	**$38,976**	$0.05	$13.75
Fuel cost:	**$0**	$0.00	
Total Annual Cost	**$245,433**	$0.30	**$86.56**
Non-Fuel Costs		$0.32	
Alternative COE:		**$0.62**	
% Community energy		69%	**Savings**
New Community COE (includes non-fuel and diesel costs)		**$0.64**	**$105,808**

Alternative Energy Resources

Wood

Installed KW	**164**
kW-hr/year	**1219094**
Installation Type	**Wood ORC**
Electric Wood cost	**$150/cd**
Wood Required	**1541** Cd/Y
Stove Wood cost	**250.00** $/Cd

			Heat Cost $/MMBtu :
Capital cost	**$2,425,756**	per kW-hr	
Annual Capital	**$163,049**	$0.13	
Annual OM	**$153,774**	$0.13	
Fuel cost:	**$231,086**	$0.19	-90
Total Annual Cost	**$547,908**	$0.45	**$29.76**
Non-Fuel Costs		$0.32	
Alternative COE:		**$0.77**	
% Community energy		101%	**Savings**
New Community COE (includes non-fuel and diesel costs)		**$0.78**	**$325,170**

Biomass For Heat

Heat Deliverd:	**425000** BTU/hr
Cords/day:	**1.8**
Hours per year	**6000**
Wood (cordwood or willows)	**$225** $/cord

Garn heater installed cost	**$500,000**
Annual ID	**$33,608**
Capital per MMBt	**$13.18**
Fuel cost per MMBtu	**$20.09**
Total per MMBT	**$33.27**
Annual Heat	31.0%

Other Resources

Tanana

Tidal:
Wave:
Coal Bed Methane:
Natural Gas:
Coal:
Propane:

Renewable Fund Project List:

For detailed information, consult the AEA web site. akenergyauthority.org

A project titled: Tanana Alternative Energy Assessment _Tanana Power has been submitted by: Tanana Power Company for a Other project. The total project budget is: $393,298 with $303,060 requested in grant funding and $90,238 as matching funds.

A project titled: Tanana Biomass Feasibility has been submitted by: Tanana Tribal Council for a Biomass project. The total project budget is: $39,868 with $30,668 requested in grant funding and $9,200 as matching funds.

Alaska Renewable Energy Fund: Round 2 (Mar-09)

ALASKA ENERGY AUTHORITY

App #281 Tanana Alternative Energy Assessment _Tanana Power

Resource: Other

Proposed Project Phase: Feasibility Recon

Proposer: Tanana Power Company

AEA Program Manager: Lenny Landis

Applicant Type: Utility

Project Description

The Tanana area is blessed with a multitude of possible alternative energy resources including:
1) Wind Energy at is T. 5 N., R. 21 W. Sec. 10 located approximately 10 miles from downtown Tanana proper.
2) Wind Energy at T. 4 N., R 20 W. This resource was eliminated as a possible because of transmission line costs from the site to Tanana. The transmission line would have to cross the Yukon River.
3) Wind and Kinetic Hydro at T. 6 N., R 17 W. commonly referred to as "The Rapids". This has both wind and water energy available however transmission line costs from The Rapids to Tanana, given the terrain, would be very costly.
4) Geothermal at Little Melozitna Hot Springs (65.459, 153.312). There has been cursory analysis done on this resource using chalcedony geo-thermometer methods by Kolker. These results are encouraging. However, the magnitude of the resource needs to be defined better to determine if it would be economically prudent to develop.
5) Traditional Hydro at Jackson Creek located at T. 5 N., R. 21 W. and T. 6 N., R 21 W. The project has been studied before by the APA in the 1980s. Information regarding the study can be found in "Reconnaissance Study of Energy Requirements and Alternatives for Tanana" Report Summary.
6) Kinetic Hydro Energy production using the Yukon River at Tanana using drag turbines. Grant funds would be used to do engineering assessments of resources 4 and 5 with the contributed funds and in kind resources of Tanana Power and the community of Tanana devoted to quantifying the resources 1 and 6.

The ultimate goal being to determine "the best" resource to develop of the community to meet the community of Tanana's long term energy needs most cost effectively.

Funding & Cost

Cost of Power:	$0.57 /kWh
Requested Grant Funds:	$303,060
Matched Funds Provided:	$90,238.5
Total Potential Grant Amount:	$393,298.5
Existing RE Fund Grant Offer:	
AEA Funding Recommendation: (Not Constrained by Available Funding)	

AEA Funding Recommendation:

AEA Recommendation

Full Funding
Partial Funding
Special Provision
X Not Recommended
Did Not Pass Stage 1
Withdrawn

Alaska Renewable Energy Fund: Round 2 (Mar-09)

ALASKA ENERGY AUTHORITY

App #281 Tanana Alternative Energy Assessment - Tanana Power

Resource: Other

Proposed Project Phase: Feasibility Recon

Proposer: Tanana Power Company

AEA Program Manager: Lenny Landis

Applicant Type: Utility

Scoring & Location



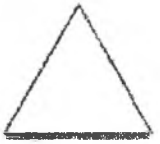
Overall Rank (out of 60)



Stage 3 Total Score (out of 100)

Energy Region: Yukon-Koyukuk/Upper Tanana

Election District: 6, Interior Villages



Rank within Region (out of)

Stage 3 Scoring Summary

Criterion (Weight)	Score
1) Cost of Energy (Max 30)	21
2) Funding Resources (Max 25)	
3) Project Feasibility from Stage 2 (Max 20)	
4) Project Readiness (Max 5)	
5) Benefits (Max 10)	
6) Local Support (Max 5)	
7) Sustainability (Max 5)	

AEA Review Comments

Applicant proposes to assess alternative energy resources of Tanana.

The work that the applicant proposes, while potentially valuable to Tanana, is more effectively accomplished using standard methodology on a statewide and regionwide basis that builds on the work already done in the statewide energy report that was released after this application.

Recommend no funding.

App #281: Tanana Alternative Energy Assessment _Tanana Power

Resource: Other

Proposed Project Phase: Feasibility Recon

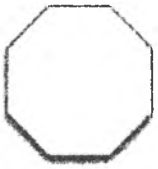
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AEA Program Manager: Lenny Landis

Applicant Type: Utility

Economic Analysis

Benefit/Cost Ratio (Applicant)



Benefit/Cost Ratio (AEA)



Mr. Eller,

I have consulted with AEA and they agree that saying "energy costs" is more accurate than "power rates." I have changed the sponsor statement to reflect that and it should be posted online shortly. Thank you for pointing that out.

Kaci Schroeder Hotch

Chief of Staff
Office of Representative Thomas
State Capitol, Rm 505
Juneau, Alaska 99801
(907) 465-3732
fax: (907) 465-2652

"A certain amount of opposition is of great help to a man.
Kites rise against, not with the wind."
-John Neal

From: Don Eller [mailto:nalaska@yukontel.com]
Sent: Friday, March 02, 2012 5:19 PM
To: Kaci Schroeder
Cc: Rebecca Rooney; Rep. Charisse Millett; Erin Harrington; Adam Berg; Rob Earl; Rep. Bob Miller; Rep. Pete Petersen; Rep. Les Gara; Rep. Chris Tuck; Rep. Sharon Cissna
Subject: HB 250

Hi Kaci Schroeder,

In reading the sponsor statement, "In 2008, the Alaska Legislature passed HB 152 which established an energy fund for renewable projects across the state.. Since then, the program has gone through four rounds of grant applications and issued grants for 200 renewable energy projects across the state. With an emphasis towards issuing grants for those who see the highest power costs, these grants have made huge differences in the power rates of many small communities who otherwise would be totally dependent on diesel fuel. " I have not been able to substantiate the statement "these grants have made huge differences in the power rates of many small communities who otherwise would be totally dependent on diesel fuel. " with any factual evidence.

If this truly is the case and I have over looked the information proving this, would you please provide me with all cases where Renewable Energy Grant Funding has made huge differences in the power rates.

Thanks,

Don

Don Eller
Yukon Tech. Inc.
6270 Beechcraft Rd.
Wasilla, Alaska 99654

Hi Peter,

A couple of things: 1) the purpose for the information requested is to correlate AEA's "investments" to lowered energy costs, AEA's mission statement. So I am looking for all money spent through AEA or any other governmental body on electrical energy projects in Alaska, not just the renewable energy fund. 2) Only looking at a few years of data is not adequate, all spending since APA would paint a much clearer picture as to the effects of governmental spending on energy projects on energy costs.

I am trying to gather this information to present to the legislature. As I have told Ms. Fisher-Goad I believe AEA is an enabler, providing resources to utilities who fail to properly maintain and manage their utility. While properly run utilities receive no recognition or assistance because they are self sufficient and doing it right. Case in point look at the state resources provided to Ruby Electric over time verses the 9.5% loan the state provided to Tanana Power, look at utility rates, reliability and facilities. Has the State "investment" really lowered the cost of energy in Ruby or has it allow a village to live off its power utility? Is it fair that my customer have to pay the full cost of electricity while others who are provided all the capital costs have power rates twice that of mine.

Combine this with what I perceive a incompetence at AEA: 1) Tanana Power's requests for funding being denied, not that they were bad projects but because we did not follow the centralized planning top down approach dictated by AEA to pursue wind. In AEA's energy model Tanana was classified as a class 7 wind zone, inspite of my protests and 50 of historical wind data showing it to be a class 1 wind zone. Tanana Power and my customer are overlooked for funding because AEA does not know what they were talking about and would not listen to those who do. 2) AEA staff promoting Susitna Hydro while saying Jackson Creek Hydro is unfeasible even though they are very similar, just many magnitudes difference in price both in capital cost and in the value of energy they are replacing. 3) I have numerous other items but there is no need for a long laundry list.

I have expressed my concerns to the executive director to no avail. So I see no alternative than to bring to the legislature AEA's report card. The money spent by AEA verses the impact on energy costs, lowering the cost of energy in Alaska being AEA's mission statement and then let the legislature make their own judgment as to the value of AEA based on the facts. I am requesting the amount spent by and through AEA (since inception) on all electrical projects in Alaska under AS 40.25.110.

Peter I have no desire to have conflict with AEA but when my company and customers are totally dismissed and not given a fair chance I see no alternative than raising the issue at a state level, letting the legislature make their own decision based on facts.

Thanks,

Don

From: Peter Crimp [mailto:PCrimp@aidea.org]
Sent: Tuesday, September 13, 2011 2:00 PM
To: Don Eller

Cc: Sara Fisher-Goad
Subject: RE: AEA expenditure information

Don,
I think the most applicable program area for you to consider is the RE Fund, which I manage. Here is a link to the status report for the first three rounds ftp://ftp.aidea.org/ReFund_RoundIV_Recommendations/REFundRound4/4_Program_Update/StatusReport2011.pdf Suggest you look at fig 3 and table 3.

By the end of 2012 AEA expects that 45 construction projects will have been completed at a total cost of $167 million—half funded by the RE Fund and half paid for by other sources. AEA estimates the annual fuel savings from these completed projects will be over 6 million gallons per year of diesel or equivalent.

AEA is planning to engage a consultant to prepare an independent review of the effectiveness and efficiency of the RE Fund (Oct-March timeline). Part of that will be an assessment of benefit (e.g. energy savings) vs cost. Cost will include the grants as well as AEA staff, etc. You are welcome to provide feedback.

Hope that helps.
Peter

From: Don Eller [mailto:nalaska@yukontel.com]
Sent: Tuesday, September 13, 2011 11:11 AM
To: Peter Crimp
Subject: AEA expenditure information

Hi Peter,

Given that AEA's mission statement is to lower the cost of energy in Alaska, I would like to do an impact analysis of AEA spending and the cost of energy. So I am looking for information regarding AEA and APA expenditures. Is there someone to work with at AEA to obtain this information, if so who , or a place this information is kept so that I can access the information.

Thanks for your help.

Don

Don Eller
Yukon Tech. Inc.
6270 Beechcraft Rd.
Wasilla, Alaska 99654

907 745-5363

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State grants are Bush boon

TIM BRADNER
ECONOMY

Published: November 20th, 2010 07:01 PM
Last Modified: November 20th, 2010 07:02 PM

When government does things right, it's worth a pat on the back.

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With that in mind, let's give credit to our Alaska Energy Authority, state legislators and Gov. Sean Parnell, who have given steady support to a renewable energy grant program aimed mainly at helping small rural villages.

The program is already reducing these communities' reliance on costly diesel for power generation and space heating. It's a worthy public investment because reducing the amount rural Alaskans spend on diesel keeps cash at home, strengthening the local village economy.

It's also good for the state's larger cities, including Anchorage, because rural residents will have more money to spend on purchases here. Money stays in Alaska rather than going to purchase oil from countries that are sometimes unfriendly.

Legislators designed the program to last three years, with $250 million in grants to be allocated. We're now two years into the three years.

So far the energy authority has approved $150 million in state funds for 124 projects around the state. By the end of this year the number should be up to 180 projects.

Local partners, and local matching funds, are required, so the actual amounts being spent are higher because of the local contributions, which vary.

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The Legislature will consider another $50 million in projects next year, the third and final year.

Considering just the projects completed now, there will be annual savings of 2.5 million gallons of fuel that won't have to be purchased. As more projects are completed, by the end of 2012 the savings will be 8 million gallons per year, increasing to 9 million gallons yearly the following year.

Assuming an average delivered fuel cost of $5 per gallon (the actual prices are higher, no doubt), 9 million gallons a year saved adds $45 million dollars a year to the purchasing power of rural villagers.

If the Legislature completes the third year of funding and the governor approves it, the fuel savings will grow.

This is something to be proud of. Alaska now has the largest renewable energy development program of any state, and it appears to be the only state program aimed at small projects in rural areas.

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The bulk of these are small wind and hydro projects but there are innovative wood-heat and even solar projects. Yes, the sun does shine, even at northern latitudes.

Finding substitutions for diesel is only part of this story. Energy conservation is the cheapest and easiest way to reduce diesel use and the energy authority also has programs under way to upgrade the efficiency of local power plants, many of which are aged, and help communities retrofit public buildings.

So far, efficiency programs, funded with a mix of loans and grants, have reduced electrical use in villages by an average of 4.5 percent. This is power that would otherwise have to be generated, mostly with diesel.

The renewable energy grant program is set to end in another year but it's interesting to consider the possibilities of an extended and truly aggressive renewable energy program for rural Alaska.

The energy authority has charted a path that through a mix of conservation, power plant efficiency improvements and local renewable energy projects could reduce -- to a startling degree -- the use of diesel to generate power in rural communities. And there would be additional reductions in diesel used for space heating.

Here are the numbers: The authority believes 35 million gallons per year now used for power generation could be reduced to 7.5 million gallons. Diesel used for space heating could be cut from the 60 million gallons per year used currently to 35 million gallons.

Between the two, that's a combined reduction of 62.5 million gallons of diesel yearly. That's an annual savings of $312 million per year, and an equal increase in rural residents' income for other purchases.

These numbers and how they were calculated are in the authority's new booklet, "Alaska Energy Pathways," in which the energy authority lays out the state's energy strategies and goals.

All this doesn't mean the authority is focused only on rural Alaska, or that the state won't pursue bigger renewable energy projects like a hydro facility at Watana, north of Anchorage, or Chackachamna, west of the city.

Last year the energy authority worked with regional electric utilities to develop an Integrated Resource Plan for new power projects needed for Southcentral and Interior Alaska, which include provisions for a large hydro project.

The state already has a substantial hydro development track record. In the 1980s, a number of large projects were built in Southeast Alaska and near Homer. These facilities, which include the Bradley Lake project near Homer, provide Alaskans with the lowest-cost power available.

Back to my point: These projects show government can do things right. And it can be done again.

Tim Bradner writes for an Alaska economic reporting service. He also consults for private clients and writes for business publications. His opinion column appears every month in the Anchorage Daily News.

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Gustavus celebrates diesel-free power

Posted: Sunday, June 27, 2010
By PAT FORGEY

GUSTAVUS - Gustavus no longer looks to Juneau, Sitka and Ketchikan and envies their cheap and plentiful hydroelectric power.

Instead, other Southeast Alaska communities are looking towards Gustavus and wondering whether they can do what the Icy Strait city did: Overcome decades-long hurdles, and replace its diesel generators with cheap, clean and plentiful hydroelectric power.

The community recently held a public celebration of its new Falls Creek Hydroelectric Project, which last year began providing all of Gustavus' power.

"It feels nothing short of wonderful," said Dick Levitt, president of the Gustavus Electric Co.

"Dick is the reason this finally got done," said Rep. Bill Thomas, a Haines Republican and a commercial fisherman.

Thomas said Levitt's lobbying efforts brought together multiple agencies and funding sources. Others at the celebration included state and federal officials who oversaw or funded the project, and representatives from neighboring utilities, including Juneau, each working on or already using similar projects.

Gustavus' diesel generators cost 74 cents per kilowatt-hour to produce power during the peak of fuel prices, with a more recent price of 39 cents per kwh. Falls Creek will bring that cost to under 20 cents.

While Gustavus now has surplus power, it didn't come either cheaply or easily. The total cost of the project was $8.2 million, Levitt said.

"Grants paid everything but $1.3 million, and we'll be paying that over time," he said.

State and federal agencies provided the grant money, with the largest part coming from the federally funded Denali Commission.

Gustavus also overcame the hurdle of acquiring the hydroelectric site. Originally within the boundaries of the nearby Glacier Bay National Park, a land trade provided state land elsewhere to the National Park Service in exchange for the site. And that took an act of Congress.

Then came the problem of getting to the location. Gustavus may be the flattest community in Southeast Alaska, and finding a site steep enough to produce power meant going into the nearby hills with an expensive three-mile road.

High in the forest, water enters a penstock where it flows down to the powerhouse after a fall of 600 feet that powers a turbine producing 800 kilowatts of power.

"When we finish with the water we put it back in the river as far upstream as we can," said Pedr Turner, construction superintendent on the project.

Returning the water to the river meant there was no impact to the salmon habitat, and fish screens on the intake also helped the project win environmental approvals, Gustavus Electric officials said.

While work is still being done on the project, it began producing power last July, and the diesel engines have been mostly silent since then.

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Plan touts hydropower project for Glacier Bay

Thank you

Fact not fiction about Gustavus

New sewers may triple cost to home owners

When the community toured the power house on June 18, it was producing only 250 kilowatts, all Gustavus needed at that time.

He said he hopes to use some of the surplus soon.

Gustavus isn't yet hooked up to the Park Service facilities at Bartlett Cove, but Levitt said the Park Service wants to make the connection and shut down its own diesels.

Levitt said they're also exploring creating an interruptible power rate for the Gustavus school, to enable it to save diesel by using electric heat when there is surplus available.

Levitt said that while the project had a high initial cost, it will produce immediate savings not only for residents, but the state.

In 2008, Gustavus Electric burned 132,000 gallons of diesel. The equalization program subsidized the first 500 kwh used per month for residences and community facilities. That year, about half of Gustavus Electric's sales were subsidized by the Power Cost Equalization program, at a cost of about $710 per customer.

Southeast Conference Energy Coordinator Robert Venables said other communities can learn from what Gustavus has accomplished, but public officials also need to find ways to make renewable energy easier to finance and develop.

Gustavus Electric's slogan is "Power for Generations," and Levitt said Falls Creek will be producing renewable power for generations to come.

"This project will be generating for Gustavus 100 years from now, when all of us are gone," he said.

He said he looks to Juneau, where Alaska Electric Light & Power's Annex Creek Plant, the utility's older hydroelectric project, has been producing power for more than 100 years.

"Hydro is expensive initially, but it's very cheap in the long run," Levitt said.

• Contact reporter Pat Forgey at 523-2250 or patrick.forgey@ juneauempire.com.

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Renewable Energy

Alaska Co-op Rebuilds Hydro Plant

By Derrill Holly | ECT Staff WriterPublished: July 5th, 2011

Nearly five years after flash flooding ripped a co-op-owned hydroelectric project away from the banks of an Alaska creek, a larger, more efficient facility is producing electricity for its consumer-members.



Cordova Electric Cooperative's new Humpback Creek Hydrolectric Project is expected to meet 20 percent of its seasonal power demand. (Photo By: CEC)

Related Content

- New Life for Montana Hydro Plant
- Mid-Atlantic Co-ops Give Wind a Spin
- Micro-Hydro Ups Co-op's Hip Factor

The Humpback Creek Hydroelectric Project is expected to meet up to 20 percent of Cordova Electric Cooperative's seasonal demand. That capacity, combined with the co-op's Power Creek hydroelectric facility, will boost overall hydroelectric capacity to 80 percent of the co-op's load.

"This is a $21 million investment for our co-op, but it is expected to offset the need for 370,000 gallons of diesel fuel a year," said Clay Koplin, CEO of the Cordova-based co-op. "This is energy that is generated in Cordova and is not subject to market fluctuations and barge logistics."

Humpback Creek has a long tradition of producing electricity for the small city of Cordova. The first hydroelectric facility began churning out power in 1909. In 1991, the co-op completed construction of a 1.2 megawatt plant on the creek at a cost of $11.5 million.

That facility was undergoing renovation following a 2005 fire when a major storm hit Oct. 10, 2006. During a 24-hour period, more than 24 inches of rain fell on the area, battering the site with an estimated 2 billion gallons of water. Concrete footings were eroded, the power house was heavily damaged, and much of the equipment was washed away.



Alaska Lt. Gov. Mead Treadwell (left) helps Cordova Electric's Clay Koplin, board chairman Hap Symmonds, state Rep. Bill Thomas, and Sen. Lisa Murkowski dedicate the co-op's hydroelectric facility. (Photo By: CEC)

This was a really violent flood. It washed a five ton transformer away from the site and downstream; a 500 pound transformer from the same facility was literally washed out to sea. It was discovered stuck in the mud during a low tide, more than one mile offshore, said Koplin.

The Federal Emergency Management Agency provided $5.3 million for the rebuilding project. The state of Alaska kicked in $8 million through its renewable energy grant program, and the co-op financed the balance.

"We expect to increase our power generating capacity by as much as 20 percent," said Koplin, following the June 11 dedication ceremony. "The 1,250-kilowatt facility can generate as much as 4 million kilowatt-hours of electricity per year."

Besides supplying the needs of the co-op's nearly 1,600 consumer-members, it is also expected to help meet the demand of seasonal seafood processing plants operating in the region, Koplin said. "This will provide good service to the Cordova community for generations to come."

Tags: Federal Emergency Management Agency, Flooding, Hydroelectric Power, Renewable Energy

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ALASKA MUNICIPAL LEAGUE
Alaska Conference of Mayors

217 Second Street, Suite 200 • Juneau, Alaska 99801
Tel (907) 586-1325 • Fax (907) 463-5480 • www.akml.org

February 27, 2012

House Finance
State Capitol Building
Juneau, Alaska 99811

Dear House Finance Members;

The Alaska Municipal League is in full support of HB 250. The expiration of a program that has been so successful would be very destructive to the State of Alaska, as over 200 renewable energy projects throughout the State of Alaska have been granted funds. The economic boon to those communities has been tremendous, as diesel fuel is no longer affordable by most small communities.

The Alaska Municipal League has closely watched those communities that have been fortunate enough to be awarded funds through this program. The continuation of HB 250 and the $50 million per year until 2018 is necessary if small municipalities are to remain viable communities in which to live and carry on business.

Thank you for your interest and dedication to this issue.

Sincerely,

Kathie Wasserman

Kathie Wasserman
Executive Director

Kathy Morgan
Box 342
Tok, AK 99780-0342

March 8, 2012

Representative Bill Thomas
120 4th Street, State Capitol, Room 501
Juneau, AK 998011-1182

Re: HB 250

Dear Representative Thomas:

I strongly support House Bill 250, extending the renewable energy fund. This fund is critically important to the entire State of Alaska. We need that renewable energy fund to encourage renewable energy projects that can reduce our high cost of energy and help the State meet its renewable energy production goals.

My community of Tok has benefited from the program with the building of an efficient wood-fired boiler to heat the Tok School and eventually also power it electrically. Already the school is saving thousands of dollars per year in heating costs, using a carbon-neutral fuel that otherwise threatens our homes with wildfire—and produces less pollution than standard oil boilers. Extending the renewable energy grant fund so that other communities can enjoy similar benefits, using whatever appropriate resources are available in their local area, is the right thing to do.

Tok School's heating and electrical generation projects funded by the renewable energy fund prove that there are feasible renewable alternatives that reduce our dependence on petroleum fuels and in the long run save both State money and private money. In the case of Tok's projects, as an extra bonus, while the projects are saving money for the school they are providing new jobs that benefit the community's economy and reduce our air pollution levels.

To turn renewable resource potential into reality, we need funding for projects to prove the validity and reliability of alternate energy projects in the unique conditions that we face in our state, with the wide variation and extremes of climate and ecology and the challenges of transportation and technology in remote areas. Different areas of the state have different resources that call for different solutions. Thank you for sponsoring HB 250.

Sincerely,

Kathy I. Morgan

Tok Community Umbrella Corporation
Box 547
Tok, AK 99780-0547

March 8, 2012

Representative Bill Thomas
120 4th Street, State Capitol, Room 501
Juneau, AK 998011-1182

Re: HB 250

Dear Representative Thomas:

This letter is in support of House Bill 250, extending the renewable energy fund. This fund is critically important to the entire State of Alaska and is needed to encourage renewable energy projects that can reduce our high cost of energy and help the State meet its renewable energy production goals.

The cost of petroleum-based energy is high and increasing throughout the world, but particularly in Alaska. It has reached crisis proportion in some of the rural areas. There are feasible renewable alternatives that are carbon-neutral or add no carbon to the atmosphere, reduce our dependence of foreign fuels, in some cases make our homes safer, and in the long run save both State money and private money.

To turn renewable resource potential into reality, we need funding for projects to prove the validity and reliability of alternate energy projects in the unique conditions that we face in our state, with the wide variation and extremes of climate and ecology and the challenges of transportation and technology in remote areas. We also need funding to build projects that involve proven technology with an up-front capital cost that our smaller communities can't fund through local resources.

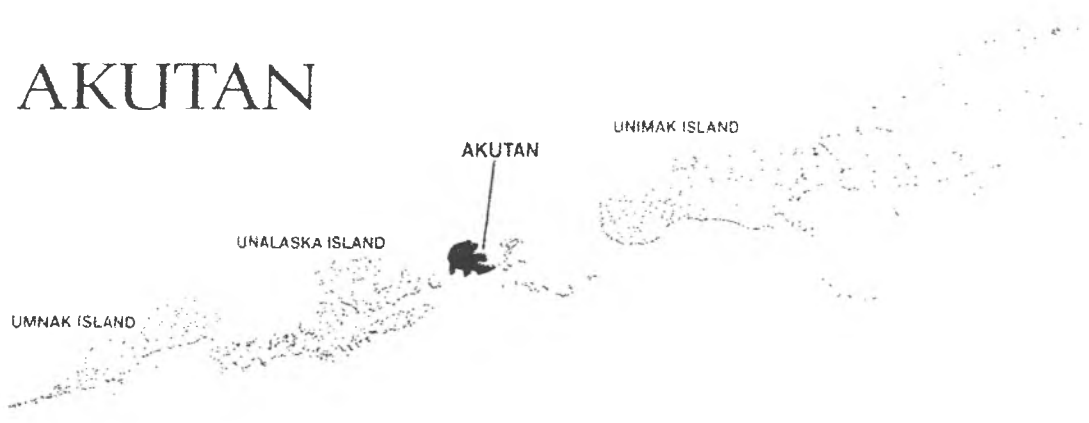
My community of Tok has benefited from the program with the building of an efficient wood-fired boiler to heat the Tok School and eventually also power it electrically. Already the school is saving thousands of dollars per year in heating costs, using a carbon-neutral fuel that otherwise threatens our homes with wildfire—and produces less pollution than standard oil boilers. Extending the renewable energy grant fund so that other communities can enjoy similar benefits is the right thing to do.

Sincerely,

Kathy I Morgan

Kathy I. Morgan, President

AKUTAN



March 8, 2012

The Honorable Representative Bill Thomas
Alaska State Capital
Room 505
Juneau, AK 99801-1182

Re: HB 250

Dear Representative Thomas:

The City of Akutan is writing to express its support for passage of House Bill No. 250, An Act Relating to the Renewable Energy Grant Fund. We support an extension of at least five years, and suggest making it a longer period.

As a result of the grant fund, the City of Akutan and Alaska Energy Authority (AEA) have jointly funded the exploration of a geothermal power resource located in the Hot Springs Bay Valley of Akutan Island, approximately five miles from the City and Native Village of Akutan. Our feasibility work is very promising as we work to bring the project to fruition. Continuation of the grant fund will be instrumental in helping communities to pursue a wide range of renewable energy projects.

Thank you for your leadership in sponsoring this bill.

Sincerely,

/s/

Mayor Joe Bereskin

cc: Hermann Scanlan, City Administrator
Representative Bryce Edgmon

Alaska Power Association
703 West Tudor Road, Suite 200
Anchorage, Alaska 99503-6650
907-561-6103
Fax: 907-561-5547
www.alaskapower.org

January 27, 2012

Representative Neal Foster, Co-Chairman, House Special Committee on Energy
Representative Lance Pruitt, Co-Chairman, House Special Committee on Energy
Representative Bob Lynn
Representative Kurt Olson
Representative Pete Petersen
Representative Dan Saddler
Representative Chris Tuck

Honorable Members of the House Special Committee on Energy:

Alaska Power Association respectfully requests your support for House Bill 250. Since its creation in 2008, the Alaska Renewable Energy Fund has provided $80 million in funding for projects that utilize renewable energy resources in communities throughout the state.

Many electric utility members of our statewide trade association are recipients of this funding, and they have several success stories of how their renewable energy projects have significantly reduced reliance on diesel fuel.

The Alaska Renewable Energy Fund is one of the most successful policy mechanisms in the nation for stimulating rapid renewable energy development.

- By the end of 2011, 58 projects (Rounds I-IV) were completed.
- Eleven of the projects in operation at the end of 2011 produce power for Power Cost Equalization utilities.
- By the end of 2012, 120 projects are expected to have been completed.
- By the end of 2013, 184 projects are expected to have been completed and fuel displacement is expected to be approximately 3.4 million gallons equivalent per year.
- By the end of 2016, fuel displacement is anticipated to be 11.6 million gallons per year.

(Source: Alaska Renewable Energy Fund Status Report, January 21, 2012)

Thank you for your dedication to ensuring that all Alaskans have access to safe, reliable and affordable energy. We believe that continued funding of the Alaska Renewable Energy Fund will keep us moving in this direction.

Sincerely,

Marilyn Leland
Executive Director

cc: Representative Bill Thomas

ALASKA POWER ASSOCIATION

R E S O L U T I O N

A Resolution Urging Capital Funding In Support of Alaska Energy Policy (12-2)

In light of the ambitious and aggressive goals set forth in the Alaska Sustainable Energy Act (SB 220) and State Energy Policy (HB 306), the Alaska electric utility sector needs sources of capital for infrastructure and transmission.

Alaska Power Association urges the Alaska Legislature to fully support the following funding mechanisms:

- Extend the authorizing language for the Renewable Energy Grant Fund, which supports the intent of the legislature to provide funds annually for projects recommended by the Renewable Energy Fund Advisory Committee;
- Properly capitalize the Power Project Loan Fund, enabling meaningful funding for infrastructure projects; and
- Establish a State of Alaska-funded and administered revolving loan fund for the sustainable financing of infrastructure projects.

(Adopted Dec. 2010, updated Dec. 2011)

Association Members
Alaska Electric and Energy Co-op
Alaska Electric Light & Power
Alaska Power & Telephone
Alaska Railbelt Energy Authority JAA
Alaska Village Electric Cooperative
Anchorage Municipal Light & Power
Aurora Energy
Barrow Utilities & Electric Co-op
Chugach Electric Association
Copper Valley Electric Association
Copper Valley Telephone Co-op
Cordova Electric Cooperative
Doyon Utilities
City of Galena
Golden Valley Electric Association
Homer Electric Association
INN Electric Cooperative
Inside Passage Electric Co-op
Kodiak Electric Association
Kotzebue Electric Association
Kwaan Electric Transmission
Interie Cooperative
Matanuska Electric Association
McGrath Light and Power
Metlakatla Power & Light
Middle Kuskokwim Electric Co-op
Naknek Electric Association
Nome Joint Utility System
North Slope Borough
Nushagak Cooperative
OTZ Telephone Cooperative
City of Seward
Southeast Alaska Power Agency
Tanalian Electric Cooperative
Tanana Power Company
TDX Power
Unalakleet Valley Electric Co-op
Yakutat Power

Anchorage office

Juneau office

MUNICIPAL
LIGHT & POWER

January 27, 2012

faxed / mailed
907-465-2652

The Honorable Bill Thomas
House of Representatives
Alaska State Capitol
Juneau, Alaska 99801-1182

Subject: HB 250

Dear Representative Thomas:

- Municipal Light and Power Supports HB 250, the time extension of the Alaska Renewal Energy Grant Fund until 2023. Dozens of projects currently in the reconnaissance, feasibility and design stage will be put into limbo if the program is not extended this year.

- So far 21 projects have been constructed under the program, which have cumulatively displaced over $7 million in fuel since 2009. By the end of 2016, AEA estimates that diesel fuel displacement from Fund projects will be approximately 11.6 million gallons per year.

- The program has so far leveraged over $100 million federal and other dollars in matching funds for projects funded.

Sincerely,

James M. Posey
General Manager

Faxed
JAN 30 2012
& mailed

1200 East First Avenue • Anchorage, Alaska • 99501-1658
Phone 907.279.7671 • Fax 907.263.5804
www.mlandp.com

Homer Electric Association, Inc.

Corporate Office
3977 Lake Street
Homer, Alaska 99603-7680
Phone (907) 235-8551
FAX (907) 235-3313

Central Peninsula Service Center
280 Airport Way
Kenai, Alaska 99611-5280
Phone (907) 283-5831
FAX (907) 283-7122

January 30, 2012

Representative Bill Thomas, Jr.
State Capitol, Room 505
Juneau AK, 99801

Dear Representative Thomas:

Homer Electric Association, Inc. (HEA) strongly supports HB 250, extending the sunset clause of the renewable energy grant program to 2023. This bill will allow the state to continue to support a wide variety of renewable energy technologies that holds great promise for Alaska such as wind, hydroelectric, biomass, and geothermal.

HEA has been fortunate to receive two grants from the renewable energy program that have allowed us to proceed with field work and scoping for a hydroelectric project on the Kenai Peninsula. This renewable energy project would not be possible without the support of the renewable energy grant program.

On behalf of Homer Electric Association, thank you very much for your unwavering commitment to renewable energy.

Sincerely,

Bradley P. Janorschke
General Manager

Memo



To: Representative Bill Thomas
via FAX, 907-465-2652

From: Karen Kelly, Executive Director

Cc: The House Energy Committee via e-mail:

- Representative Foster Co-Chair
- Representative Pruitt Co-Chair
- Representative Lynn
- Representative Olson
- Representative Saddler
- Representative Petersen
- Representative Tuck

Date: January 30, 2012

Re: Support for HB 250

The Northern Alaska Environmental Center (NAEC) Board of Directors and staff extend our thanks and appreciation for your support and consideration of HB 250, "An Act relating to the renewable energy grant fund and recommendation program; and providing for an effective date"

The NAEC is also dedicated to supporting renewable energy projects that promote the health, wealth and sustainability of our Interior Alaskan communities, while maintaining the integrity of the wild places in which we live. Extending the Renewable Energy Grant Fund for another 10 years through HB 250 will help provide opportunities for renewable energy projects that we need to meet the economic demands of the present and future. The Interior's unique geography, remote rural communities and incredible diversity of abundant renewable energy resources provides an excellent opportunity to become a world leader in energy technology development. Renewable technologies like wind, geothermal, biomass, solar, tidal or small scale hydropower, have the potential to impart significant environmental, health and economic benefits to communities throughout Alaska.

We are honored to be among those in support of your ongoing efforts to encourage renewable energy. If there is anything the NAEC can do to further this legislation, please do not hesitate to contact us.

A 501(C)(3) NOT-FOR-PROFIT ORGANIZATION
830 COLLEGE ROAD, FAIRBANKS, ALASKA 99701
PHONE (907) 452-5021 • FAX (907) 452-3100 • WEB www.northern.org

CORDOVA
ELECTRIC
COOPERATIVE, INC
P.O. Box 20, 705 Second Street, Cordova, Alaska 99574-0020 * (907) 424-5555 * Fax (907) 424-5527

January 31, 2012

The Honorable Bill Thomas, Neal Foster, Lance Pruitt, and
House Special Energy Committee Members

RE: HB 250 Extension

Dear Representative Thomas and Committee,

Cordova Electric Cooperative (CEC) strongly supports HB 250 reauthorization to "Extend the Renewable Energy Grant Fund". CEC was a recipient of renewable energy grant funds for the Humpback Creek Hydroelectric Project, which was matched with Federal and CEC funds. Since the project went into operation on July 13, 2011 just over 6 months ago, it has produced over 1,500,000 kWh of energy or 110,000 gallons of diesel fuel savings despite a dry 2011 and low fall production. The project is designed to save 370,000 gallons of diesel a year average for at least 50 years.

The program benefits both rural and railbelt utilities, large and small. The application, review, and award process is straightforward, fair, and accountable. It has been touted as the most successful renewable energy grant incentive program in the world and I am inclined to agree.

This program is an excellent investment of State resources that will pay dividends for generations. While it would be nice to commit to this successful program for ten years, the State of Alaska has other priorities and a five year commitment is appropriate.

CEC urges reauthorization of this important bill and thanks you for your colleagues' efforts to support and cosponsor the original bill and this extension.

Sincerely,

Clay K. Koplin

Clay Koplin, CEO

HB 250 Support

January 31, 2012

Representative Bill Thomas
State Capitol, Room 505
Juneau, Alaska 99801

Subject: Support for HB 250

Dear Representative Bill Thomas:

Myself and Coffman Engineers is in support of HB 250. The Alaska Renewable Energy Grant Fund allows alternative energy projects to be funded throughout the state. The communities benefit from this in many ways:

- By creating local jobs maintaining and operating equipment (wind turbines, wood fired boilers, etc)
- By creating local jobs to provide fuel that is locally created (wood/pellets)
- Reduce the impact of high fuel prices and fuel price volatility
- Reducing the overall cost of energy and increasing energy security
- Taking advantage of locally renewable energy sources
- Reduces environmental pollution

Additionally, so far 21 projects have been constructed under the program, which have cumulatively displaced over $7 million in fuel since 2009. By the end of 2016, AEA estimates that diesel fuel displacement from Fund projects will be approximately *11.6 million gallons per year*. The program has so far leveraged over $100 million federal and other dollars in matching funds for projects funded. Dozens of projects currently in the reconnaissance, feasibility and design stage will be put into limbo if the program is not extended this year.

Please take what steps you can so this program does not lapse. Thank you

Sincerely,

Tony SlatonBarker, P.E., LEED AP
Program Manager, Alternative Energy and Sustainability
Coffman Engineers

cc: House Energy Committee Members

City & Borough of Wrangell
P.O. Box 531
Wrangell, AK 99929
Phone: 907-874-2381
Fax: 907-874-3952

January 30, 2012

Honorable Members,

Please accept this letter of support for HB 250 to "Extend the Renewable Energy Grant Fund." Over the past four years, this fund has brought together various stakeholders throughout Alaska to evaluate and fund renewable energy proposals that by 2013 will have displaced nearly six million galls of diesel fuel.

In Wrangell, a $2 million grant helped our community replace diesel boilers in municipal buildings that will result in long-term savings of millions of dollars. These savings keep our precious dollars in our communities for reinvestment in our local economy.

Having participated in the Southeast Alaska Integrated Resource Plan Advisory Working Group, it is also clear that major investments in demand side management, energy efficiency, biofuels, and future hydro projects must continue to meet our growing energy needs in an affordable and sustainable way. HB 250 and the $50 million per year over 10 years investment will be absolutely critical to meet these challenges and ensure our communities, and all of Southeast, remain viable and competitive.

I appreciate your consideration and if you have questions, do not hesitate to contact the Borough Manager, Timothy D. Rooney, or me, at Wrangell City Hall, phone: 907-874-2381, or by email: tdrooney@wrangell.com or jmaxand@hotmail.com

Sincerely,

Jeremy M. Maxand
Mayor

ALASKA PARTNERSHIP
FOR ECONOMIC DEVELOPMENT

A RESOLUTION OF THE ALASKA PARTNERSHIP FOR ECONOMIC DEVELOPMENT BOARD OF DIRECTORS SUPPORTING HOUSE BILL NUMBER 250; "AN ACT RELATING TO THE RENEWABLE ENERGY GRANT FUND AND RECCOMENDATION PROGRAM; AND PROVIDING FOR AN EFFECTIVE DATE"

Resolution # 12-13

Whereas; the Alaska Regional Development Organizations (ARDOR) was established by the Alaska Legislature in 1988; and

Whereas; the ARDOR's statutory mandate is to encourage the formation of regions development organizations to prepare and implement regional development strategies; and

Whereas; the ARDOR's represent a diverse network of public, private and economic development groups that drive local initiatives and advance economic diversification through partnerships with state and local governments; and

Whereas; the ARDOR's established the Alaska Partnership for Economic Development, (APED), in 2009, to advance economic development and address initiatives affecting development and to help develop a state-wide comprehensive strategic plan; and

Whereas; the ARDOR/APED programs have established partnerships with more than 300 local, regional, private, municipal and public organizations to pool resources, decrease duplication and foster new businesses; and

Whereas; the APED now comes in support of the following legislation being considered by the Alaska State Legislature:

NOW THEREFORE BE IT RESOLVED; the Alaska Partnership for Economic Development supports House Bill 250; **"AN ACT RELATING TO THE RENEWABLE ENERGY GRANT FUND AND RECCOMENDATION PROGRAM; AND PROVIDING FOR AN EFFECTIVE DATE"**

BE IT FURTHER RESOLVED that a copy of this resolution be sent to the REPRESENTATIVES THOMAS, P. WILSON, MILLETT, the prime sponsors of SB250.

APPROVED THIS 24th DAY of FEBRUARY 2012.

Kathleen E Drabek _2/24/2012_

President Date

ATTEST:

Andy Van _2/24/2012_

Secretary Date

HB 294

<TARGET><BILL>HB 294</BILL><SUBJECT>HB 294</SUBJECT><COMM>HENE27</COMM></TARGET>

27-LS1108\B
Nauman
3/12/12

CS FOR HOUSE BILL NO. 294(ENE)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY THE HOUSE SPECIAL COMMITTEE ON ENERGY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES EDGMON, Herron, Foster, Muñoz

A BILL

FOR AN ACT ENTITLED

"An Act relating to the power cost equalization program."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 42.45.110(b) is amended to read:

(b) An eligible electric utility is entitled to receive power cost equalization

(1) for sales of power to local community facilities, calculated in the aggregate for each community served by the electric utility, for actual consumption of not more than 70 kilowatt-hours a month for each resident of the community; the number of community residents shall be determined annually by the latest figures of the United States Bureau of the Census or other population data that the Department of Commerce, Community, and Economic Development determines is reliable; and

(2) for actual consumption of not more than **600** [500] kilowatt-hours a month sold to each [RESIDENTIAL] customer **in all classes served by the electric utility except**

(A) customers of the utility covered under (1) of this subsection;

(B) customers that are state or federal offices or state or federal facilities; and

(C) nonresidential customers of the utility that consume more than 2,400 kilowatt-hours of power a month.

*** Sec. 2.** AS 42.45.110(d) is amended to read:

(d) An electric utility whose customers receive power cost equalization under AS 42.45.100 - 42.45.150 shall set out in its tariff the rates without the power cost equalization and the amount of power cost equalization per kilowatt-hour sold. The rate charged to the customer shall be the difference between the two amounts. Power cost equalization paid under AS 42.45.100 - 42.45.150 shall be used to reduce the cost of all power sold to local community facilities, in the aggregate, to the extent of 70 kilowatt-hours **a** [PER] month **for each** [PER] resident of the community, and to reduce the cost of the first **600** [500] kilowatt-hours **for each** [PER RESIDENTIAL] customer **a month for all other classes served by the electric utility except state and federal offices and state and federal facilities and nonresidential customers of the utility that consume more than 2,400 kilowatt-hours of power a** [PER] month.

Alaska State Legislature
REPRESENTATIVE BRYCE EDGMON
House District 37

SPONSOR STATEMENT FOR HB294

Adak
Akutan
Aleknagik
Atka
Chignik
Chignik Lagoon
Chignik Lake
Clark's Point
Cold Bay
Dillingham
Egegik
Ekwok
False Pass
Ivanof Bay
King Cove
King Salmon
Koliganek
Manokotak
Naknek
Nelson Lagoon
New Stuyahok
Nikolski
Perryville
Pilot Point
Portage Creek
Port Heiden
St. George
St. Paul
Sand Point
South Naknek
Togiak
Twin Hills
Ugashik
Unalaska

This legislation simply proposes returning elements of the Power Cost Equalization (PCE) program to its 1998 levels.

The bill proposes raising the kilowatt-hours ceiling from 500 to 700 per month, and also adds all other customers that are not state or federal offices, or state or federal facilities, to the pool of customers eligible for PCE. Businesses and schools are currently not eligible for PCE and haven't been since changes to the program in 1999.

We are experiencing one of the coldest Alaska winters in the last 25 years. While folks in the Bush have become used to conserving power to fall under the 500 killowatt-hour ceiling, it is a struggle to do so in winter months. This year's weather is not helping that struggle.

While the State has done an excellent job in creating and supporting energy programs that will make a difference over the long haul, nothing has been done to help our residents with their short-term needs.

I believe the time is right to consider this legislation, and I hope it spurs on other ideas to help our rural people deal with their immediate needs with energy costs. I also believe it is time for the legislature to acknowledge that we need to assist small rural business owners, which in turn will drive down the excessive costs for goods and services to the consumers in our remote communities.

There will be strong supporters and strong detractors of this idea. Running HB294 through the legislative process will allow us to identify the agency and programmatic costs associated with expanding PCE. It will also enable the public to weigh in as to why PCE should or should not be expanded, and to discover what the program has meant to its eligible customers.

I would appreciate your support for this bill.

State Capitol Building
Room 416, Juneau, AK 99801. Phone: (907) 465-4451 Toll Free: 1-800-898-4451
Email: Rep_Bryce_Edgmon@legis.state.ak.us

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **HB 294**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB294-DCCED-AEA-02-10-12
Title: Power Cost Equalization
Sponsor: Representative Edgmon
Requester: House Special Committee on Energy

Dept. Affected: DCCED
Appropriation: Alaska Energy Authority
Allocation: AEA Power Cost Equalization
OMB Component Number: 2602

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services	81.0		81.0	81.0	81.0	81.0	81.0
Commodities	5.0						
Capital Outlay							
Grants, Benefits	33,040.0		33,040.0	33,040.0	33,040.0	33,040.0	33,040.0
Miscellaneous							
TOTAL OPERATING	**33,126.0**	**0.0**	**33,121.0**	**33,121.0**	**33,121.0**	**33,121.0**	**33,121.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF	33,126.0		33,121.0	29,811.0	20,311.0	20,311.0	20,311.0
1169	PCE Endow (DGF)				3,310.0	12,810.0	12,810.0	12,810.0
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**33,126.0**	**0.0**	**33,121.0**	**33,121.0**	**33,121.0**	**33,121.0**	**33,121.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Not applicable, initial version.

Prepared by: Sara Fisher-Goad, Executive Director — Phone 907-771-3000
Division: Alaska Energy Authority — Date/Time 02/10/12 4:00PM
Approved by: JoEllen Hanrahan, Director Administrative Services — Date 2/10/2012
Commerce, Community, and Economic Development

(Revised 11/18/2011 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** HB 294
2012 LEGISLATIVE SESSION

Analysis

This legislation amends AS 42.45.110 (b) relating to the Power Cost Equalization (PCE) program by increasing the eligible kWh from 500 kWh to 700 kWh per eligible customer per month. This legislation also changes the definition of eligible customer to include commercial and public school customers.

Cost estimate to implement this legislation **$33.126.0**:

1) **$15,140.0** - Estimated annual cost to increase eligible kWh from 500 to 700 kWh a month sold for residential customers (current eligible customers):

FY12 Authorized Grant Expense	$37,850.0
	x .40
Estimated increase of 40% (200/500)	$15,140.0

This estimate assumes all customers will be eligible for the maximum amount.

2) **$17,900.0** - Estimated annual cost to include commercial and public school customers as eligible customers:

This estimate was based on the last reported statistical information obtained from PCE monthly reports submitted by current participating utilities. We estimated the annual kWh eligible for PCE by multiplying each utility's last reported number of commercial customers plus an estimate of 2 public school customers by 8,400 kWh (700 per mo. x 12). We estimated the annual cost by multiplying the estimated kWh eligible for PCE by the utility's last reported PCE Rate. Supplementary information regarding this estimate is available at AEA upon request.

3) **$86.0** - Estimated cost for one additional Accounting Technician. This position is required for increased work required to verify the eligibility of additional customers and related kWh as required by statute and to provide additional technical assistance for the utilities. Estimated cost is $71.0 for a Range 12 position. This estimate includes $10.0 for core services costs and $5.0 for 1st year start up costs .

Please also see associated fiscal note for the AIDEA RDU Component #1234. All employees are budgeted under the AIDEA component. AEA contracts with AIDEA for personnel. AEA's costs are budgeted as contractual services costs in AEA's operating components.

Recap of Revised Program Cost:

FY13 Estimated Program Cost - current program	$38,190.0
Estimated cost to implement this legislation	33,126.0
Revised Program Cost	$71.316.0

See page 3 for a more detailed recap of the PCE Program at current levels plus HB294.

Funding Source: The annual appropriation to the PCE program from the PCE Endowment Fund is based on 7% of the average monthly market value of the fund for the previous 3 fiscal years (AS 42.45.085). In prior years, program funding for the PCE program has required an appropriation from the general fund to fully fund PCE. However, the PCE Endowment Fund was capitalized by a $400 million dollar appropriation effective June 30, 2011. AEA performed a simplistic computation of projected PCE Endowment Fund balances for purposes of preparing this fiscal note and estimating out-year funding sources. See page 3 for details.

Analysis Continued

Recap of PCE Program with HB294

	Current Program	HB294	Revised Program Cost	Out-Year Cost Estimates				
OPERATING EXPENDITURES	FY13	FY13	FY13	FY14	FY15	FY16	FY17	FY18
PCE Expenditures:								
AEA Administration	175.0	86.0	261.0	256.0	256.0	256.0	256.0	256.0
AEA Training	25.0	-	25.0	25.0	25.0	25.0	25.0	25.0
RCA Administration	140.0	-	140.0	140.0	140.0	140.0	140.0	140.0
Grants	37,850.0	33,040.0	70,890.0	70,890.0	70,890.0	70,890.0	70,890.0	70,890.0
	38,190.0	33,126.0	71,316.0	71,311.0	71,311.0	71,311.0	71,311.0	71,311.0
Funding Sources:								
General Fund	15,314.2	33,126.0	48,440.2	39,111.0	29,811.0	20,311.0	20,311.0	20,311.0
PCE Endowment Fund	22,875.8	-	22,875.8	32,200.0	41,500.0	51,000.0	51,000.0	51,000.0
	38,190.0	33,126.0	71,316.0	71,311.0	71,311.0	71,311.0	71,311.0	71,311.0

Note: AEA's projections of the available PCE Endowment Fund balance for the purposes of the fiscal note were simplistic with the basic assumption of fund earnings = to 7%; and an annual appropriation = to 7% of avg. mmv of the fund for the previous 3 fiscal years (per AS42.45.085). The $400 million capitalization was spread over a three year period.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **HB 294**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB294-DCCED-AIDEA-02-10-12
Title: Power Cost Equalization
Sponsor: Representative Edgmon
Requester: House Special Committee on Energy

Dept. Affected: DCCED
Appropriation: AIDEA
Allocation: Alaska Industrial Development & Export Authority
OMB Component Number: 1234

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services	71.0		71.0	71.0	71.0	71.0	71.0
Travel							
Services	10.0		10.0	10.0	10.0	10.0	10.0
Commodities	5.0						
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**86.0**	**0.0**	**81.0**	**81.0**	**81.0**	**81.0**	**81.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1007	I/A Rcpts (Other)	86.0		81.0	81.0	81.0	81.0	81.0
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**86.0**	**0.0**	**81.0**	**81.0**	**81.0**	**81.0**	**81.0**

POSITIONS							
Full-time	**1**		1	1	1	1	1
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Not applicable, initial version.

Prepared by: Sara Fisher-Goad, Executive Director — Phone 907-771-3000
Division: Alaska Energy Authority — Date/Time 2/10/12 4:00 PM
Approved by: JoEllen Hanrahan, Director Administrative Services — Date 2/10/2012
Commerce, Community, and Economic Development

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. HB 294

Analysis

This legislation amends AS 42.45.110 (b) relating to the Power Cost Equalization (PCE) program by increasing the eligible kWh from 500 kWh to 700 kWh per eligible customer per month. This legislation also changes the definition of eligible customer to include commercial and public school customers.

This fiscal note reflects the costs to AIDEA for the increase in personal services related to the Alaska Energy Authority's (AEA) implementation of this legislation. AEA contracts with AIDEA for personnel. AEA's costs are budgeted as contractual services costs in AEA's operating components. See related fiscal note for the Alaska Energy Authority, Power Cost Equalization component #2602.

AEA estimates that a Range 12 Accounting Technician will be required for increased work to verify eligibility of additional customers and related kWh as required by statute and to provide additional technical assistance for the utilities. Estimated cost is $71.0 for a Range 12. This fiscal note also includes $10.0 for core services costs and $5.0 for 1st year startup costs.

The funding source is an increase in I/A receipts from the Alaska Energy Authority.

Article 03. POWER COST EQUALIZATION AND RURAL ELECTRIC CAPITALIZATION

Sec. 42.45.100. Power cost equalization and rural electric capitalization fund.

(a) The power cost equalization and rural electric capitalization fund is established as a separate fund for the purpose of

(1) equalizing power cost per kilowatt-hour statewide at a cost close to or equal to the mean of the cost per kilowatt-hour in Anchorage, Fairbanks, and Juneau by paying money from the fund to eligible electric utilities in the state; and

(2) making grants to eligible utilities under AS 42.45.180 to improve the performance of the utility.

(b) The fund shall be administered by the authority as a fund distinct from the other funds of the authority. The fund is composed of

(1) money appropriated to provide power cost equalization to eligible electric utilities and to provide grants for utility improvements;

(2) money appropriated from the National Petroleum Reserve - Alaska special revenue fund under AS 37.05.530(g);

(3) money appropriated from the power cost equalization endowment fund (AS 42.45.070) under AS 42.45.085(a);

(4) gifts, bequests, contributions from other sources, and federal money; and

(5) interest earned on the fund balance.

(c) The fund is not a dedicated fund.

Sec. 42.45.110. Entitlement to power cost equalization.

(a) The costs used to calculate the amount of power cost equalization for all electric utilities eligible under AS 42.45.100 - 42.45.150 include all allowable costs, except return on equity, used by the Regulatory Commission of Alaska to determine the revenue requirement for electric utilities subject to rate regulation under AS 42.05. The costs used in determining the power cost equalization per kilowatt-hour shall exclude any other type of assistance that reduces the customer's costs of power on a kilowatt-hour basis and that is provided to the electric utility within 60 days before the commission determines the power cost equalization per kilowatt-hour of the electric utility. In calculating power cost equalization, the commission may not consider validated costs or kilowatt-hour sales associated with a United States Department of Defense facility.

(b) An eligible electric utility is entitled to receive power cost equalization

(1) for sales of power to local community facilities, calculated in the aggregate for each community served by the electric utility, for actual consumption of not more than 70 kilowatt-hours a month for each resident of the community; the number of community residents shall be determined annually by the latest figures of the United States Bureau of the Census or other population data that the Department of Commerce, Community, and Economic Development determines is reliable; and

(2) for actual consumption of not more than 500 kilowatt-hours a month sold to each residential customer.

(c) The amount of power cost equalization provided for each kilowatt-hour under (b) of this section may not exceed 95 percent of the power costs, or the average rate for each eligible kilowatt-hour sold, whichever is less, as determined by the commission. However,

(1) the power costs for which power cost equalization are paid to an electric utility are limited to minimum power costs of more than 12 cents a kilowatt-hour and less than $1 a kilowatt-hour;

(2) each year, the commission shall adjust the power costs for which power cost equalization may be paid to an electric utility based on the weighted average retail residential rate in Anchorage, Fairbanks, and Juneau; however, the commission may not adjust the power costs under this paragraph to reduce the amount below the lower limit set out in (1) of this subsection; and

(3) the power cost equalization for each kilowatt-hour may be determined for a utility without historical kilowatt-hour sales data by using kilowatt-hours generated.

(d) An electric utility whose customers receive power cost equalization under AS 42.45.100 - 42.45.150 shall set out in its tariff the rates without the power cost equalization and the amount of power cost equalization per kilowatt-hour sold. The rate charged to the customer shall be the difference between the two amounts. Power cost equalization paid under AS 42.45.100 - 42.45.150 shall be used to reduce the cost of all power sold to local community facilities, in the aggregate, to the extent of 70 kilowatt-hours per month per resident of the community, and to reduce the cost of the first 500 kilowatt-hours per residential customer per month.

(e) The power cost equalization program shall be administered by the authority based on a determination by the commission under (a) and (c) of this section of power cost equalization per kilowatt-hour for each eligible electric utility.

(f) The authority may not deny an eligible electric utility power cost equalization because complete cost information is not available. The commission shall assist an eligible electric utility that is exempt from rate regulation under AS 42.05 to provide the cost information the commission considers necessary to comply with AS 42.45.100 - 42.45.150. Only power costs that are supportable may be considered in calculating power cost equalization. Each electric utility is responsible for keeping records that provide the information necessary to comply with AS 42.45.100 - 42.45.150 including records of

monthly kilowatt-hour sales or generation, monthly fuel balances, fuel purchases, and monthly utility fuel consumption.

(g) The commission shall determine the cost of fuel for each eligible electric utility using the procedure for approving fuel cost rate adjustments of electric utilities subject to rate regulation under AS 42.05.

(h) Each electric utility receiving power cost equalization approved by the commission shall

(1) report monthly to the authority within the time and in the form the authority requires; and

(2) use operational equipment designed to meter individual utility customer power consumption and to determine and record the utility's overall fuel consumption.

(i) The authority shall review the report required under (h) of this section. After review and approval of the report, the authority shall, subject to appropriation, pay to each eligible electric utility an amount equal to the power cost equalization per kilowatt-hour determined under (a) and (c) of this section, multiplied by the number of kilowatt-hours eligible for power cost equalization that were sold during the preceding month to all customers of the utility under (b) of this section. Payment shall be made by the authority within 30 days after receipt from the utility of the report required under (h) of this section. If appropriations that have been made for the purpose by July 1 of a fiscal year are insufficient for payment in full, the amount paid to each electric utility shall be reduced on a pro rata basis. In making the pro rata reductions required by this subsection, the authority may not consider any potential supplemental appropriation until the appropriation has been enacted.

Sec. 42.45.115. Exclusion from eligibility.

(a) Notwithstanding the definition of "eligible electric utility" in AS 42.45.150, an electric utility whose primary source of power for sale to customers is one or more of the power projects that were part of the former initial project may not be considered an eligible electric utility.

(b) In this section, "former initial project" includes the Tyee Lake, Swan Lake, Solomon Gulch, and Terror Lake hydroelectric facilities.

Sec. 42.45.120. Notice to customers.

If an electric utility receives power cost equalization under AS 42.45.100 - 42.45.150, the utility shall either give to its electric service customers eligible under this program, for each period for which the payment is received,

(1) the following notice:

NOTICE TO CUSTOMER

For the most recent monthly reporting period under the State of Alaska's power cost equalization program, this utility's actual fuel efficiency for your community was _____ kilowatt-hours a gallon. The applicable fuel efficiency standard set out in regulations for the power cost equalization program is _____ kilowatt-hours a gallon.

For the current billing period, the utility will be paid under the State of Alaska's power cost equalization program (AS 42.45.100) to assist the utility and its customers in reducing the high cost of generation of electric energy.

Your total electrical service cost $ .....

Less state equalization $ .....

Your charge $ .....; or

(2) a notice approved by the authority that provides electric service customers the same information provided by the notice in (1) of this section.

Sec. 42.45.130. Cost minimization.

(a) In order to qualify for power cost equalization, each electric utility shall make every reasonable effort to minimize administrative, operating, and overhead costs, including using the best available technology consistent with sound utility management practices. In reviewing applications for power cost equalization, the commission may require the elimination of unnecessary operating expenses. Each eligible electric utility shall cooperate with appropriate state agencies to implement cost-effective energy conservation measures and to plan for and implement feasible alternatives to diesel generation.

(b) In this section, "energy conservation measures" include weatherization and other insulating methods, utilization of waste heat, appropriate sizing of new generating equipment, and other programs of the state or federal government intended and available for energy conservation.

Sec. 42.45.140. Customer petitions.

If the authority receives a petition requesting power cost equalization, signed by at least 25 percent of the customers of an electric utility that is subject to rate regulation under AS 42.05 and that has not applied for power cost equalization under AS 42.45.100 - 42.45.150, the authority shall require the utility to submit a power cost equalization application. Upon a determination of eligibility for power cost equalization, the utility, as a part of its service, shall receive power cost equalization and pass power cost equalization benefits to its customers under AS 42.45.100 - 42.45.150.

Sec. 42.45.150. Definitions for AS 42.45.100 - 42.45.150.

In AS 42.45.100 - 42.45.150,

(1) "community facility" means a water and sewer facility, public outdoor lighting, charitable educational facility, or community building whose operations are not paid for by the state, the federal government, or private commercial interests;

(2) "eligible electric utility" or "electric utility" means a public, cooperative, or other corporation, company, individual, or association of individuals, and includes the lessees, trustees, or receivers appointed by a court, that

(A) owns, operates, manages, or controls a plant or system for the furnishing, by generation, transmission, or distribution, of electric service to the public for compensation;

(B) during calendar year 1983, had a residential consumption level of power eligible for power cost equalization under former AS 44.83 of less than 7,500 megawatt hours or had a residential consumption level of power eligible for power cost equalization under former AS 44.83 of less than 15,000 megawatt hours if the utility served two or more municipalities or unincorporated communities; and

(C) during calendar year 1984, used diesel fired generators to produce more than 75 percent of the electrical consumption of the utility; an electric utility that is a subsidiary of another electric utility is an "eligible electric utility" if the operations of the subsidiary, considered separately, meet the eligibility requirements of AS 42.45.100 - 42.45.150; if an electric utility did not receive power cost assistance in 1983 but is otherwise eligible for power cost equalization under AS 42.45.100 - 42.45.150, the utility is an "eligible electric utility";

(3) "power costs" means costs used in determining power cost equalization under AS 42.45.110(a) and (c).

Sec. 42.45.160. Adjustments to power cost equalization.

(a) The commission may adjust the power cost equalization per kilowatt-hour, determined under AS 42.45.100 - 42.45.150, payable to an electric utility that is subject to rate regulation under AS 42.05 if the

(1) commission has approved a fuel cost rate adjustment caused by an increase or decrease in the electric utility's cost of fuel;

(2) commission has approved a permanent or interim rate increase or decrease that establishes a higher or lower power cost;

(3) authority has discovered, in reviewing the monthly data submitted by the electric utility, discrepancies that require adjustment of the power cost equalization; or

(4) authority determines that appropriations are insufficient to finance full payments to eligible electric utilities.

(b) An electric utility that is eligible to receive power cost equalization under this section and that receives power cost equalization per kilowatt-hour approved by the commission shall report monthly to the authority within the time and in the form the authority requires. An electric utility shall report

(1) the power cost equalization per kilowatt-hour approved by the commission;

(2) the total kilowatt-hours sold to each class of customer during the preceding month;

(3) the total kilowatt-hours eligible for power cost equalization under this section sold to each class of customer during the preceding month;

(4) the total kilowatt-hours generated during the preceding month, if available;

(5) any commission approved amendments to the schedule of rates in effect during the preceding month; and

(6) an increase or decrease in the current unit price of fuel from the base price used by the commission in determining power costs if the change is expected to result in a subsequent power cost equalization adjustment.

(c) The provisions of AS 42.45.100 - 42.45.150 relating to the determination of the amount of power cost equalization and payment of the equalization assistance apply to equalization assistance under this section.

Sec. 42.45.170. Equalization assistance to unregulated utilities.

(a) An electric utility that is not subject to rate regulation by the Regulatory Commission of Alaska under AS 42.05 may receive power cost equalization if the utility is otherwise eligible for equalization assistance under AS 42.45.100 - 42.45.150 and if the utility

(1) files with the commission financial data necessary to determine the power cost equalization per kilowatt-hour as prescribed by the commission and that is in compliance with AS 42.45.100 - 42.45.150;

(2) reports monthly to the authority, within the time and in the form required, the information required in (b) of this section;

(3) sets rates

(A) that consider the power cost equalization provided under AS 42.45.100 - 42.45.150 by subtracting from its revenue requirements for electric services the power cost equalization per kilowatt-hour that it is eligible to receive; and

(B) under which the power cost equalization provided in AS 42.45.070 - 42.45.110 is applied as a credit only against the cost of kilowatt-hours eligible for equalization assistance under AS 42.45.100 - 42.45.150 that are consumed by each customer in any month;

(4) allows audits that the commission determines are necessary to ensure compliance with this section; and

(5) furnishes its electric service customers eligible under this program a notice as specified in AS 42.45.120.

(b) An electric utility that is eligible to receive power cost equalization under this section shall report in accordance with (a)(2) of this section

(1) the power cost equalization per kilowatt-hour approved by the commission;

(2) the total kilowatt-hours sold to each class of customer during the preceding month;

(3) the total kilowatt-hours eligible for power cost equalization under this section sold to each class of customer during the preceding month;

(4) the total kilowatt-hours generated during the preceding month, if available;

(5) any amendments to the schedule of rates in effect during the preceding month; and

(6) an increase or decrease in the current unit price of fuel from the base price used by the commission in determining power costs if the change is expected to result in a subsequent equalization assistance level adjustment.

(c) An electric utility that is eligible to receive power cost equalization under this section may have its power cost equalization per kilowatt-hour determination changed by the commission if the

(1) commission has verified an increase or decrease in the electric utility's cost of fuel;

(2) commission has verified an increase in rates based on an increase in costs;

(3) authority has discovered, in reviewing the monthly data submitted by the electric utility, discrepancies that require adjustment of the power cost equalization; or

(4) authority determines that appropriations are insufficient to finance full payments to eligible electric utilities.

(d) The provisions of AS 42.45.100 - 42.45.150 relating to the determination of the amount of power cost equalization and payment of the equalization assistance apply to equalization assistance under this section.

(e) An application for power cost equalization by an electric utility that is eligible to receive power cost under this section does not extend the jurisdiction of the Regulatory Commission of Alaska beyond that established by AS 42.05.

Sec. 42.45.180. Grants for utility improvements.

(a) The authority may make a grant from the fund for an eligible utility for a small power project that will reduce the cost of generating or transmitting power to the customers of the utility. The amount of the grant may not exceed 75 percent of the cost of the project. The authority may not make a grant under this section unless the eligible utility has secured financing for 25 percent of the cost of the project from a source other than the power cost equalization and rural electric capitalization fund, as provided under (c) of this section.

(b) The authority may not allocate more than three percent of the balance in the fund to grants under this section in a fiscal year.

(c) In determining whether an eligible utility has secured financing for 25 percent of the cost of the project from a source other than the power cost equalization and rural electric capitalization fund, the authority shall accept solicited and unsolicited proposals for third party financing or for a joint venture between the utility and an entity from the private sector provided that the private sector participant has

(1) a valid state business license;

(2) a resolution or letter of agreement executed by the eligible utility agreeing to participation by the private sector participant;

(3) a business plan that illustrates how the proposed project will reduce the cost of generating or transmitting power to the customers of the utility.

(d) In this section,

(1) "eligible utility" has the meaning given in AS 42.45.150;

(2) "project" includes

(A) power generation systems;

(B) transmission systems;

(C) distribution systems;

(D) metering systems;

(E) energy store systems;

(F) energy conservation programs; and

(G) bulk fuel storage facilities;

(3) "small power project" means a new or modified project that will either generate, store, or conserve no more than 1.5 megawatts of power or provide a metering system, transmission system, distribution system, or bulk fuel storage facility that has an estimated cost of less than $3,000,000.

Sec. 42.45.190. Definition for AS 42.45.100 - 42.45.190.

In AS 42.45.100 - 42.45.190, "fund" means the power cost equalization and rural electric capitalization fund established under AS 42.45.100.

Legislative Research Report 99.086
March 23, 1999

Use of the PCE Program by School Districts

Legislative Research Services
Division of Legal and Research Services
Legislative Affairs Agency
Alaska State Legislature

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SCHOOL DISTRICT USE OF THE PCE PROGRAM

You asked several questions about use of the Power Cost Equalization (PCE) Program by school districts in Alaska. You wanted a list of schools receiving PCE credits, as well as an estimate of expenses that school districts would incur if they were ineligible to receive PCE benefits. You also wished to know how the new school foundation formula impacts this discussion.

As you can see from Table 1, "Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program," if school districts had been ineligible to receive PCE in FY 99, district budgets would have had to absorb approximately $260,000 in power costs statewide. Naturally, some districts would have been affected more than others. We estimate that in FY 99, the Lower Yukon, Bering Straits, Lower Kuskokwim, Northwest Arctic, and Kuspuk districts will each receive over $20,000 in PCE credits; without PCE, district budgets would have to absorb those costs.

Schools are eligible to receive up to 700 kilowatt hours of PCE credits per month (AS 42.45.110). For the purposes of calculating PCE credits, administrators consider all school facilities within a community as one customer eligible for one 700 kwh credit: if a community were home to an elementary school, middle school, and teacher housing, those facilities combined would be eligible to receive 700 kilowatt hours of credit (19 AAC 97.260, standards for customer eligibility). PCE grant administrator Irene Tomary reports that every school district customer account currently uses the entire 700 kwh monthly maximum during the school year. PCE records show that most, but not all, school customer account holders use 700 kwh even during June and July. For the purposes of calculating annual PCE credits to all school districts, therefore, we assume that each eligible "school customer" listed on Table 1 receives the maximum 700 kwh for 12 months of the year.

While Table 1 presents *estimated* PCE benefits for *all* school districts for FY 99, Table 2 provides *actual* PCE credits for *selected* schools for FY 98. Included are detailed data for two schools in the Bering Strait School District, three schools in the Kodiak Island School District, six schools in the Kuspuk District, and two schools in the Yukon Flats District. As you can see from Table 2, for most of the schools listed, PCE pays for only 2 to 5 percent of a school's electric bill. In Sleetmute and Stony River in the Kuspuk School District, however, the PCE program pays for approximately 14 percent of school expenditures for electricity.

If schools were ineligible to receive PCE credits, these power costs would, of course, have to be absorbed by the district. Last session, by passing SB 36, the legislature added a provision to statute mandating that districts spend at least 70 percent of their operating budgets on instructional functions (AS 14.17.520). Eddy Jeans, manager of the school finance section at the Department of Education, reports that some districts may already have a problem meeting this requirement. Adding additional expenses to the non-instructional side of the ledger would make compliance with the 70 percent requirement even more difficult for those mostly rural districts.

I hope you find this information useful. Please do not hesitate to contact us if you have questions or need additional information.

TABLE 1: Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program, FY 99					
DISTRICT	REAA or City/ Borough	COMMUNITY	PCE Level per KWH (as of 3/99)	Maximum PCE Credits Paid to Utility [1]	
				Monthly	Annually
Alaska Gateway	REAA	Dot Lake	0.06	$40	$500
Alaska Gateway	REAA	Eagle	0.24	$170	$2,000
Alaska Gateway	REAA	Mentasta Lake	0.13	$90	$1,100
Alaska Gateway	REAA	Northway	0.14	$100	$1,200
Alaska Gateway	REAA	Tanacross	0.14	$100	$1,200
Alaska Gateway	REAA	Tetlin	0.14	$100	$1,200
Alaska Gateway	REAA	Tok	0.06	$40	$500
Alaska Gateway Total					**$7,700**
Aleutian Region	REAA	Atka	0.14	$100	$1,200
Aleutian Region	REAA	Nikolski	0.21	$140	$1,700
Aleutian Region	REAA	Unalaska	0.04	$30	$400
Aleutian Region Total					**$3,300**
Aleutians East	city/borough	Akutan	0.19	$130	$1,600
Aleutians East	city/borough	Cold Bay	0.21	$150	$1,800
Aleutians East	city/borough	False Pass	0.10	$70	$800
Aleutians East	city/borough	King Cove	0.06	$40	$500
Aleutians East	city/borough	Nelson Lagoon	0.21	$150	$1,800
Aleutians East	city/borough	Sand Point	0.14	$100	$1,200
Aleutians East Total					**$7,700**
Bering Strait	REAA	Brevig Mission	0.22	$150	$1,800
Bering Strait	REAA	Diomede	0.24	$170	$2,000
Bering Strait	REAA	Elim	0.22	$160	$1,900
Bering Strait	REAA	Gambell	0.22	$150	$1,800
Bering Strait	REAA	Golovin	0.22	$150	$1,800
Bering Strait	REAA	Koyuk	0.21	$150	$1,800
Bering Strait	REAA	Savoonga	0.23	$160	$1,900
Bering Strait	REAA	Shaktoolik	0.21	$150	$1,800
Bering Strait	REAA	Shishmaref	0.22	$150	$1,800
Bering Strait	REAA	St. Michael	0.21	$150	$1,800
Bering Strait	REAA	Stebbins	0.21	$150	$1,800
Bering Strait	REAA	Teller	0.26	$180	$2,200
Bering Strait	REAA	Unalakleet	0.10	$70	$800
Bering Strait	REAA	Wales	0.22	$150	$1,800
Bering Strait	REAA	White Mountain	0.26	$180	$2,200
Bering Strait Total					**$27,200**
Bristol Bay	city/borough	Naknek	0.06	$40	$500
Bristol Bay	city/borough	South Naknek	0.06	$40	$500
Bristol Bay Total					**$1,000**
Chatham	REAA	Angoon	0.15	$100	$1,200
Chatham	REAA	Gustavus	0.29	$200	$2,400
Chatham	REAA	Klukwan	0.15	$100	$1,200
Chatham	REAA	Tenakee Springs	0.13	$90	$1,100
Chatham Total					**$5,900**
Chugach	REAA	Chenega Bay	0.17	$120	$1,400
Chugach	REAA	Tatitlek [2]	0.11	$70	$800
Chugach Total					**$2,200**
Copper River	REAA	Chistochina	0.15	$100	$1,200
Copper River Total					**$1,200**

TABLE 1: Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program, FY 99					
DISTRICT	REAA or City/ Borough	COMMUNITY	PCE Level per KWH (as of 3/99)	Maximum PCE Credits Paid to Utility [1]	
				Monthly	Annually
Cordova City	city/borough	Cordova	0.07	$50	$600
Cordova City Total					**$600**
Craig City	city/borough	Craig	0.06	$40	$500
Craig City Total					**$500**
Delta/Greely	REAA	Healy Lake/Delta Junction	0.30	$210	$2,500
Delta/Greely Total					**$2,500**
Dillingham	city/borough	Dillingham	0.07	$50	$600
Dillingham Total					**$600**
Fairbanks	city/borough	Tanana	0.15	$100	$1,200
Fairbanks Total					**$1,200**
Galena	city/borough	Galena	0.07	$50	$600
Galena Total					**$600**
Haines (T-H Elec)	city/borough	Mosquito Lake (Chilkat Valley)	0.15	$100	$1,200
Haines (AK Power & Tele)	city/borough	Haines Schools	0.04	$30	$400
Haines Total					**$1,600**
Hoonah	city/borough	Hoonah	0.05	$40	$500
Hoonah Total					**$500**
Hydaburg	city/borough	Hydaburg	0.06	$40	$500
Hydaburg Total					**$500**
Iditarod	REAA	Anvik	0.24	$170	$2,000
Iditarod	REAA	Grayling	0.22	$160	$1,900
Iditarod	REAA	Holy Cross	0.22	$150	$1,800
Iditarod	REAA	Lime Village	0.31	$220	$2,600
Iditarod	REAA	McGrath	0.21	$150	$1,800
Iditarod	REAA	Nikolai	0.23	$160	$1,900
Iditarod	REAA	Shageluk	0.24	$170	$2,000
Iditarod	REAA	Takotna	0.14	$100	$1,200
Iditarod Total					**$15,200**
Kake	city/borough	Kake	0.15	$100	$1,200
Kake Total					**$1,200**
Kashunamiut	REAA	Chevak	0.22	$150	$1,800
Kashunamiut Total					**$1,800**
Klawock	city/borough	Klawock	0.05	$40	$500
Klawock Total					**$500**
Kodiak	city/borough	Akhiok	0.12	$80	$1,000
Kodiak	city/borough	Karluk	0.22	$150	$1,800
Kodiak	city/borough	Larsen Bay	0.22	$150	$1,800
Kodiak	city/borough	Old Harbor	0.24	$170	$2,000
Kodiak	city/borough	Ouzinkie	0.10	$70	$800
Kodiak Total					**$7,400**
Kuspuk	REAA	Aniak	0.22	$150	$1,800
Kuspuk	REAA	Chuathbaluk	0.34	$240	$2,900
Kuspuk	REAA	Crooked Creek	0.34	$240	$2,900
Kuspuk	REAA	Kalskag (Upper)	0.23	$160	$1,900
Kuspuk	REAA	Lower Kalskag	0.23	$160	$1,900
Kuspuk	REAA	Red Devil	0.34	$240	$2,900
Kuspuk	REAA	Sleetmute	0.34	$240	$2,900
Kuspuk	REAA	Stony River	0.34	$240	$2,900
Kuspuk Total					**$20,100**

TABLE 1: Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program, FY 99					
DISTRICT	REAA or City/ Borough	COMMUNITY	PCE Level per KWH (as of 3/99)	Maximum PCE Credits Paid to Utility [1]	
				Monthly	Annually
Lake & Penninsula	city/borough	Chignik Lagoon	0.10	$70	$800
Lake & Penninsula	city/borough	Chignik, City of	0.11	$80	$1,000
Lake & Penninsula	city/borough	Igiugig	0.29	$200	$2,400
Lake & Penninsula	city/borough	King Salmon	0.06	$40	$500
Lake & Penninsula	city/borough	Kokhanok	0.25	$180	$2,200
Lake & Penninsula	city/borough	Levelock	0.22	$160	$1,900
Lake & Penninsula	city/borough	Newhalen	0.21	$150	$1,800
Lake & Penninsula	city/borough	Nondalton	0.21	$150	$1,800
Lake & Penninsula	city/borough	Perryville	0.06	$40	$500
Lake & Penninsula	city/borough	Pilot Point	0.15	$100	$1,200
Lake & Penninsula	city/borough	Port Alsworth	0.14	$100	$1,200
Lake & Penninsula	city/borough	Port Heiden	0.05	$30	$400
Lake & Penninsula Total					**$15,700**
Lower Kuskokwim	REAA	Bethel	0.08	$50	$600
Lower Kuskokwim	REAA	Chefornak	0.08	$60	$700
Lower Kuskokwim	REAA	Goodnews Bay	0.21	$140	$1,700
Lower Kuskokwim	REAA	Kasigluk	0.25	$170	$2,000
Lower Kuskokwim	REAA	Kasigluk	0.25	$170	$2,000
Lower Kuskokwim	REAA	Kipnuk	0.14	$100	$1,200
Lower Kuskokwim	REAA	Kongiganak	0.10	$70	$800
Lower Kuskokwim	REAA	Mekoryuk	0.23	$160	$1,900
Lower Kuskokwim	REAA	Napakiak	0.28	$200	$2,400
Lower Kuskokwim	REAA	Napaskiak	0.16	$110	$1,300
Lower Kuskokwim	REAA	Newtok	0.24	$170	$2,000
Lower Kuskokwim	REAA	Nightmute	0.22	$160	$1,900
Lower Kuskokwim	REAA	Nunapitchuk	0.25	$170	$2,000
Lower Kuskokwim	REAA	Platinum	0.21	$150	$1,800
Lower Kuskokwim	REAA	Toksook Bay	0.23	$160	$1,900
Lower Kuskokwim	REAA	Tununak	0.23	$160	$1,900
Lower Kuskokwim Total					**$26,100**
Lower Yukon	REAA	Alakanuk	0.22	$150	$1,800
Lower Yukon	REAA	Atmautluak	0.13	$90	$1,100
Lower Yukon	REAA	Eek	0.21	$150	$1,800
Lower Yukon	REAA	Emmonak	0.24	$170	$2,000
Lower Yukon	REAA	Hooper Bay	0.23	$160	$1,900
Lower Yukon	REAA	Kotlik	0.15	$100	$1,200
Lower Yukon	REAA	Kwethluk	0.13	$90	$1,100
Lower Yukon	REAA	Kwigillingok	0.24	$170	$2,000
Lower Yukon	REAA	Marshall	0.21	$150	$1,800
Lower Yukon	REAA	Mountain Village	0.25	$180	$2,200
Lower Yukon	REAA	Pilot Station	0.24	$160	$1,900
Lower Yukon	REAA	Pitkas Point	0.22	$150	$1,800
Lower Yukon	REAA	Quinhagak	0.21	$150	$1,800
Lower Yukon	REAA	Russian Mission	0.22	$160	$1,900
Lower Yukon	REAA	Scammon Bay	0.22	$160	$1,900
Lower Yukon	REAA	Sheldon Point	0.13	$90	$1,100
Lower Yukon	REAA	St. Mary's	0.23	$160	$1,900
Lower Yukon	REAA	Tuntutuliak	0.17	$120	$1,400
Lower Yukon Total					**$30,600**

TABLE 1: Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program, FY 99					
DISTRICT	REAA or City/ Borough	COMMUNITY	PCE Level per KWH (as of 3/99)	Maximum PCE Credits Paid to Utility [1]	
				Monthly	Annually
Nome	city/borough	Nome	0.04	$30	$400
Nome Total					**$400**
North Slope	city/borough	Anaktuvuk Pass	0.09	$60	$700
North Slope	city/borough	Atqasuk	0.09	$60	$700
North Slope	city/borough	Kaktovik	0.03	$20	$200
North Slope	city/borough	Nuiqsut	0.09	$60	$700
North Slope	city/borough	Point Hope	0.03	$20	$200
North Slope	city/borough	Point Lay	0.09	$60	$700
North Slope	city/borough	Wainwright	0.03	$20	$200
North Slope Total					**$3,400**
Northwest Arctic	city/borough	Ambler	0.28	$200	$2,400
Northwest Arctic	city/borough	Buckland	0.09	$70	$800
Northwest Arctic	city/borough	Deering	0.20	$140	$1,700
Northwest Arctic	city/borough	Kiana	0.25	$170	$2,000
Northwest Arctic	city/borough	Kivalina	0.24	$170	$2,000
Northwest Arctic	city/borough	Kobuk	0.30	$210	$2,500
Northwest Arctic	city/borough	Kotzebue	0.08	$50	$600
Northwest Arctic	city/borough	Noatak	0.33	$230	$2,800
Northwest Arctic	city/borough	Noorvik	0.24	$170	$2,000
Northwest Arctic	city/borough	Selawik	0.21	$140	$1,700
Northwest Arctic	city/borough	Shungnak	0.29	$200	$2,400
Northwest Arctic Total					**$20,900**
Pelican	city/borough	Pelican	0.02	$10	$100
Pelican Total					**$100**
Pribilof Islands	REAA	St. George	0.11	$80	$1,000
Pribilof Islands	REAA	St. Paul	0.09	$60	$700
Pribilof Islands Total					**$1,700**
Skagway	city/borough	Skagway	0.02	$20	$200
Skagway Total					**$200**
Southeast Island	REAA	Coffman Cove	0.09	$70	$800
Southeast Island	REAA	Hollis	0.06	$40	$500
Southeast Island	REAA	Kasaan/Kethikan	0.09	$70	$800
Southeast Island	REAA	Naukati/Ketchikan	0.09	$70	$800
Southeast Island	REAA	Thorne Bay	0.03	$20	$200
Southeast Island	REAA	Whale Pass	0.09	$70	$800
Southeast Island Total					**$3,900**
Southwest Region	REAA	Aleknagik	0.07	$50	$600
Southwest Region	REAA	Ekwok	0.18	$130	$1,600
Southwest Region	REAA	Koliganek	0.18	$130	$1,600
Southwest Region	REAA	Manokotak	0.12	$80	$1,000
Southwest Region	REAA	New Stuyahok	0.27	$190	$2,300
Southwest Region	REAA	Togiak	0.22	$150	$1,800
Southwest Region Total					**$8,900**
Tanana	city/borough	Tanana	0.15	$100	$1,200
Tanana Total					**$1,200**
Unalaska	city/borough	Unalaska	0.04	$30	$400
Unalaska Total					**$400**
Yakutat	city/borough	Yakutat	0.06	$50	$600
Yakutat Total					**$600**

TABLE 1: Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program, FY 99					
DISTRICT	REAA or City/ Borough	COMMUNITY	PCE Level per KWH (as of 3/99)	Maximum PCE Credits Paid to Utility [1]	
				Monthly	Annually
Yukon Flats	REAA	Arctic Village [3]	0.00	$0	$0
Yukon Flats	REAA	Beaver	0.27	$190	$2,300
Yukon Flats	REAA	Central	0.25	$180	$2,200
Yukon Flats	REAA	Chalkyitsik	0.35	$240	$2,900
Yukon Flats	REAA	Circle	0.21	$140	$1,700
Yukon Flats	REAA	Fort Yukon	0.14	$100	$1,200
Yukon Flats	REAA	Stevens Village	0.16	$110	$1,300
Yukon Flats	REAA	Venetie	0.10	$70	$800
Yukon Flats Total					**$12,400**
Yukon/Koyukuk	REAA	Allakaket	0.16	$110	$1,300
Yukon/Koyukuk	REAA	Betties	0.29	$210	$2,500
Yukon/Koyukuk	REAA	Hughes	0.23	$160	$1,900
Yukon/Koyukuk	REAA	Huslia	0.25	$170	$2,000
Yukon/Koyukuk	REAA	Kaltag	0.23	$160	$1,900
Yukon/Koyukuk	REAA	Koyukuk	0.12	$80	$1,000
Yukon/Koyukuk	REAA	Manley Hot Springs	0.33	$230	$2,800
Yukon/Koyukuk	REAA	Minto	0.22	$150	$1,800
Yukon/Koyukuk	REAA	Nulato	0.22	$150	$1,800
Yukon/Koyukuk	REAA	Ruby	0.16	$110	$1,300
Yukon/Koyukuk Total					**$18,300**
Yupiit	REAA	Akiachak	0.25	$180	$2,200
Yupiit Total					**$2,200**
Grand Total, ALL SCHOOL DISTRICTS					**$258,000**

NOTES:

(1) Schools are eligible to receive up to 700 kwh of PCE credits per month (AS 42.45.110). For the purposes of calculating PCE credits, administrators consider all school facilities within a community as one customer eligible for one 700 kwh credit: if a community were home to an elementary school, middle school, and teacher housing, all three facilities together would be eligible to receive 700 kilowatt hours of credit (19 AAC 97.260, standards for customer eligibility). PCE grant administrator Irene Tomary reports that every school district customer account currently uses the entire 700 kwh monthly maximum during the school year. PCE records show that most, but not all, school customer account holders use 700 kwh even during June and July. For the purposes calculating annual PCE credits to all school districts, therefore, we assume that each eligible "school customer" listed on this table receives the maximum 700 kwh for 12 months of the year.

(2) Tatitlik school and teacher housing are currently ineligible because of outstanding balance owed to the utility. If the balance brought to within program limits, they may begin receiving credit again.

(3) Arctic Village Electric Company did not file its annual update with APUC. This report is required to enable the APUC to determine the PCE level per kwh for each utility. The utility, and, therefore, community residents, may not receive PCE credits until the utility files the report (3 AAC 52.640). The last monthly report was filed July 1, 1998.

SOURCES: Department of Community and Regional Affairs, Division of Energy (Terry Ganthner and Irene Tomary), personal communication, March 1999; Department of Education, database of Alaska public schools available at http://www.educ.state.ak.us/Alaskan_schools/public/home.html

TABLE 1: Maximum PCE Credits to Schools Participating in the Power Cost Equalization Program, FY 99					
DISTRICT	REAA or City/ Borough	COMMUNITY	PCE Level per KWH (as of 3/99)	Maximum PCE Credits Paid to Utility [1]	
				Monthly	Annually
Yukon Flats	REAA	Arctic Village [3]	0.00	$0	$0
Yukon Flats	REAA	Beaver	0.27	$190	$2,300
Yukon Flats	REAA	Central	0.25	$180	$2,200
Yukon Flats	REAA	Chalkyitsik	0.35	$240	$2,900
Yukon Flats	REAA	Circle	0.21	$140	$1,700
Yukon Flats	REAA	Fort Yukon	0.14	$100	$1,200
Yukon Flats	REAA	Stevens Village	0.16	$110	$1,300
Yukon Flats	REAA	Venetie	0.10	$70	$800
Yukon Flats Total					**$12,400**
Yukon/Koyukuk	REAA	Allakaket	0.16	$110	$1,300
Yukon/Koyukuk	REAA	Betties	0.29	$210	$2,500
Yukon/Koyukuk	REAA	Hughes	0.23	$160	$1,900
Yukon/Koyukuk	REAA	Huslia	0.25	$170	$2,000
Yukon/Koyukuk	REAA	Kaltag	0.23	$160	$1,900
Yukon/Koyukuk	REAA	Koyukuk	0.12	$80	$1,000
Yukon/Koyukuk	REAA	Manley Hot Springs	0.33	$230	$2,800
Yukon/Koyukuk	REAA	Minto	0.22	$150	$1,800
Yukon/Koyukuk	REAA	Nulato	0.22	$150	$1,800
Yukon/Koyukuk	REAA	Ruby	0.16	$110	$1,300
Yukon/Koyukuk Total					**$18,300**
Yupiit	REAA	Akiachak	0.25	$180	$2,200
Yuplit Total					**$2,200**
Grand Total, ALL SCHOOL DISTRICTS					**$258,000**

NOTES:

(1) Schools are eligible to receive up to 700 kwh of PCE credits per month (AS 42.45.110). For the purposes of calculating PCE credits, administrators consider all school facilities within a community as one customer eligible for one 700 kwh credit: if a community were home to an elementary school, middle school, and teacher housing, all three facilities together would be eligible to receive 700 kilowatt hours of credit (19 AAC 97.260, standards for customer eligibility). PCE grant administrator Irene Tomary reports that every school district customer account currently uses the entire 700 kwh monthly maximum during the school year. PCE records show that most, but not all, school customer account holders use 700 kwh even during June and July. For the purposes calculating annual PCE credits to all school districts, therefore, we assume that each eligible "school customer" listed on this table receives the maximum 700 kwh for 12 months of the year.

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TABLE 2: Actual PCE Credits to Selected Schools Participating in the Power Cost Equalization Program, FY98									
District	Community	Customer	Month	Total Kwh Used	Rate Per Kwh	Cost WITHOUT PCE	PCE Credits Paid to Utility [1]		% of Gross Paid by PCE
							per Kwh	Dollars	
Bering Strait School District	Diomede	School Facilities	Jul-97	19,119	0.43	$ 8,221	0.22	$155	1.9%
			Aug-97	11,397	0.43	$ 4,901	0.22	$155	3.2%
			Sep-97	15,487	0.43	$ 6,659	0.22	$155	2.3%
			Oct-97	18,852	0.43	$ 8,106	0.22	$155	1.9%
			Nov-97	26,780	0.43	$ 11,515	0.25	$172	1.5%
			Dec-97	18,601	0.43	$ 7,998	0.25	$172	2.2%
			Jan-98	18,106	0.43	$ 7,786	0.25	$172	2.2%
			Feb-98	30,615	0.43	$ 13,164	0.25	$172	1.3%
			Mar-98	19,650	0.43	$ 8,450	0.24	$171	2.0%
			Apr-98	18,902	0.43	$ 8,128	0.24	$171	2.1%
			May-98	16,692	0.43	$ 7,178	0.24	$171	2.4%
			Jun-98	10,350	0.43	$ 4,451	0.24	$171	3.8%
Bering Strait--Diomede Total				**224,551**		**$ 96,557**		**$1,993**	**2.1%**
Bering Strait	Golovin	School	Jul-97	4,380	0.38	$ 1,664	0.22	$155	9.3%
			Aug-97	5,465	0.38	$ 2,077	0.22	$155	7.5%
			Sep-97	7,693	0.38	$ 2,923	0.22	$155	5.3%
			Oct-97	10,353	0.38	$ 3,934	0.22	$155	4.0%
			Nov-97	10,661	0.38	$ 4,051	0.22	$155	3.8%
			Dec-97	11,155	0.38	$ 4,239	0.22	$155	3.7%
			Jan-98	10,646	0.38	$ 4,045	0.22	$155	3.8%
			Feb-98	10,699	0.38	$ 4,066	0.22	$155	3.8%
			Mar-98	10,228	0.38	$ 3,887	0.23	$164	4.2%
			Apr-98	10,707	0.38	$ 4,069	0.23	$164	4.0%
			May-98	7,762	0.38	$ 2,950	0.23	$164	5.5%
			Jun-98	2,431	0.38	$ 924	0.22	$153	16.5%
Bering Strait--Golovin Total				**2,431**		**$ 38,828**		**$1,887**	**4.9%**

TABLE 2: Actual PCE Credits to Selected Schools Participating in the Power Cost Equalization Program, FY98									
District	Community	Customer	Month	Total Kwh Used	Rate Per Kwh	Cost WITHOUT PCE	PCE Credits Paid to Utility [1]		% of Gross Paid by PCE
							per Kwh	Dollars	
Kodiak Island Borough	Old Harbor	School	Jul-97	1,232	1.99	$ 2,452	0.15	$107	4.3%
			Aug-97	4,441	0.71	$ 3,166	0.15	$107	3.4%
			Sep-97	9,528	0.43	$ 4,089	0.15	$107	2.6%
			Oct-97	10,606	0.41	$ 4,353	0.15	$107	2.4%
			Nov-97	11,374	0.41	$ 4,659	0.15	$107	2.3%
			Dec-97	11,021	0.42	$ 4,603	0.15	$107	2.3%
			Jan-98	12,232	0.39	$ 4,802	0.15	$107	2.2%
			Feb-98	10,555	0.42	$ 4,431	0.15	$107	2.4%
			Mar-98	10,144	0.46	$ 4,647	0.17	$121	2.6%
			Apr-98	10,467	0.45	$ 4,708	0.17	$121	2.6%
			May-98	9,767	0.45	$ 4,391	0.17	$121	2.7%
			Jun-98	6,279	0.59	$ 3,733	0.17	$121	3.2%
Kodiak Island--Old Harbor Total				**107,646**		**$ 50,034**		**$1,336**	**2.7%**
Kodiak Island Borough	Ouzinkie	School	Jul-97	2,293	0.30	$ 688	0.11	$79	11.5%
			Aug-97	3,502	0.30	$ 1,051	0.11	$79	7.5%
			Sep-97	8,452	0.30	$ 2,536	0.11	$79	3.1%
			Oct-97	10,057	0.30	$ 3,017	0.11	$79	2.6%
			Nov-97	8,913	0.30	$ 2,674	0.11	$79	3.0%
			Dec-97	10,111	0.30	$ 3,033	0.11	$79	2.6%
			Jan-98	10,024	0.30	$ 3,007	0.11	$74	2.5%
			Feb-98	9,689	0.30	$ 2,907	0.11	$74	2.5%
			Mar-98	6,220	0.30	$ 1,866	0.10	$73	3.9%
			Apr-98	9,075	0.30	$ 2,723	0.10	$73	2.7%
			May-98	7,707	0.30	$ 2,312	0.10	$71	3.1%
			Jun-98	1,693	0.30	$ 508	0.10	$71	13.9%
Kodiak Island--Ouzinkie Total				**87,736**		**$ 26,321**		**$910**	**3.5%**
Kodiak Island Borough	Larsen Bay	School	Jul-97	1,680	0.40	$ 672	0.20	$141	21.0%
			Aug-97	3,120	0.40	$ 1,248	0.20	$141	11.3%
			Sep-97	6,720	0.40	$ 2,688	0.20	$141	5.2%
			Oct-97	9,480	0.40	$ 3,792	0.20	$141	3.7%
			Nov-97	10,800	0.40	$ 4,320	0.20	$141	3.3%
			Dec-97	9,840	0.40	$ 3,936	0.21	$148	3.8%
			Jan-98	11,640	0.40	$ 4,656	0.21	$148	3.2%
			Feb-98	9,000	0.40	$ 3,600	0.20	$142	3.9%
			Mar-98	10,440	0.40	$ 4,176	0.20	$141	3.4%
			Apr-98	9,000	0.40	$ 3,600	0.20	$141	3.9%
			May-98	7,800	0.40	$ 3,120	0.20	$141	4.5%
			Jun-98	2,880	0.40	$ 1,152	0.20	$141	12.2%
Kodiak Island--Larsen Bay Total				**92,400**		**$ 36,960**		**$1,706**	**4.6%**

TABLE 2: Actual PCE Credits to Selected Schools Participating in the Power Cost Equalization Program, FY98

District	Community	Customer	Month	Total Kwh Used	Rate Per Kwh	Cost WITHOUT PCE	PCE Credits Paid to Utility [1]		% of Gross Paid by PCE
							per Kwh	Dollars	
Kuspuk	Aniak	School	Jul-97	7,750	0.44	$ 3,395	0.21	$149	4.4%
School		District	Aug-97	15,918	0.43	$ 6,837	0.24	$166	2.4%
District		Facilities	Sep-97	28,197	0.42	$ 11,888	0.24	$166	1.4%
			Oct-97	33,349	0.42	$ 13,997	0.23	$164	1.2%
			Nov-97	32,859	0.42	$ 13,797	0.23	$164	1.2%
			Dec-97	33,287	0.42	$ 13,984	0.23	$164	1.2%
			Jan-98	38,654	0.42	$ 16,184	0.23	$164	1.0%
			Feb-98	38,280	0.42	$ 16,028	0.24	$168	1.0%
			Mar-98	26,702	0.42	$ 11,292	0.24	$166	1.5%
			Apr-98	36,515	0.42	$ 15,282	0.23	$164	1.1%
			May-98	26,638	0.42	$ 11,255	0.23	$164	1.5%
			Jun-98	8,915	0.43	$ 3,844	0.25	$174	4.5%
Kuspuk--Aniak Total				**327,064**		**$ 137,783**		**$1,973**	**1.4%**
Kuspuk	Lower	School	Jul-97	600	1.73	$ 1,039	0.12	$69	6.7%
School	Kalskag		Aug-97	1,380	0.92	$ 1,264	0.12	$81	6.4%
District			Sep-97	4,320	0.40	$ 1,718	0.12	$81	4.7%
			Oct-97	5,580	0.35	$ 1,953	0.12	$81	4.1%
			Nov-97	5,520	0.35	$ 1,944	0.12	$81	4.2%
			Dec-97	4,380	0.38	$ 1,682	0.12	$81	4.8%
			Jan-98	4,320	0.38	$ 1,628	0.12	$81	5.0%
			Feb-98	5,100	0.34	$ 1,746	0.12	$81	4.6%
			Mar-98	4,080	0.40	$ 1,648	0.13	$88	5.3%
			Apr-98	4,740	0.38	$ 1,802	0.13	$88	4.9%
			May-98	3,480	1.07	$ 3,709	0.13	$88	2.4%
			Jun-98	-		$ -			
Kuspuk--Lower Kalskag Total				**43,500**		**$ 20,132**		**$901**	**4.5%**
Kuspuk	Upper	School	Jul-97	238	8.93	$ 2,125	0.12	$28	1.3%
School	Kalskag		Aug-97	1,487	1.62	$ 2,414	0.12	$81	3.4%
District			Sep-97	9,588	0.39	$ 3,758	0.12	$81	2.2%
			Oct-97	7,248	0.51	$ 3,720	0.12	$81	2.2%
			Nov-97	11,835	0.35	$ 4,188	0.12	$81	1.9%
			Dec-97	13,342	0.34	$ 4,596	0.12	$81	1.8%
			Jan-98	12,985	0.34	$ 4,407	0.12	$81	1.8%
			Feb-98	14,055	0.34	$ 4,749	0.12	$81	1.7%
			Mar-98	13,997	0.35	$ 4,844	0.13	$88	1.8%
			Apr-98	13,093	0.35	$ 4,560	0.13	$88	1.9%
			May-98	7,788	0.47	$ 3,640	0.13	$88	2.4%
			Jun-98	229	9.48	$ 2,171	0.13	$29	1.3%
Kuspuk--Upper Kalskag Total				**105,885**		**$ 45,174**		**$887**	**2.0%**

TABLE 2: Actual PCE Credits to Selected Schools Participating in the Power Cost Equalization Program, FY98									
District	Community	Customer	Month	Total Kwh Used	Rate Per Kwh	Cost WITHOUT PCE	PCE Credits Paid to Utility [1]		% of Gross Paid by PCE
							per Kwh	Dollars	
Kuspuk School District	Chuathbaluk	School	Jul-97	339	0.61	$ 208	0.35	$118	56.5%
			Aug-97	2,958	0.58	$ 1,726	0.35	$243	14.1%
			Sep-97	5,494	0.59	$ 3,222	0.35	$243	7.5%
			Oct-97	5,568	0.57	$ 3,169	0.35	$243	7.7%
			Nov-97	5,488	0.57	$ 3,124	0.35	$243	7.8%
			Dec-97	4,760	0.57	$ 2,711	0.35	$243	9.0%
			Jan-98	5,149	0.55	$ 2,823	0.35	$242	8.6%
			Feb-98	5,250	0.55	$ 2,878	0.35	$242	8.4%
			Mar-98	6,230	0.55	$ 3,413	0.35	$242	7.1%
			Apr-98	5,852	0.55	$ 3,206	0.35	$242	7.5%
			May-98	4,525	0.56	$ 2,520	0.35	$242	9.6%
			Jun-98	486	0.58	$ 281	0.35	$168	59.7%
Kuspuk--Chuathbaluk Total				**52,099**		**$ 29,281**		**$2,710**	**9.3%**
Kuspuk School District	Sleetmute	School District Facilities	Jul-97	922	0.59	$ 546	0.35	$243	44.5%
			Aug-97	1,712	0.59	$ 1,004	0.35	$243	24.2%
			Sep-97	3,263	0.59	$ 1,919	0.35	$243	12.7%
			Oct-97	3,663	0.57	$ 2,089	0.35	$243	11.6%
			Nov-97	3,580	0.57	$ 2,042	0.35	$243	11.9%
			Dec-97	3,653	0.57	$ 2,083	0.35	$243	11.7%
			Jan-98	3,778	0.55	$ 2,074	0.35	$242	11.7%
			Feb-98	4,544	0.55	$ 2,492	0.35	$242	9.7%
			Mar-98	3,505	0.55	$ 1,925	0.35	$242	12.6%
			Apr-98	3,547	0.59	$ 2,099	0.35	$242	11.5%
			May-98	2,503	0.56	$ 1,399	0.35	$242	17.3%
			Jun-98	128	0.65	$ 83	0.35	$44	53.3%
Kuspuk--Sleetmute Total				**34,798**		**$ 19,756**		**$2,712**	**13.7%**
Kuspuk School District	Stony River	School District Facilities	Jul-97	974	0.59	$ 576	0.35	$243	42.2%
			Aug-97	2,586	0.58	$ 1,510	0.35	$243	16.1%
			Sep-97	3,830	0.59	$ 2,250	0.35	$243	10.8%
			Oct-97	4,370	0.57	$ 2,490	0.35	$243	9.8%
			Nov-97	4,394	0.57	$ 2,503	0.35	$243	9.7%
			Dec-97	4,184	0.57	$ 2,384	0.35	$243	10.2%
			Jan-98	4,013	0.55	$ 2,203	0.35	$242	11.0%
			Feb-98	3,631	0.55	$ 1,994	0.35	$242	12.1%
			Mar-98	2,347	0.55	$ 1,293	0.35	$242	18.7%
			Apr-98	2,717	0.59	$ 1,610	0.35	$242	15.0%
			May-98	3,158	0.56	$ 1,762	0.35	$242	13.7%
			Jun-98	38	0.87	$ 33	0.35	$13	39.7%
Kuspuk--Stony River Total				**36,242**		**$ 20,609**		**$2,681**	**13.0%**

TABLE 2: Actual PCE Credits to Selected Schools Participating in the Power Cost Equalization Program, FY98

District	Community	Customer	Month	Total Kwh Used	Rate Per Kwh	Cost WITHOUT PCE	PCE Credits Paid to Utility [1]		% of Gross Paid by PCE
							per Kwh	Dollars	
Yukon Flats School District	Beaver	School District Facilities	Jul-97	3,424	0.66	$ 2,243	0.24	$170	7.6%
			Aug-97	6,240	0.66	$ 4,087	0.24	$170	4.2%
			Sep-97	4,240	0.66	$ 2,777	0.24	$170	6.1%
			Oct-97	7,920	0.66	$ 5,188	0.24	$170	3.3%
			Nov-97	7,280	0.66	$ 4,768	0.26	$182	3.8%
			Dec-97	8,400	0.66	$ 5,502	0.26	$182	3.3%
			Jan-98	7,040	0.66	$ 4,611	0.26	$182	4.0%
			Feb-98	6,640	0.66	$ 4,349	0.26	$182	4.2%
			Mar-98	6,800	0.66	$ 4,454	0.26	$181	4.1%
			Apr-98	6,800	0.65	$ 4,450	0.26	$180	4.1%
			May-98	3,520	0.66	$ 2,306	0.26	$179	7.8%
			Jun-98	2,320	0.66	$ 1,520	0.26	$179	11.8%
Yukon Flats--Beaver Total				**70,624**		**$ 46,255**		**$2,130**	**4.6%**
Yukon Flats School District	Stevens Village	School District Facilities	Jul-97	2,854	0.55	$ 1,570	0.14	$95	6.1%
			Aug-97	1,982	0.55	$ 1,090	0.14	$95	8.7%
			Sep-97	4,889	0.55	$ 2,689	0.14	$95	3.5%
			Oct-97	5,357	0.55	$ 2,946	0.14	$95	3.2%
			Nov-97	5,312	0.55	$ 2,922	0.14	$95	3.3%
			Dec-97	2,476	0.55	$ 1,362	0.14	$95	7.0%
			Jan-98	4,998	0.55	$ 2,749	0.14	$95	3.5%
			Feb-98	2,516	0.55	$ 1,384	0.14	$95	6.9%
			Mar-98	4,239	0.55	$ 2,331	0.13	$94	4.0%
			Apr-98	4,145	0.55	$ 2,280	0.13	$94	4.1%
			May-98	4,168	0.55	$ 2,292	0.13	$94	4.1%
			Jun-98	1,489	0.55	$ 819	0.13	$94	11.5%
Yukon Flats--Stevens Village Total				**44,425**		**$ 24,434**		**$1,137**	**4.7%**

NOTE:
(1) Schools are eligible to receive up to 700 Kwh of PCE credits per month (AS 42.45.110). For the purposes of calculating PCE credits, administrators consider all school facilities within a community as one customer eligible for one 700 Kwh credit: if a community were home to an elementary school, middle school, and teacher housing, all three facilities combined would be eligible to receive 700 kilowatt hours of credit (19 AAC 97.260, standards for customer eligibility). PCE credits calculated here are for the maximum 700 Kwh per month limit; actual Kwh used when actual Kwh usage was less than 700.

SOURCE:
Alaska Department of Community and Regional Affairs, Division of Energy, March 1999; information extracted from monthly utility reports submitted to PCE administrators for the period July 1997 through June 1998.

LEGISLATIVE RESEARCH REPORT

DECEMBER 16, 1999

REPORT NUMBER 00.022

POWER COST EQUALIZATION, 1981-1999

PREPARED BY KEVIN O'SULLIVAN, LEGISLATIVE ANALYST

You requested an update of Legislative Research Report 95.159, a legislative history of the Power Cost Equalization Program (PCE). As enacted in 1981, the program was designed to reduce the electric rates paid by rural consumers to levels comparable to those paid by consumers in Anchorage, Fairbanks, and Juneau. The program also makes grants to eligible utilities to improve the performance of the utility. Operating under four different names over the past twenty years, the program has evolved in various ways. Because 95.159 provided a detailed history for the years 1981-1995, we focus in this report on developments from 1995 to the present.[1]

Significant Changes Since 1995

An amendment to AS.42.45.110 effective July, 1999, increased the entry rate from 9.5 cents/kwh to 12 cents/kwh and decreased the consumption cap for residential customers from 700 kwh/month to 500 kwh/month. As a result, the subsides paid to rural utilities will decline. A second significant change removed commercial customers and public schools from the energy subsidy program.[2] Especially affected by this change are rural school districts who must now absorb the cost of lost PCE credits out of their operating budgets, while still meeting the requirements of AS 14.17.520 to spend at least 70 percent of their operating budget on instructional functions.[3]

During the past five years, the Legislature appropriated approximately $17 million annually to the Power Cost Equalization and Rural Electric Capitalization (PCE-REC).[4] This is in keeping with the Legislature's intent to flat-fund the power cost equalization program at a minimum of $17 million

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[1] For a detailed history of these four programs between 1981-1995, see Legislative Research Report 95.159.

[2] Sec. 5-8 ch 93 SLA 1999.

[3] For more information, see Legislative Research Report 99.086, "Use of the PCE Program by School Districts."

[4] *Statistical Report of the Power Cost Equalization Program*, Division of Energy for fiscal years 1996-1999.

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annually through the year 2013.[5] Bert Tarrant, PCE program coordinator for the Division of Energy, reports that PCE program costs without commercial customers and schools are approximately $15.7 million. If appropriations are insufficient for payment in full to program participants, statutes direct the Department of Community and Economic Development (DCED) to divide these appropriations on a pro rata basis among the utilities.[6]

The following tables summarizes the main differences in the programs over the years.

Changes in PCE Program Requirements

	FY 81 Power Production Cost Assistance Program	FY 82-FY85 Power Cost Assistance Program	FY 85-FY94 Power Cost Equalization Program	FY 94-FY 98 Power Cost Equalization and Rural Electric Capitalization Fund	FY 99-Present Power Cost Equalization and Rural Electric Capitalization Fund
Entry Rate [1]	7.65 cents/kwh	12 cents/kwh	8.5 cents/kwh	9.5 cents/kwh	12 cents/kwh
Ceiling Rate [2]	40.0 cents/kwh	45.0 cents/kwh	52.5 cents/kwh	52.5 cents/kwh	52.5 cents/kwh
Percentage of Eligible Costs Reimbursed	85 percent	95 percent	95 percent	95 percent	95 percent
Eligible Costs in Excess of the Ceiling Rate Paid	Yes	No	No	No	No
Consumption Cap for Residential and Commercial Customers[3]	None	600 kwh/month	750 kwh/month	700 kwh/month	500 kwh/month
Consumption Cap for Community Facilities	None	55 kwh/month per resident	70 kwh/month per resident	70 kwh/month per resident	70 kwh/month per resident

NOTES:
1. Entry Rate: A rural utility is reimbursed a percentage of its costs when those costs exceed the minimum amount per kilowatt hour.
2. Ceiling Rate: A rural utility is reimbursed a percentage of its costs when those costs are below this maximum but above the entry rate.
3. Customer eligibility is defined in statute and based on actual power use. State and federal offices and facilities are excluded from PCE. Recent changes to AS 42.45.110 made commercial customers and public schools ineligible for PCE credits. Residential customers are now eligible for PCE credit up to 500 kwh/month, while community facilities, as a group, continue to receive PCE credit for up to 70 kwh/month multiplied by the number of residents in the community.

SOURCES: Department of Community and Economic Development, Division of Energy (Bert Tarrant), personal communications, December 1999; Sec. 5-8 ch 93 SLA 1999; Legislative Research Report 95.159.

I hope you find this information useful. Please do not hesitate to contact us if you have questions or need additional information.

[5] Chapter 18, SLA 1993.

[6] Chapter 58, SLA 1999 transferred responsibility for administering the PCE-REC program to the Department of Community and Economic Development, Division of Energy, following the dissolution of the Department of Community and Regional Affairs. PCE pro rata reduction is required by AS 42.45.110 (l).

LEGISLATIVE RESEARCH REPORT

SEPTEMBER 19, 2005

REPORT NUMBER 06.016

POWER COST EQUALIZATION PROGRAM

BY KATHLEEN L. WAKEFIELD, LEGISLATIVE ANALYST

You asked that we update Legislative Research Report 00.022, *Power Cost Equalization, 1981-1999*, which was itself an update of an even earlier report (95.159, *Legislative History of the Power Cost Equalization Program*).

As you know, legislators established a rural electrical rate subsidy program in 1980 called the Power Production Cost Assistance (PPCA) program (now known as PCE, or the Power Cost Equalization program). The program was created to provide subsidies to utilities to reduce the electrical rates paid by rural residents to levels comparable to rates in Anchorage, Fairbanks, and Juneau. The Regulatory Commission of Alaska (RCA) determines the equalization rate for each utility, using fuel expenses (including transportation) and non-fuel expenses such as salaries, insurance, taxes, and other "reasonable costs."[1] Eligible utilities then submit monthly reports to the Alaska Energy Authority (AEA), documenting the amount of power sold.[2] AEA then calculates the amount of equalization assistance due and reimburses each utility for the subsidy the company has already provided to its customers. AEA also determines the eligibility of customers and community facilities.[3]

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[1] "Highlights of the Power Cost Equalization Program," *Statistical Report of the Power Cost Equalization Program, Fiscal Year 2004*, December 2004, p. 3.

[2] AS 42.45.115 excludes any electrical utility "whose primary source of power for sale to customers is one or more of the power projects that were part of the former initial project" from the PCE program. The "former initial project" refers to the Four Dam Pool hydroelectric facilities (Tyee Lake, Swan Lake, Solomon Gulch, and Terror Lake).

[3] For example, 3 AAC 107.270 defines "customers" as including "an eligible electric utility's residential customer of energy for a single-family or multi-family dwelling, or residential housing unit." In addition, 3 AAC 107.260 requires that customers make "timely payments" to the electrical utility. "Community facilities" include water and sewer facilities, public outdoor lighting, and other community buildings open to the public. AS 42.45.150(1).

Over the years, legislators have made a number of modifications to the program, while maintaining the initial intent of reducing rural electrical costs. The following information shows the evolution of the program:

- **FY81**: Legislators established the *Power Production Cost Assistance Program* under the Alaska Power Authority.[4] The program reimbursed utilities for a percentage of eligible power costs that exceeded the "entry rate"—85 percent of eligible costs in excess of 7.65 cents per kWh. The "ceiling rate," or maximum rate, was 40 cents per kWh—PPCA reimbursed utilities for 100 percent of costs that exceeded the maximum rate. Eligible costs included only production and transmission costs.

- **FY82**: The program's name was changed to the *Power Cost Assistance Program*. The entry rate was increased to 12 cents per kWh, and the ceiling rate was increased to 45 cents. Eligible costs were expanded to include administrative and distribution costs. Utilities received reimbursement for 95 percent of eligible costs, but no reimbursement for costs in excess of the ceiling rate. In addition, legislators imposed "consumption caps" of 600 kwh per month for residential and commercial consumers, and 55 kWh per month per resident for community facilities.

- **FY85**: The program's name was changed again, to the *Power Cost Equalization Program* (PCE). The entry rate was reduced to 8.5 cents per kWh, and the ceiling rate increased to 52.5 cents. Utilities received reimbursement for 95 percent of eligible costs, but no reimbursement for costs in excess of the ceiling rate. Consumption caps were increased to 750 kWh per month for commercial and residential users, and to 70 kWh per month per resident for community facilities.

- **FY94**: Legislators established the *Power Cost Equalization and Rural Electric Capitalization Fund* (PEC-RECF).[5] They capitalized the fund through an appropriation from the Railbelt Energy Fund. In addition, legislators stated their intent to continue to support rural electrical subsidies by maintaining the fund at a minimum of $17 million dollars each year through 2013.[6]

  The legislation also transferred responsibility for all rural energy programs from AEA to the newly created Division of Energy in the Department of Community and Regional Affairs. AEA retained responsibility for the state's hydroelectric and intertie projects, under the auspices of the Alaska Industrial

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[4] In FY91, the Alaska Power Authority became the Alaska Energy Authority.

[5] The fund allows AEA to award grants to eligible utilities for up to 75 percent of costs for small power projects designed to reduce the cost of providing electrical power. According to AS 42.45.180(b), total grants may not exceed three percent of the available fund balance in any one year. In addition to the initial $67 million appropriation from the Railbelt Energy Fund, further deposits to the fund include annual appropriations for electrical subsidies and grants, appropriations from the National Petroleum Reserve-Alaska special reserve fund, appropriations from the Power Cost Equalization Endowment Fund, interest, and "any gifts, bequests, contributions from other sources, and federal money." AS 42.45.100(b).

[6] Section 1(b), Ch. 18, SLA 1993.

Development and Export Authority (AIDEA). The PCE entry rate was increased to 9.5 cents per kWh, but the ceiling rate remained the same, as did the percentage of reimbursement. Consumption caps were reduced to 700 kWh per month for residential and commercial users, and remained at 70 kWh per month per resident for community facilities. The legislature, however, eliminated the subsidies for federal and state government facilities.

- **FY98**: Governor Knowles established the PCE Blue Ribbon Committee to "consider and recommend an overall policy on the future of PCE."[7] The committee was composed of legislators, industry representatives, and one public member. Among the committee's recommendations were the following items:

    - The legislature should extend PCE or an alternative rate support program into the future;

    - Rate support should be available only for residential consumers and for community facilities that are directly related to public health and safety; and

    - The legislature should establish a stable source of funding for the program.[8]

- **FY99**: The entry rate for PCE was increased to 12 cents per kWh, and the consumption caps were reduced to 500 kWh per month for residential users. The consumption cap for community facilities remained at 70 kWh per month per resident. Legislators abolished subsidies for commercial users and schools. The legislature approved HB 40, which reorganized several state departments, abolished the Department of Community and Regional Affairs, and transferred the agency's responsibilities to other departments.[9] Rural energy programs, including PCE, were transferred to AEA, with AIDEA oversight. Former Division of Energy staff became AIDEA employees.

- **FY01**: Legislators established the *Power Cost Equalization Endowment Fund* (PCE-RECF) to support the PCE and Rural Electric Capitalization Fund.[10] The endowment fund consists of legislative appropriations and any interest earned by the fund. Lawmakers appropriated $100 million from the Constitutional Budget Reserve Fund as the initial capitalization for the fund. The proceeds from the sale of the Four Dam Pool and the balance of the Four Dam Pool Insurance Fund were deposited into the fund in 2002, bringing the total deposits into the fund to approximately $192 million.

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[7] "Introduction," *Power Cost Equalization: Report and Recommendations of the Governor's Blue Ribbon Committee*, February 1, 1999, p. 1.

[8] "Summary of Recommendations," p. 3.

[9] Ch. 58, SLA 1999.

[10] AS 42.45.070 and 42.45.085.

The legislature has continued to appropriate funds to the PCE-RECF for the operation of the PCE program. The FY06 appropriation is $18.7 million.

Table 1 shows the changes in program provisions over the past 25 years.

Table 1: Changes in PCE Program Requirements, FY81-FY05

Program Requirements	FY81 Power Production Cost Assistance Program	FY82-FY85 Power Cost Assistance Program	FY85-FY94 Power Cost Equalization Program	FY94-FY98 Power Cost Equalization Program	FY99-Present Power Cost Equalization Program
Entry Rate [1]	7.65 cents/kWh	12 cents/kWh	8.5 cents/kWh	9.5 cents/kWh	12 cents/kWh
Ceiling Rate [2]	40.0 cents/kWh	45.0 cents/kWh	52.5 cents/kWh	52.5 cents/kWh	52.5 cents/kWh
Percentage of Eligible Costs Reimbursed	85 percent	95 percent	95 percent	95 percent	95 percent
Eligible Costs in Excess of the Ceiling Rate Paid	Yes	No	No	No	No
Consumption Cap for Residential and Commercial Customers [3]	None	600 kWh/month	750 kWh/month	700 kWh/month	500 kWh/month
Consumption Cap for Community Facilities	None	55 kWh/month per resident	70 kWh/month per resident	70 kWh/month per resident	70 kWh/month per resident

NOTES:
1. *Entry Rate*: A rural utility is reimbursed a percentage of its costs when those costs exceed the minimum amount per kilowatt hour.
2. *Ceiling Rate*: This is the maximum amount for eligible costs--under the current program, a rural utility receives no reimbursement for costs in excess of this figure.
3. In FY94, the legislature elimiated subsidies for federal and state government facilities. In FY99, the legislature eliminated subsidies for schools and commercial users.

SOURCES: AS 42.45.100-190; Alaska Energy Authority; Legislative Research Reports 95.159 and 00.022.

Over the life of the program, the state has spent $378 million for power cost equalization (this figure does not include the FY06 appropriation of $18.7 million, nor does it include power project grants from the PEC-REC fund). Table 2 shows the amount spent or appropriated for PCE by fiscal year.

Table 2: Power Cost Equalization Program Expenditures, FY1981-2006

Fiscal Year	Amount[1]	Fiscal Year	Amount
1981	$2,658.6	1994	$17,679.9
1982	$9,300.0	1995	$18,620.5
1983	$8,300.0	1996	$19,329.7
1984	$8,298.2	1997	$17,967.9
1985*	$14,128.2	1998	$18,664.2
1986	$17,532.0	1999	$18,050.0
1987	$13,787.5	2000	$14,562.2
1988	$15,000.0	2001	$16,091.6
1989	$16,823.6	2002	$15,619.7
1990	$19,715.5	2003	$15,700.0
1991	$16,747.1	2004	$15,700.0
1992	$15,029.6	2005	$15,700.0
1993	$17,533.0	*2006*	*$18,700.0*
	Total PCE 1981-2006		***$397,239.0***

Notes: 1. Amounts for FY1981-2005 are actual expenditures. Amounts for FY1981-1984 include administrative costs. FY2006 is the authorized budget amount.
* The large increase in program expenditures in FY85 was due to a reduction in the entry rate and increases in the consumption caps for residential and commercial consumers, and community facilities.

Sources: Legislative Finance Division, Historical Budgets online and Operating Budget Books ("shortforms").

I hope you find this information to be useful. Please do not hesitate to contact us if you have questions or need additional information.

LEGISLATIVE RESEARCH REPORT

APRIL 10, 2009

REPORT NUMBER 09.200

A HISTORY OF MAJOR ENERGY APPROPRIATIONS, INCLUDING THE RAILBELT ENERGY FUND

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You asked us to update Legislative Research Report (LRS) 05.206, in which we provided a history of the Railbelt Energy Fund (REF). As with LRS 05.206, in this report we provide an updated list of appropriations to and from the fund, and for other major energy-related projects. In addition, we provide a brief history of Alaska's energy expenditures and a history of the REF, as well as brief discussions of other major projects. We also include several tables that show a chronological history of major energy appropriations, appropriations to and from the REF, and expenditures for the Power Cost Equalization program.

SUMMARY

Any discussion of Alaska's energy program over the last thirty years must begin with the understanding that the program has a complicated history, and that information on the state's disparate energy projects is not available from any one source. For this report we reviewed data

from the Office of Management and Budget and Legislative Finance, reports from the now defunct Division of Energy, information from the Alaska Energy Authority, fund data from the Department of Administration, and appropriations in Legislative Finance operating budget books and the *Session Laws of Alaska*. We made every effort to ensure that the information contained in this report is as complete and accurate as possible.

Major funding for energy projects began in 1976, with an appropriation of $2.5 million to the water resources revolving loan fund. Out of that came the initial appropriations for loans for major dam projects: Green Lake, Swan Lake, Terror Lake, and Tyee Lake. In 1982, lawmakers changed the loans to grants, made additional appropriations for the projects, and also appropriated funds to purchase the hydroelectric project at Solomon Gulch.[1] The Swan, Terror, and Tyee Lake projects, along with Solomon Gulch, became known as the "Four Dam Pool." The Four Dam Pool was sold to private utility companies in 2002.[2]

In 1979, lawmakers appropriated the first funds for the Susitna Hydroelectric Project. Between 1979 and 1985, about $423 million was appropriated for Susitna. During the same period of time, lawmakers appropriated funds for the Bradley Lake Hydroelectric Project—a total of $328 million ($163 million in grants and $165 million in general obligation bonds).[3]

Between 1980 and 1984, legislators appropriated $124 million for the Alaska intertie, which runs from Willow to Healy (and which was formerly called the "Anchorage/Fairbanks intertie"). In this same time period, lawmakers created the Power Cost Equalization program in the Division of Energy. The program was to reduce electrical rates paid by rural consumers to a level comparable to the rates in Anchorage, Fairbanks, and Juneau. From 1981 to 2009, PCE expenditures totaled about $505 million.[4]

In 1986, lawmakers created the Railbelt Energy Fund (REF). The Susitna project was cancelled, and the monies appropriated for it were repealed and reappropriated to capitalize the REF. Between 1986 and 2008, a total of $468 million was appropriated to the REF, and appropriations of about $467 million were made from the REF to fund a variety of projects. Projects funded from the REF include the Healy Cogeneration Project ($55 million), the intertie reserve for the Northern and Southern interties ($100 million) and the capitalization for the Power Cost Equalization and Rural Capitalization Fund ($67 million).

In 2000, lawmakers created the Power Cost Equalization Endowment Fund to support the PCE program. The fund was capitalized with an appropriation of $100 million from the Constitutional Budget Reserve Fund, and in 2002 the proceeds from the sale of the Four Dam Pool were

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[1] The major dam projects were to provide electrical power to the following communities: Ketchikan (Swan Lake), Kodiak (Terror Lake), Sitka (Green Lake), Valdez/Glennallen (Solomon Gulch), and Wrangell/Petersburg (Tyee Lake).

[2] According to Sara Fisher-Goad and Valorie Walker from the AEA, the AEA still owns Bradley Lake. The AEA also owns a small hydroelectric project at Larsen Bay on Kodiak Island. This project was paid for through revenue bonds, and includes water system upgrades as well as hydropower generation. The AEA has tried to get the community of Larsen Bay to take over the project, with no success at this point. The AEA's projects are listed on its website at *http://www.akenergyauthority.org/projects.html*.

[3] Many of the figures used in this report are final tallies, and may not equal the total of the original appropriations for a particular project. For example, the original total for Bradley Lake was about $340 million—$175 million in general funds and $165 million in general obligation bonds, with a lapse amount of about $11.5 million. The figure we quote here is the total minus the lapse. Please note that we are not able to identify original totals in many cases, due to amendments to the original appropriations and repeals and reappropriations for different projects.

[4] This figure includes actual expenditures for fiscal years 1981-2008 and authorized budget amounts for FY2009.

deposited to the fund. As of December 31, 2008, the balance of the Fund, including invested assets was about $288.8 million.[5]

Since those first appropriations in the 1970s, Alaska has appropriated approximately $810 million for major energy projects for the railbelt, and about $1.05 billion collectively for the Four Dam Pool and PCE (this does not include the endowment fund). Railbelt projects include Susitna, Bradley Lake, the Alaska, Northern and Southern interties, and the Healy cogeneration project. These figures do not include the many small energy projects and grants across the state (for example, bulk fuel loans, generator upgrades, small hydropower projects, and weatherization projects).

The following information provides more detail on some of these major projects. In addition, Table 1 shows a brief chronological history of the major energy appropriations.

FOUR DAM POOL

The "Four Dam Pool," as its name suggests, consists of four individual hydroelectric projects: two in Southeast Alaska (Swan Lake [Ketchikan] and Tyee Lake [Petersburg/Wrangell]), one in Kodiak (Terror Lake), and one serving Valdez/Glennallen (Solomon Gulch). The projects include generation and transmission facilities. Funding for these projects began in 1976, with the initial loans for Swan, Terror, and Tyee Lakes (Chapter 237, SLA 1976). In 1981-82, lawmakers appropriated about $53 million for the purchase of the Solomon Gulch project, which was constructed by the Copper Valley Electric Association.[6] Electrical utilities purchased hydropower from these four projects through long-term power sales agreements.[7] The Four Dam Pool was owned and operated by the state through the Alaska Energy Authority (AEA).[8] According to the AEA, total funding for the Four Dam Pool was about $499 million, provided through state grants and loans (approximately $295 million in grants, $185 million in loans, and including about $19 million in interest accrued over the life of the project).[9]

In 2000, lawmakers approved the sale of the Four Dam Pool and, in 2002, the Four Dam Pool Power Agency (a consortium of the utilities that had purchased power from the dams) acquired the projects with the help of a loan from the Alaska Industrial Development and Export Authority

[5] Personal communication from Gary Zepp, Legislative Fiscal Analyst, Legislative Finance Division, April 17, 2009. Mr. Zepp can be reached at 907-465-5410.

[6] Solomon Gulch is the oldest of the Four Dam Pool projects, and the only one not built by the State of Alaska. "Alaska's Public Energy Resources," Rural Resource Agency Report 85.003207, July 1985, p. 75.

[7] The Four Dam Pool utilities are Copper Valley Electric Association, Ketchikan Public Utilities, Kodiak Electric Association, Petersburg Municipal Power and Light, and Wrangell Municipal Light and Power.

[8] Like Alaska's energy projects, the Alaska Energy Authority has a complicated history. Originally, the Alaska Power Authority (APA) was part of the Department of Commerce and Economic Development. The APA became the AEA in 1991. In 1993, the AEA was placed under the auspices of AIDEA, and in 1999 rural energy programs formerly administered by the Division of Energy, such as PCE, were transferred to the AEA. The AEA continues to act as a separate legal entity, although personnel are provided by AIDEA and the executive director serves both organizations.

[9] Sara Fisher-Goad and Valorie Walker, AEA.

(AIDEA).[10] The AIDEA loaned the consortium $77.1 million for the "purchase, closing costs and initial funding of reserves related to the acquisition of the Four Dam Pool Project."[11] In FY2008, the Four Dam Pool Power Agency received a $46.2 million grant for the Swan Lake to Tyee Lake intertie.[12]

BRADLEY LAKE

As we noted above, funding for Bradley Lake began in 1979. During the 1980s, the state appropriated about $175 million for the project. That amount was made up of a mix of general funds ($68 million), funding from the Power Development Fund ($50 million), and from the Railbelt Energy Fund ($57 million). In 1993, about $11.5 million lapsed back into the REF. The total cost for Bradley Lake was $328 million, including $165 million in general obligation bonds. Bradley Lake came online in 1991 and provides electrical power to a variety of railbelt utilities: Anchorage Municipal Light and Power, Chugach Electric Association, Golden Valley Electric Association, Homer Electric Association, Matanuska Electric Association, and Seward Electric Utility.[13]

POWER COST EQUALIZATION PROGRAM

As you know, the Power Cost Equalization program, or "PCE," was established in 1984 for the purpose of reducing electrical rates paid by rural consumers to a level comparable to the rates in Anchorage, Fairbanks, and Juneau. Precursors to the current program were the Power Production Cost Assistance and the Power Cost Assistance programs. In 1994, lawmakers created the Power Cost Equalization and Rural Energy Capitalization Fund, and capitalized it with an appropriation of $67 million from the REF.[14] Further deposits to the fund are composed of annual appropriations for electrical subsidies and grants, appropriations from the National Petroleum Reserve-Alaska special reserve fund, appropriations from the power cost equalization endowment fund, interest, and any "gifts, bequests, contributions from other sources, and federal money."[15]

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[10] "The Four Dam Pool Power Agency Loan," *AIDEA 2004 Annual Report*, p. 40, *http://www.aidea.org*. "Hydroelectric Facilities," *Alaska Electric Power Statistics 1960-2001*, Institute of Social and Economic Research, University of Alaska Anchorage, November 2003, Appendix C-1, *http://www.iser.uaa.alaska.edu/Publications/akelectricpowerfinal.pdf*.

[11] "Status of the Four Dam Pool Project and AIDEA Financing," Alaska Industrial Development and Export Authority/Alaska Energy Authority, February 8, 2005.

[12] Chapter 30, SLA 2007.

[13] *Alaska Electric Power Statistics, 1960-2001*, Institute of Social and Economic Research, University of Alaska, November 2003, p. C-1.

[14] The Rural Electric Capitalization provision allows the AEA to award grants to eligible utilities for up to 75 percent of the costs for small power projects designed to reduce the cost of providing electrical power. According to AS 42.45.180(b), total grants may not exceed three percent of the available balance in the fund in any one year.

[15] AS 42.45.100(b).

Table 2 shows the actual expenditures for PCE for fiscal years 1981 through 2008, the authorized budget for FY2009, and the Governor's Requested Budget for FY2010. The total amount allocated to the PCE program from 1981-2009 is about $505 million.

MAJOR INTERTIES

Funding for the construction of the Alaska intertie (formerly known as the "Anchorage/Fairbanks intertie") began in 1981.[16] Between 1981 and 1985, lawmakers appropriated about $124 million in general funds for the project, which runs from Willow to Healy and, in 2003, they appropriated about $20 million from the REF for an upgrade to the Teeland substation.

Lawmakers also funded other intertie projects, the major ones being the Northern, Southern, and Southeast interties and the Sutton/Glennallen intertie. The Northern intertie, which runs from Healy to Fairbanks, cost about $65 million. The Southern intertie from Anchorage to Kenai was never built—lawmakers appropriated about $47 million for the project, but the participating utilities pulled out.[17] The funds remain with the Alaska Energy Authority until they are repealed or reappropriated. The AEA has returned about $28.5 million in interest on the Southern intertie appropriation back to the State of Alaska.[18]

Lawmakers appropriated $55 million from the REF for the Sutton/Glennallen ($35 million) and Southeast ($20 million) interties in 1993. In 2000, those funds lapsed back into the REF. The Sutton/Glennallen project was cancelled, and the Southeast intertie is being built by the utilities that purchased the Four Dam Pool as part of the purchase agreement.

RAILBELT ENERGY FUND

As you know, lawmakers created the Railbelt Energy Fund in 1986. Management of the fund was assigned to the Department of Revenue, and monies were to be appropriated by the legislature for projects "to assist in meeting Railbelt energy needs."[19] Later, in 1993, lawmakers amended the statute to include expenditures for "programs, projects, and other expenditures to assist in meeting Railbelt energy needs, including projects for retrofitting state-owned buildings and facilities for energy conservation."[20] As of March 2, 2009, the unexpended and unobligated balance of the Railbelt Energy Fund is approximately $52.8 million.[21]

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[16] In the 1980s, lawmakers also appropriated funds for several smaller intertie projects, or for feasibility studies for such interties. We do not include these projects in this report.

[17] Sara Fisher-Goad and Valorie Walker, AEA.

[18] The Attorney General determined that interest on these funds should be returned to the general fund. Sara Fisher-Goad and Valorie Walker, AEA, April 11, 2005.

[19] Sec. 1, Ch. 29, SLA 1986. The "railbelt" refers to Alaska communities on the road system.

[20] AS 37.05.520 (Chapter 29, SLA 1986; amended by Chapter 18, SLA 1993 and Chapter 60, SLA 2000).

[21] Personal communication from Gary Zepp, Legislative Fiscal Analyst, Legislative Finance Division, April 17, 2009. Mr. Zepp can be reached at 907-465-5410.

The initial funds for the REF came from monies left over from the Susitna Hydroelectric Project. About $424 million was appropriated for Susitna during the early 1980s, but only about $134 million was spent on the project. When plans for the dam were discontinued, lawmakers repealed the appropriations for the Susitna project and reappropriated the remaining amounts to the REF as the initial capitalization (roughly $289.5 million).[22]

Since 1986, a total of just over $468 million has been appropriated to the REF, including interest. About $467 million has been spent from the fund for a variety of projects, including the Bradley Lake Hydroelectric project ($57 million) and the Railbelt intertie reserve ($100 million for the Soldotna-Anchorage and the Healy-Fairbanks interties).[23] In addition, funds were appropriated to the Power Project Fund for loans for the Sutton to Glennallen and Swan Lake to Tyee Lake interties ($55 million total).[24] In 1993, $67 million was appropriated to capitalize the Power Cost Equalization and Rural Electric Capitalization Fund (these were general funds appropriated to the REF for this specific purpose).

Tables 3 and 4, attached, show the details of appropriations to and from the fund.[25]

As you will note from Table 4, since 2003, lawmakers have made approximately $29.5 million in appropriations from the REF. The REF is normally not used for general government expenditures, and according to the Office of Management and Budget, projects selected for appropriations from the REF have traditionally been determined by the legislature outside the normal budget process. The Legislative Finance Division notes that the REF is generally treated as a "hands off" fund, one from which appropriations are made only with the endorsement of a finance committee chair or other high-ranking legislator.[26]

I hope you find this information to be useful. Please do not hesitate to contact us if you have questions or need additional information.

[22] Chapter 41, SLA 1985, Sections 4, 10, 12, 13, 15, 16, 17, and 18.

[23] By Sec. 2, Ch. 96, SLA 1987, $50 million in GF was repealed and reappropriated to the REF for Bradley Lake. Ch. 172, SLA 1988 appropriated an additional $7 million from the REF to Bradley Lake. In 1993, $11.5 million from the Bradley Lake project lapsed back into the REF (Sec. 7[1]-[7], Ch. 19, SLA 1993). The appropriation for the intertie reserve is contained in Sec. 159, Ch. 208, SLA 1990.

[24] Sec. 4(a) and Sec. 5(a), Ch. 19, SLA 1993. In 2000, the funds for these two projects lapsed back into the REF. The utilities originally involved in the Sutton/Glennallen intertie project withdrew and the project was cancelled. The Swan Lake/Tyee Lake intertie is being constructed by the utilities that bought the Four Dam Pool as part of the purchase agreement. Sara Fisher-Goad and Valorie Walker, AEA.

[25] Although the initial intent of the REF was to fund energy programs in the railbelt, during the early 1990s it was also used to fund a variety of capital projects across the state. As you will see in Table 2, lawmakers appropriated almost $85 million from the REF for various capital projects in 1990 and 1991, including funds for the University of Alaska ($39.5 million), the McLaughlin Youth Center ($2.5 million), and a congregate housing facility for the City of Kenai ($3.3 million).

[26] "The Alaska Railbelt Energy Fund," Legislative Research Services Report 05.041, April 5, 2005, p. 3.

Table 1: Chronological History of Major Energy Appropriations, 1976-2009 (in thousands)		
Year	**Comments**	**Amount**
1976	The first major appropriations for energy projects began in 1976, with an appropriation to the water resources revolving loan fund for energy projects.	$2,500.0
1976-1982	Initial appropriations for loans and grants for **major dam projects** (Green Lake, Swan Lake, Terror Lake, Tyee Lake), including the purchase of Solomon Gulch. (Loans were reappropriated as grants in 1982).	$185,260.0
1979-1985	Appropriations for **Susitna** Hydroelectric Project.	$423,500.0
1980-1986	Appropriations for **Bradley Lake** Hydroelectric Project (includes $165 million in GO bonds). $57 million is from the REF ($50 million of this was a funding source change from GF to REF). This project came online in 1991.	$328,000.0
1980-1984	Grants for Alaska Intertie (formerly known as "Anchorage/Fairbanks Intertie").	$124,000.0
1986	**Railbelt Energy Fund** (REF) created **Capitalization of REF.** Susitna appropriation made in 1985 repealed and reappropriated to the General Fund and then to the REF. Reappropriated unexpended, unobligated, and unencumbered prior year appropriations for Susitna to the REF.	$289,500.0
1993	Ch. 18, SLA 1993 authorized AIDEA to issue GO bonds up to $185 million for selected energy projects ($60 million for Northern Intertie, $60 million for Southern Intertie, $40 million for Southeast Intertie, $25 million for Sutton/Glennallen Intertie). No bonds were issued.	$185,000.0
1995	Northern Intertie	$65,000.0
2002	Southern, and Southeast interties, and Alaska intertie upgrade (the Southern intertie was discontinued after participating utilities withdrew from the project).[1] Sale of the Four Dam Pool	$67,000.0
2003	Eklutna project transmission line upgrade; Upgrade and Extend the Anchorage to Fairbanks power transmission intertie to the Teeland substation; Grant to Matanuska Electric Association for Lucas substation and Pioneer line extensions.	$45,600.0
2007	Alaska Energy Authority - Alcan Intertie	$3,200.0
2008	Four Dam Pool Power Agency for the Swan Lake to Lake Tyee Intertie	$46,200.0
2009	Susitna Hydro Study and Railbelt Energy Plan	$2,500.0
2009	Fire Island Wind Farm Transmission Lines	$25,000.0

Table 1: Chronological History of Major Energy Appropriations, 1976-2009
(in thousands)

Year	Comments	Amount
	Major Railbelt Projects	
	Susitna	$136,500.0
	Bradley Lake ($163 million in grants, $165 million in GO bonds)	$328,000.0
	Alaska Intertie	$144,300.0
	Northern Intertie	$65,000.0
	Southern Intertie (project cancelled--funds remain with AEA until repealed or reappropriated)	$47,300.0
	Transmission line upgrades and extentions	$88,925.0
	Total	$810,025.0
	Southern Intertie interest returned to the General Fund	$28,500.0
	Major "Off-Railbelt" Projects	
	Four-dam Pool (Solomon Gulch [Valdez/Glennallen], Swan Lake [Ketchikan], Terror Lake [Kodiak], Tyee Lake [Wrangell/Petersburg])	$545,000.0
	Power Cost Equalization--FY1981-2009	$505,200.0
	Larsen Bay	
	Total	$1,050,200.0
	PCE Endowment Fund[2]	$192,200.0

Notes: 1. "Southern" intertie: Kenai to Anchorage (project cancelled, participating utilities withdrew). "Northern" intertie: Healy to Fairbanks (owned by the Golden Valley Electric Association). "Alaska" intertie: Willow to Healy. "Southeast" intertie: Swan Lake to Tyee Lake (being constructed by the Four Dam Pool Power Agency as a condition of the sale of the Four Dam Pool).
2. The fund is not included in the total of "off-railbelt" projects because the PCE Endowment funds the PCE & Rural Electric Capitalization fund, from which appropriations are made to the PCE program. Including it would duplicate the amounts.

Sources: Alaska Energy Authority, Alaska Railroad Corporation, Legislative Finance Division, Office of Management and Budget, operating budgets, *Session Laws of Alaska*.

Table 2: Power Cost Equalization Program Expenditures, 1980 - Present			
Fiscal Year	**Amount**	**Fiscal Year**	**Amount**
1981	$2,658.6	1996	$19,329.7
1982	$9,300.0	1997	$17,967.9
1983	$8,300.0	1998	$18,664.2
1984	$8,298.2	1999	$18,050.0
1985	$14,128.2	2000	$14,562.2
1986	$17,532.0	2001	$16,091.6
1987	$13,787.5	2002	$15,619.6
1988	$15,000.0	2003	$15,700.0
1989	$16,823.6	2004	$15,700.0
1990	$19,715.5	2005	$15,634.0
1991	$16,747.1	2006	$21,885.5
1992	$15,029.6	2007	$25,459.0
1993	$17,533.0	2008	$28,400.0
1994	$17,679.9	2009	$51,000.0
1995	$18,620.5	*2010*	*$32,000.0*
	Total PCE 1981-2010		***$537,217.4***

Notes: Amounts for FY1981-2008 are actual expenditures; FY2009 are Mangement Plan figures; FY2010 are Governor's Proposed figures.

Amounts for FY1981-1984 include administrative costs; FY1985-2010 are grants only.

Sources: Legislative Finance Division, Historical Budgets online and Operating Budget Books ("shortforms"); Office of Management and Budget, FY2007, FY2008, FY2009, and FY2010 Governor's Operating Budget, *http://omb.alaska.gov/*.

Table 3: APPROPRIATIONS TO THE RAILBELT ENERGY FUND, 1986 - Present

Ch.	SLA	Sec.	Comments	Amount
29	1986	1	Create the Railbelt Energy Fund (REF).	--
41	1986	4	From the General Fund[1]	$200,000,000
		10 12 13 15 16 17 18	Reappropriations of unexpended, unobligated, and unencumbered prior year appropriations for the Susitna Hydroelectric Project to capitalize the Railbelt Energy Fund.	$89,481,023
117	1989	217(b)	Appropriation from GF to the REF for the Healy cogeneration project (contingent upon sec. 217(a) which appropriated $30 million from the REF to the GF).	$30,000,000
117	1989	219(b)	Appropriation from the GF to the REF for the Winter Sports Training Facilities reserve (contingent upon 219(a) which appropriated $5 million from the REF to the GF).	$5,000,000
19	1993	3	Balance of Railbelt intertie reserve.	$30,882,941
19	1993	4(b)	Authorization to receive repayments of principal & interest on loans from the Power Project Fund for the Sutton-Glennallen intertie project.[2]	--
19	1993	5(b)	Authorization to receive repayments of principal & interest on loans from the Power Project Fund for the Swan Lake-Tyee Lake intertie project.[2]	--
19	1993	7(1)-(7)	Various reappropriations from the Bradley Lake Hydroelectric project.	$11,500,000
19	1993	8(a)	From the General Fund.	$13,200,000
19	1993	8(b)	From the General Fund.	$66,900,000
60	2000	3	Authorization to receive interest earnings (as of 03/31/05)[3]	$21,293,354
			TOTAL APPROPRIATIONS INTO THE FUND	**$468,257,318**

Notes: 1. Sections 1 and 2 of Ch. 41 repealed prior appropriations for the Susitna Hydroelectric Project ($200 million) and the Bradley Lake Hydroelectric Project ($50 million) and returned them to the General Fund. Section 4 then reappropriated the $200 million from the Susitna project from the General Fund to the REF. Sections 10, 12, 13, and 15-18 all repealed prior Susitna appropriations and reappropriated them to the REF. 2. Sections 4(a) and 5(a) of Ch. 19, SLA 1993 appropriated $55 million from the REF to the Power Project Fund for loans for these projects. 3. Approximate earnings and interest income as of March 31, 2005. Includes total FY2005 year-to-date interest earned of $1,112,997, according to the Division of Finance.

Sources: Legislative Finance Division; Division of Finance, Department of Administration; *Session Laws and Resolves of Alaska.*

Table 4: APPROPRIATIONS FROM THE RAILBELT ENERGY FUND, 1987 - Present				
Fiscal Year	Session Law	Comments	Appropriated To[1]	Amount
1987	Sec. 1, Ch. 42, SLA 1986	Preparing a review and evaluation of Railbelt electric power alternatives.	APA	$2,500,000
1988	Sec. 2, Ch. 96, SLA 1987	Amending the funding source for the Bradley Lake Hydroelectric Project from General Fund (GF) to Railbelt Energy Fund (REF).	APA	$50,000,000
1989	Sec. 6, Ch. 172, SLA 1988	Bradley Lake Hydroelectric Project	APA	$7,000,000
1989	Sec. 293, Ch. 173, SLA 1988	Authorization to use REF monies for any GF shortfall in FY89, only in the amount needed to pay outstanding obligations and not to exceed $50 million. Such a transfer was not necessary.		$0
1990	Sec. 217(a), Ch. 117, SLA 1989	Appropriation to the General Fund (contingent upon 217(b), which appropriated GF to the REF for the Healy cogeneration project).		$30,000,000
1990	Sec. 219(a), Ch. 117, SLA 1989	Appropriation to the General Fund (contingent upon 219(b), which appropriated of GF to REF for the Winter Sports Training Facilities reserve).		$5,000,000
1991	Sec. 139, Ch. 208, SLA 1990	Various capital appropriations as Grants to Municipalities (AS 37.05.315), Grants to Unincorporated Communities (AS 37.05.317), and to state agencies		$18,732,942
1991	Sec. 139, Ch. 208, SLA 1990	Various capital projects		$6,085,500
1991	Sec. 141, Ch. 208, SLA 1990	McLaughlin Youth Center Cottage/School Replacement	H&SS	$2,500,000
1991	Sec. 143, Ch. 208, SLA 1990	Healy cogeneration project	AIDEA	$25,000,000
1991	Sec. 144, Ch. 208, SLA 1990	City of Seward for transmission line from Lawing to Fort Raymond substation	DOA	$9,500,000
1991	Sec. 145, Ch. 208, SLA 1990	Purchase of locomotives, rolling stock, and associated equipment costs (for development of Wishbone Hill coal project)	ARC	$9,000,000
1991	Sec. 146, Ch. 208, SLA 1990	Grant to the Municipality of Anchorage for the Ship Creek development project	DOA	$2,500,000

Table 4: APPROPRIATIONS FROM THE RAILBELT ENERGY FUND, 1987 - Present				
Fiscal Year	Session Law	Comments	Appropriated To[1]	Amount
1991	Sec. 147(a), Ch. 208, SLA 1990	Weatherization, energy conservation, and energy efficient residential housing incentive program	DCRA	$1,600,000
1991	Sec. 147(b), Ch. 208, SLA 1990	Weatherization and energy conservation federal match	DCRA	$600,000
1991	Sec. 148, Ch. 208, SLA 1990	Alaska home craftsman program	DCRA	$600,000
1991	Sec. 149, Ch. 208, SLA 1990	Alaska energy efficiency and retrofit program	DCRA	$2,200,000
1991	Sec. 150, Ch. 208, SLA 1990	Grant to the Mat-Su Borough for job corps facility construction	DOA	$1,700,000
1991	Sec. 151, Ch. 208, SLA 1990	Phase I design and construction of UAF natural sciences facility	UAF	$23,000,000
1991	Sec. 152, Ch. 208, SLA 1990	Phase I design and construction of UAA classroom building and land purchase	UAA	$16,500,000
1991	Sec. 153, Ch. 208, SLA 1990	Grant to the Municipality of Anchorage to reconstruct and upgrade the Alyeska Utilities water and sewer system	DOA	$2,300,000
1991	Sec. 154, Ch. 208, SLA 1990	Anchorage Economic Development Corporation	DCED	$3,800,000
1991	Sec. 155, Ch. 208, SLA 1990	Kenai Peninsula Borough solid waste disposal facility	DOA	$1,100,000
1991	Sec. 156, Ch. 208, SLA 1990	Fire training facility on the Kenai Peninsula	UAA	$1,000,000
1991	Sec. 157, Ch. 208, SLA 1990	City of Kenai for construction of a congregate housing facility	DOA	$3,300,000
1991	Sec. 158, Ch. 208, SLA 1990	Anchorage Neighborhood Housing Services for neighborhood revitalization	DOA	$1,700,000
1991	Sec. 159, Ch. 208, SLA 1990	To the General Fund, Railbelt intertie reserve, for the Soldotna-Anchorage and Healy-Fairbanks interties		$100,000,000
1994	Sec. 4(a), Ch. 19, SLA 1993	To the Power Project Fund for a loan for the Sutton to Glennallen power transmission intertie.	PPF[2]	$35,000,000

Table 4: APPROPRIATIONS FROM THE RAILBELT ENERGY FUND, 1987 - Present				
Fiscal Year	**Session Law**	**Comments**	**Appropriated To[1]**	**Amount**
1994	Sec. 5(a), Ch. 19, SLA 1993	To the Power Project Fund for a loan for the Swan Lake to Tyee Lake power transmission intertie.	PPF[2]	$20,000,000
1994	Sec. 8(c), Ch. 19, SLA 1993	To Power Cost Equalization and Rural Electric Capitalization Fund to capitalize the fund.	PCE/RECF	$66,900,000
2001	Sec. 1(a), Ch. 75, SLA 2000	Appropriations made in secs. 4 and 5, Ch. 19, SLA 1993, lapse into the Railbelt Energy Fund.		($55,000,000)
2001	Sec. 24(a), Ch. 135, SLA 2000	Reappropriates unspent balance of Sec. 145(a), Ch. 208, SLA 1990, as amended by sec. 55, Ch. 100, SLA 1997 (Alaska Railroad Corporation--$9,000,000), as follows: (1) one-half for a grant to the Mat-Su Borough for the Point MacKenzie port development and associated rail line improvements within the borough; (2) one-half to the Alaska Railroad Corporation for the purchase of locomotives, rolling stock, and associated equipment, and rail line improvements to facilitate the development of coal deposits in the Matanuska-Susitna Borough.		$0
2001	Sec. 24(b), Ch. 135, SLA 2000	Reappropriates unspent balance of Sec. 145(b), Ch. 208, SLA 1990, added by Sec. 56, Ch. 100, SLA 1997 as amended by Sec. 40(b), Ch. 2, FSSLA 1999 (Alaska Railroad Corporation), as follows: (1) one-half for a grant to the Mat-Su Borough for the Point MacKenzie port development and associated rail line improvements within the borough; (2) one-half to the Alaska Railroad Corporation for the purchase of locomotives, rolling stock, and associated equipment, and rail line improvements to facilitate the development of coal deposits in the Matanuska-Susitna Borough.		$0
2001	Sec. 24(c), Ch. 135, SLA 2000	Appropriates the interest earned on 24(a)(2) and 24(b)(2) to the General Fund on July 1 of each fiscal year.		$0

Table 4: APPROPRIATIONS FROM THE RAILBELT ENERGY FUND, 1987 - Present				
Fiscal Year	**Session Law**	**Comments**	**Appropriated To[1]**	**Amount**
2003	Sec. 78(a), Ch. 1, SSSLA 2002	Grants to Homer Electric Association (replacement power supply for Seldovia--$2 million), Golden Valley Electric Association (Parks Highway line extension--$872.0), and Matanuska Electric Association (Lucas substation and Pioneer line extensions--$500.0)	DCED	$3,372,000
2003	Sec. 78(b), Ch. 1, SSSLA 2002	Grant to the Municipality of Anchorage for the Eklutna project transmission line	DCED	$19,300,000
2003	Sec. 78(c), Ch. 1, SSSLA 2002	Upgrade and extend the Anchorage-Fairbanks power transmission intertie to the Teeland substation.	DCED/AEA	$20,300,000
2006	Sec. 42(f), Ch. 3, FSSLA 2005	The unexpended and unobligated balance of the appropriation made in sec. 24(a)(1), ch. 135, SLA 2000 (Matanuska-Susitna Borough, Point MacKenzie port development and associated rail line improvements - orginally $4,500,000) is reappropriated to the Department of Commerce, Community, and Economic development or payment as a grant under AS 37.05.315 to the Matanuska-Susitna Borough for Point MacKenzie port development and associated rail line improvements.	DCCED	$0
2007	Sec. 62(i), Ch. 82, SLA 2006	Any balance remaining in the Railbelt energy fund (AS 37.05.520) and interest earnings of the fund, after the appropriations made in (a) - (h) of this section and not to exceed $800,000, is appropriated to the Department of Commerce, Community, and Economic Development, Alaska Energy Authority, for the study of the Railbelt Electrical Grid Authority, an independent system operator, to manage and dispatch electric power on the Railbelt grid. Governor Murkowski vetoed Sections (a) - (h).	DCCED	$0
2009	Sec. 10, Ch. 29, SLA 2008	Purchase of Back-up generators for Seward (AS37.05.315)	DCCED	$2,000,000
2009	Sec. 13, Ch. 29, SLA 2008	Susitna Hydro Study and Railbelt Energy Plan	DCCED	$2,500,000
2009	Sec. 13, Ch. 29, SLA 2008	Fire Island Wind Farm Transmission Lines	DCCED	$25,000,000

Table 4: APPROPRIATIONS FROM THE RAILBELT ENERGY FUND, 1987 - Present

Fiscal Year	Session Law	Comments	Appropriated To[1]	Amount
2009	Sec. 69, Ch. 29, SLA 2008	The unexpended and unobligated balance, not to exceed $10,000,000, of the appropriation made in sec. 78(c), ch. 1, SSSLA 2002 (Alaska Energy Authority, upgrade and extend the Anchorage to Fairbanks power transmission intertie to Teeland substation - $20,300,000) is reappropriated to the Department of Commerce, Community, and Economic Development, Alaska Energy Authority, for Alaska intertie static VAR compensators and tower upgrade and repair.	DCCED	$0
		Total Appropriations from the Fund[3]		**$466,590,442**
		Fund Balance		***$1,666,876***

Notes: 1. The legend for these abbreviations is as follows: AEA, Alaska Energy Authority; AIDEA, Alaska Industrial Development Authority; APA, Alaska Power Authority; ARC, Alaska Railroad Corporation; DCED, Department of Commerce & Economic Development; DCRA, Department of Community & Regional Affairs; DOA, Department of Administration; PCE/RECF, Power Cost Equalization and Rural Electric Capitalization Fund; PPF, Power Project Fund; UAA, University of Alaska Anchorage; UAF, University of Alaska Fairbanks.
2. These appropriations were made to the Power Project Fund, from which loans were made for the intertie projects (Section 4, Chapter 1, SLA 1993).
3. This amount does not include the "CBR sweep"--general fund subaccounts (one of which is the Railbelt Energy Fund) are automatically "swept" into the Constitutional Budget Reserve Fund (CBRF) to meet the requirements of Article IX, Sec. 17(d) of the Alaska Constitution, which requires that withdrawals from the CBRF be repaid. The FY2004 sweep was transferred back to the subaccounts from which it came by Section 61(d) of Chapter 159, SLA 2004.

Sources: Legislative Finance Division; Division of Finance, Department of Administration; *Session Laws and Resolves of Alaska.*

MDC

Minto Development Corporation

PO Box 70408
Fairbanks, AK 99707-0408

201 First Avenue, Suite 120
Fairbanks, AK 99701

907.452.8251 xt.7001
fax: 907.451.1561

February 13, 2012

Representatives Bryce Edgmon, Bob Herron, Neal Foster, & Cathy Munoz
Alaska State Legislature
State Capitol, Room 416
Juneau, AK 99801-1182

- Sent via email - Bryce_Edgmon@legis.state.ak.us

RE: Support Return of Power Cost Equalization V27-LS1107-A

Dear Representative Edgmon, et al,

The prolonged period of high fuel and energy costs has had a tremendous impact on rural Alaska. School district budgets have been forced to shift funding from education costs to cover the cost of heating fuel. Businesses have seen freight costs skyrocket and find they have to charge outrageous prices for staple goods just to break even. The strain has been especially poignant this past winter as bitter cold gripped much of the interior for an extended period.

Allowing power cost equalization to again assist the schools and rural stores lower their energy costs will greatly help to provide services and products to the people of rural Alaska. This legislation is very important, and we support your efforts to return PCE to the 1998 levels.

In addition, we hope that village councils that provide electric power generation, water and sewer as well as other public services are also included in the list of entities that will become eligible for PCE under this bill.

Thank you for the good work you do, as I remain,

Respectfully,

Marjorie Grunin

Marjorie Grunin
General Manager

Cc: Alaska House of Representatives

BRISTOL BAY NATIVE ASSOCIATION
P.O. BOX 310
DILLINGHAM, ALASKA 99576
PHONE (907) 842-5257

Friday, March 16, 2012

Representative Bryce Edgmon
House of Representatives
State Capitol, Room 416
Juneau AK, 99801

Tribal Councils Served by BBNA:
Aleknagik
Chignik Bay
Chignik Lagoon
Chignik Lake
Clarks Point
Curyung
Egegik
Ekuk
Ekwok
Igiugig
Iliamna
Ivanof Bay
Kanatak
King Salmon
Kokhanok
Koliganek
Levelock
Manokotak
Naknek
New Stuyahok
Newhalen
Nondalton
Pedro Bay
Perryville
Pilot Point
Port Heiden
Portage Creek
South Naknek
Togiak
Twin Hills
Ugashik

RE: Letter of Support for House Bill 294, "Returning Power Cost Equalization Program to 1998 Levels"

Dear Mr. Edgmon,

The Bristol Bay Native Association is writing to express support of House Bill 294 and its intent to return the Power Cost Equalization program to its 1998 levels.

The high and volatile price of energy is a serious issue for Bristol Bay. The average price of electricity for residential customers is .5967 per kWh, and we anticipate rates to only increase - the majority of electric utilities in the region are powered by diesel-fired generators. The high rates impact all payers, including schools and businesses, and any assistance to help lower their energy expenses would greatly help with the costs for goods and services.

In general, we recognize the critical need for energy assistance – it is the only way to deliver an immediate solution to a long-term and pervasive problem. We also recognize the importance of pursuing solutions to help fix the problem including, conservation and alternative energy projects that help offset the need for fossil fuels.

The Bristol Bay Native Association appreciates your backing of policies and programs that support energy assistance, and again would like to express our support of House Bill 294.

Sincerely,

Ralph Andersen
President & Chief Executive Officer

Cc: Senator Gary Stevens
Senator Lyman Hoffman
Representative Bryce Edgmon
Representative Alan Austerman

The Aleutian Pribilof Islands Association, on behalf of the 13 federally-recognized tribes and four Head Start sites in our region, wish to thank Representative Edgmon, the co-sponsors of House Bill 294.

It is important that Head Start programs be included as a part of the school system and the Power Cost Equalization Program be made available to rural Head Start programs regardless of if they are housed in school district buildings, standalone Head Start Facilities or utilized space in a tribal or other community facility. Rapidly escalating electrical costs have directly impacted rural Head Start programs ability to provide for basic program needs such as Health, Safety oversight and nutritional services. Inclusion of the Head Start in the PCE program will allow resources to return to providing for these basic and required services for Alaska's most vulnerable citizens, our children. We are encouraged by this bill and strongly urge it passage.

Testimony on HB 294 to the House Energy Committee February 14, 2012

Thank you Mr. Chairman,

My name is Robert Venables, Energy Coordinator for Southeast Conference (the State's regional development organization for southeast Alaska and the federally recognized Economic Development District).

Southeast Conference has worked since 1958 to advance the collective interests of the people, communities and businesses of the region with a mission to help develop strong economies, healthy communities and a quality environment in Southeast Alaska. Our Energy Committee continues to bring focus to the need to develop our vast renewable resources and displace diesel dependency – especially in our rural communities devastated by high energy costs, unemployment and outmigration.

And we thank the State Legislature for efforts to date that will bring about the long-term improvements in developing those renewable energy resources that will diminish, and hopefully someday displace the need for PCE as well.

But that day is not here yet. There are still communities with decimated economies that need help now. Businesses are hurting in rural communities like Hoonah – and they are disappearing in communities like Angoon and Kake. The costs of operating our schools here in southeast continue to increase in an era of diminished federal support. This legislation would be a life-saver to school districts and businesses in our most needy communities.

Perhaps HB 294 should be called the "Back to the Future" bill. It does not seek to establish a new program, but restores back to what was the original intent of the PCE program and give rural businesses a future and possibly survive. The program was understandably cut back during the days of $9/barrel oil. That is not the case today with oil prices well above historic averages.

HB 294 can help make a difference – and help now as we all work toward better long-term solutions. Thank you, Mr. Chairman for the many efforts you all are making on our region and state's behalf and for this opportunity to provide comment.

I am available for any questions.

AVEC
ALASKA VILLAGE ELECTRIC COOPERATIVE

February 14, 2012

House Energy Committee

Re: AVEC Testimony on HB 294

Honorable Committee Members,

Alaska Village Electric Cooperative would like to express support for HB 294, which seeks to restore Power Cost Equalization benefits to levels that existed before 1999.

PCE was established in 1984 in an effort to bring the cost of electricity to rural Alaskans – both households and businesses – to a level more or less equal to that enjoyed by urban Alaskans. This benefit was extended to the first 700 kWh for all non-government consumers.

In an effort to reduce the cost of the program, it was trimmed back several times by the legislature – first to reduce the number of beneficiaries by eliminating all but the first meter owned by a consumer, later to reduce the number of eligible kWh and then to eliminate commercial customers, and finally to increase the floor from the original 8 cents per kWh. The floor is now around 14 cents.

The cumulative impact of these changes over the years has resulted in the number of eligible kWh (and their associated cost) being reduced by about half. HB 294 seeks to restore the eligible kWh from the current 500 to the original 700 kWh and to restore eligibility to commercial customers.

Although it may appear that a 700 kWh benefit is of negligible impact to commercial customers, this is not the case. This would be an extremely meaningful benefit for thousands of Alaskans who are operating very modest businesses in their communities – creating jobs and multiplying the spending power of local dollars.

AVEC communities account for about one third of the state's PCE benefits - $11.3 million in CY2011. Analyzing our billing records for last year, we calculate that increasing the eligible kWh and adding back commercial consumers will result in an additional $4.28 million in PCE to our communities. If the ~100 school facilities are also included, that would add another $227,000, for a total increase of 40% to the program as it currently stands.

In FY10, the total cost of generating electricity in the PCE communities amounted to $157.6 million. PCE provided $30.6 million – less than 20%. Restoring part of the benefit that has been eliminated over the last two decades will result in the program cost increasing to about $43 million, still only 27% of the cost of delivering electricity in rural Alaska.

Your support is strongly encouraged.

Sincerely,

Meera Kohler
President and CEO

4831 Eagle Street * Anchorage, Alaska 99503 * Phone (907) 561-1818 * Toll-Free (800) 478-1818 * Fax: 907-562-4086 * www.avec.org

Statement by - Ed Phillips on Power Cost Equalization -- House Bill 294

Good afternoon. My name is Ed Phillips and I live and own a hotel in Hoonah I want to first thank you for providing me with this opportunity to speak and more importantly for having this conversation. . I am encouraged by House Bill 294 as it could most rapidly relieve some of the economic hardship plaguing diesel electric communities. I believe that left unaddressed, for economic reasons our communities will eventually disintegrate.

It may initially seem inconsistent but I also believe that the governments focus should continue to lean toward energy conservation. While naturally struggling with increasing electric bills the majority of our residents have little understanding where their energy is going or how to reduce consumption. A "weatherization" like program that goes directly into homes and identified wasteful equipment while helping to identify and possibly provide alternative solutions would ultimately reduce everyones costs. To help put it in perspective - A great deal on a $20 standard electric heater could cost over $700 a month to operate in one of our communities. In conversations with people it seems entirely possible that there could also be serious unidentified faulty electrical problems. A simple thing like a loose neutral or a defective outlet or device could also be needlessly wasting energy & jeopardizing lives. Solving these problems takes money and these electric customers are all too frequently barely able to pay their electric bills let alone solve the underlying problems. This situation is especially acute with our businesses.

After 12 years of struggling with energy costs operating a 13,000 square foot hotel in Hoonah I am especially relieved to hear that PCE eligibility may be returned to businesses. I believe that perpetuating this clearly unequal "Equalization" is "penny wise and pound foolish" and far more harmful to our communities than you may imagine. To be sustainable a community must have employment and financially stressed businesses have no choice but to reduce employment. Reduced jobs, services and goods available within the community are unavoidable. As idle time and frustrations mount social problems flourish along with all of its ramifications. In other words high energy costs have created a destructive progression that will not only destroy growth in our communities but also seriously stifle the growth of our State. Ultimately, the PCE inequality will increasingly concentrate people where energy is affordable and seriously undermine the growth of our vast State along with access to its abundant resources.

The best hope for decreasing the per KWH cost in our communities is by increasing the economies of scale for the utilities but that's not possible unless businesses are ennervated. That is impossible so long as vital electrical costs are toxic to business. The current strategy also causes the State to pay more subsidy per KWH while the communities progressively suffer. Stabilizing the cost of electricity is the one thing that government can do to help turn things around in our communities.

Obviously a single 700 KWH eligibility allowance would be a good start. Despite my best efforts to conserve the lodge averages 8,500 KWH per month so all businesses are certainly not equal. Nonetheless HB 296 would provide at least some welcome relief while resurrecting the

relationship. That way the State could be tracking and studying business consumption and also be best able to respond to save businesses and our rural communities if catastrophic price increases occur due to supply volatility.

It is both ironic and most opportune that the very thing that makes the State so fabulously rich is precisely what ails our communities. It would be quite logical and certainly fair for the Legislature to take some of the States good fortune and counter this ill effect directly caused by high oil prices. It should be considered nothing more than "fighting fire with fire".

Please, do not assume that I am being negative when I honestly strive to be more realistic than anything. I am hopeful that you will care about us when it is so easy to be "out of sight out of mind". You and the resources you control are the only hope for our businesses and communities. It is my hope that you will begin to realize that some of the surplus that you are considering using is to some degree born by the exclusion of businesses from PCE. That Power Cost "Equalization" could be made true and that our communities would have renewed hope for sustainable self-sufficiency as at least in the short term PCE appears to be our only hope… Ultimately with increased recognition of the true cost of the "temporary" PCE program will help spur the development of the energy conservation projects that would finally solve the underlying problems thus eliminating the need for the PCE program and burden to the State. Thanks.

Ed Phillips

(907) 209-4806

Adam Berg

From: Jim <jimer53@starband.net>
Sent: Tuesday, February 28, 2012 8:45 PM
To: Adam Berg
Subject: I am in support of HB 294

Follow Up Flag: Follow up
Flag Status: Completed

Dear Representative Adam Berg,

My name is James Erickson and I live in a rural community in southeast Alaska, Hoonah. I am a business owner.

It is my hope and prayer that one day soon the great state of Alaska will connect us all to a electrical intertie and I can live as an equal [rate payer] to some larger communities and pay a fair and equitable fee for electric power. And that we go ahead with such projects that we seem to just talk about right now such as Geothermal, wind, tidal and current power. And certainly the Hydro projects that seem to be lingering in thoughts and future plans.

I am hostage to diesel generators for power provided by IPEC southeast.

Being a small business owner I am at a strain every month to pay my electric bill; especially hard during the winter months when our customer base is little to nothing. My rates are currently at $0.61 and I have to pay regulatory costs and fuel surcharges, local taxes on top of that fee. If I am a day late for payment additional fees apply.

I pray that you and others will support HB 294 for at least a temporary fix. Small business's can't go on or be competitive in today's economy under this extreme cost hardship we endure. Your help is greatly needed and would be so appreciated with approval of this legislation.

Keep in mind that I employ 4 people (with family) during the winter months and twice that during the summer months when Alaska comes alive with activity. My business is every bit as important to them as it is to me and my wife and family, not to forget the support business structure.

On top of my electrical rates, I still have to buy heating oil to run the furnace and that is equally as bad as we all know. Energy is taking us down.

Finally, I live in hopes that some day our governing body will recognize that cheap and affordable power will propel our state into a global contender in business and exports. So many nations have done this from China to Norway and beyond. I know we can too as "Alaska".

I also believe energy is the chief reason so many of our younger people leave home and never come back to the state they grew up in.

Back to the point, Alaska needs to have PCE for small business to help us get by this struggle. HB 294 is good.

Thank you.

James Erickson - The Office Bar, LLC
PO Box 366
Hoonah, Alaska 99829

City of Hoonah
P.O. Box 360 Hoonah, AK 99829 (907) 945-3663 Fax (907) 945-3445

RESOLUTION NO. 12-03-05

A Resolution Expressing Support for House Bill 294 Relating to the Power Cost Equalization Program

WHEREAS, the entire community of Hoonah is dependent upon an electrical supply currently generated from diesel fuel, which is very costly to all consumers in our community; and

WHEREAS, the current structure of the Power Cost Equalization does NOT provide assistance to all users of such costly electricity including schools, and businesses; and

WHEREAS, communities throughout Alaska that rely on diesel generated electricity are in great need of immediate relief from the high cost of diesel generated electricity; and

WHEREAS, under the provisions of House Bill 294, the PCE program will raise the ceiling from 500 to 700 kilowatt-hours per month for customers under PCE and also add customers currently not eligible for PCE such as schools and businesses.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF HOONAH, ALASKA: that the City of Hoonah fully supports House Bill 294 and urges passage by the Alaska Legislature and signature by the Governor.

PASSED AND APPROVED THIS 13 **DAY OF** March **2012.**

Mary L Erickson

Seferino Villarreal, Mayor of City of Hoonah

ATTEST:

Alice L Williams

Alice Williams, City Clerk

VOTING:

Steve Brown	✓ yes	___ no
Mary Erickson	✓ yes	___ no
Alan Fisher Sr.	✓ yes	___ no
Nadine Morrison	✓ yes	___ no
Chris Erickson	✓ yes	___ no
Hope Anderson	___ yes	___ no

Alaska Energy Authority

Endowment Fund Analysis of Estimated Out-Year Investment Earnings

For purposes of preparing PCE fiscal notes

	Actuals			Estimated Out-Years					
Fund Balance:	**FY2010**	**FY2011**	**FY2012**	**FY2013**	**FY2014**	**FY2015**	**FY2016**	**FY2017**	**FY2018**
Beginning Balance	303,354,399	320,713,602	364,529,375	777,929,917	810,867,546	835,626,659	851,477,813	858,213,715	863,823,457
Fund Transfers In	-	-	400,000,000	-	-	-	-	-	-
Fund Transfers Out - to AEA	(20,892,700)	(23,673,600)	(23,510,600)	(22,875,769)	(34,140,701)	(45,577,626)	(56,569,896)	(58,286,014)	(59,390,758)
Projected Annual Investment Earnings *	38,386,794	67,651,024	37,126,642	56,056,398	59,150,577	61,684,300	63,563,340	64,154,981	64,624,995
Management Fee - Dept of Rev	(134,891)	(161,651)	(215,500)	(243,000)	(250,763)	(255,520)	(257,541)	(259,225)	(260,717)
Ending Balance	320,713,602	364,529,375	777,929,917	810,867,546	835,626,659	851,477,813	858,213,715	863,823,457	868,796,977
	320,713,602	364,529,375							
**Return on Investment earnings - Asset AllocationTarget is 7%*			7.0%	*					
Estimate of Appropriations to PCE program from Endowment Fund									
Average Monthly Market Value Previous 3 years				** 326,796,704	487,724,298	651,108,946	808,141,374	832,657,339	848,439,395
Available for PCE Program (computed at 7% of avg. monthly mv of the fund for the prev 3 fiscal years)				22,875,769	34,140,701	45,577,626	56,569,896	58,286,014	59,390,758

** FY13 avg mmv obtained from Dept of Revenue

-0.0300%

POWER COST EQUALIZATION

Report and Recommendations

Of the

Governor's Blue Ribbon Committee

February 1, 1999

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INTRODUCTION

The Power Cost Equalization program has paid a portion of the electrical bills of rural consumers since 1985. During this period, the PCE budget has averaged about $17.5 million per year. In 1993, the State legislature established a Power Cost Equalization and Rural Electric Capitalization Fund (the "PCE Fund") with an appropriation of $66.9 million, and also enacted the following policy statement:

> Ch. 18, SLA 1993, Sec. 1. "FINDINGS AND INTENT. (a) The legislature finds that adequate, reliable, electric service at affordable rates is a necessary ingredient of a modern society and a prosperous developing economy. The legislature further finds at the current stage of social and economic development in the state, direct participation by the state is necessary to assist in the development of a regional electric transmission infrastructure and to assist in holding rates in high cost service areas to affordable levels.
>
> (b) The legislature recognizes the high cost of electric power in rural Alaska and intends that funding for power cost equalization from the general fund and from the power cost equalization and rural electric capitalization fund remain at a minimum of $17,000,000 annually through the year 2013. The legislature further intends that this long-term commitment to the power cost equalization program will permit and encourage the electric utility industry and its lenders to develop the plans, make the investments, and take other actions that are necessary or prudent to meet the utility needs of residents in rural Alaska."

Over the last several years, PCE outlays have been drawn exclusively from the PCE Fund, which will be nearly exhausted by the end of FY99. For PCE to continue beyond FY99, a renewed commitment will be needed by the 1999 legislature and by the Governor.

In anticipation of this pivotal legislative session, the Governor convened a Blue Ribbon Committee to consider and recommend an overall policy on the future of PCE as well as specific proposals to implement that policy. The Committee membership was designed to reflect a variety of institutional perspectives by including members from the legislature, the public utilities commission, the Anchorage chamber of commerce, rural consumers, rural utilities, and the State's industrial development agency. The Committee membership (in alphabetical order) is as follows:

Blue Ribbon Committee Membership

The Honorable Al Adams
Alaska State Senator

Mr. Robert Beans, Chairman
Alaska Village Electric Cooperative, Inc.

Mr. Sam Cotten, Chairman
Alaska Public Utilities Commission

Mr. Joe Griffith, Chairman
Anchorage Chamber of Commerce

Ms. Nancy James
Consumer representative from Ft. Yukon

Mr. Robert Martin Jr., (former) General Manager
Tlingit & Haida Regional Electrical Authority

The Honorable Drue Pearce
Alaska State Senator

Mr. Walter Sapp, representative
Four Dam Pool Project Management Committee

Mr. Randy Simmons, Executive Director
Alaska Industrial Development and Export Authority

Mr. Dewey Skan, President
Rural Alaska Community Action Program, Inc.

Mr. Eric Yould, Executive Director
Alaska Rural Electric Cooperative Association, Inc.

Beginning in January 1998, the Committee reviewed the history, structure, and impact of PCE, the organizational and cost structure of rural electric utilities, and proposals that have been made to reduce rural power costs. The Committee then returned to the task of developing policy and program recommendations with respect to the PCE program.

SUMMARY OF RECOMMENDATIONS

The Committee has adopted the following recommendations:

1. PCE or an alternative rate support program for high cost service areas should be extended into the future.

2. Such rate support should be available only for:

   A. A "lifeline" supply of electric power for residential consumers. A lifeline supply is defined as one-half of the statewide average consumption per household each month. While this amount varies over the course of a year, the average monthly lifeline supply would be approximately 350 kWh.

   B. Electric power for community facilities that are directly related to public health and safety.

3. A stable source of funding for PCE or an alternative rate support program should be established with the following major components:

   A. 60% of the annual debt service paid to the State by the Four Dam Pool – this would include the 40% now allocated to PCE plus the 20% now allocated to the Power Project Fund loan program.

   B. $20 million appropriated by the 1993 legislature as a loan for the Swan/Tyee intertie, based on a proposal from Ketchikan Public Utilities to forego the loan in exchange for State bonding of Swan/Tyee intertie costs.

   C. Proceeds of a universal service fund to be created from a surcharge on all electricity sold statewide by public utilities.

4. A statewide organization or agency should be designated to establish standards for rural electric utilities with respect to financial management, physical plant, and system operations. No rural electric utility should continue to receive rate support or capital project grants from the State unless it is in compliance with these standards, is making clear and continuing progress in attaining compliance, or has entered into an agreement with an existing utility or utility organization whose operation is consistent with the standards.

All Committee members recognize the challenge in gaining a consensus on future program funding as well as the amount of future benefits. For this reason, several options are presented in this report for consideration by the Governor and the legislature:

OPTION 1: Universal service fund.

1A. A lifeline supply of power is made available at 150% of the statewide average residential rate. (The 150% level is estimated at 17.0 cents per kWh.)

1B. Same as 1A except the lifeline rate is set at 100% of the statewide average residential rate. (The 100% level is estimated at 11.3 cents per kWh.)

OPTION 2: General Fund endowment / extend modified PCE through 2013.

OPTION 3: Declining general fund appropriations / extend modified PCE through 2010.

OPTION 4: Further explore the potential for federal funding of PCE or an alternative rate support program.

The potential funding options were debated at length by the Committee and ultimately put to a vote. Included in Attachment 1 are the questions included on the Committee ballot and the ballot results. Key results are as follows:

- A majority of Committee members recommend the creation of a universal service fund to provide limited rate relief in high cost service areas.
- Of the 7 members favoring a universal service fund, a majority would set the lifeline rate at 150% of the statewide average residential rate.
- Each of the options listed above is believed by a majority of the Committee members to be worthy of further consideration by the Governor and legislature.

DISCUSSION OF RECOMMENDATIONS

Recommendation #1 – PCE or an alternative rate support program for high cost service areas should be extended into the future.

A. Economic growth and development in rural Alaska.

For many years and in many different ways, both the State and federal government have consistently carried out a policy of helping to build up and improve the basic infrastructure of Alaska's rural villages. Examples of this commitment include continuing investments in local schools, water and sanitation facilities, housing, airports, harbors, roads, health care, bulk fuel storage, communications, and a host of other public facilities. These financial commitments make sense only on the belief that rural communities will be economically viable and self-sustaining in the future. This has been the basis of State and federal policy with respect to rural Alaska for many years. To abandon PCE at this stage of development in rural Alaska would be contrary to the long-standing State and federal policy of helping rural Alaska during its difficult transition to a modern, self-sustaining economy.

B. Affordable power is a necessity.

The Committee believes that electric power is a necessity which should be available and reasonably affordable to everyone living in an established community. For example, new housing units financed by the federal Department of Housing and Urban Development (HUD), which are increasingly common throughout rural Alaska, are essentially uninhabitable without electric power to keep pipes from freezing, to run fans and pumps for space heat, and to operate other housing essentials such as refrigerators, freezers, and lights. In addition, new public infrastructure projects financed by State and federal governments are equally dependent on electric power – pumps for water and sewer facilities, pumps for fuel transfers and dispensing, or heating and lighting systems for local schools. Very little of this makes sense if electric power is not available and affordable throughout the expected life of these facilities.

But in most of rural Alaska, electricity is not reasonably affordable because the cost of service is high while average cash incomes are low. There are three approaches the State can take to help make rural power more affordable:

1. Increase personal income through economic development or increased transfer payments. The Committee assumes, however, that a major advance in economic development on a broad scale is not something that the State can quickly bring about and that significant increases in transfer payments are not likely to occur.

2. Reduce rates directly through PCE or an alternative rate support program.

3. Reduce the actual cost of generating and distributing power. Among the possible cost reduction strategies are the following:

   a. Utility mergers to create economies of scale.

   b. Consolidated fuel purchasing to reduce fuel costs.

   c. Increase the efficiency of diesel generators.

   d. Upgrade distribution systems to reduce line losses.

   e. Replace diesel with alternative energy where warranted.

   f. End use conservation.

   A working paper prepared for the Panel entitled "Options for Reducing Rural Power Costs" is included as Attachment 2. A number of these options continue to hold promise for long-term reduction in power costs, and the Committee believes that aggressive efforts to pursue them should accompany any extension of a rate support program.

   The Committee is also aware, however, that none of these cost reduction strategies are new and that all have practical limitations. For example:

   - Utility mergers. The data suggest that electricity rates for a single-village utility are likely to go up initially rather than down if it merges with a multi-village system, despite the benefit of administrative economies of scale. This is because the multi-village utility is more likely to budget for such fundamentals as plant depreciation, preventive maintenance, and insurance. In addition, the multi-village utility is more likely to finance needed investments in physical plant, and to recover the associated debt service in its rates, while the single-village utility is more likely to obtain

government grants when equipment replacement can no longer be postponed.

- Consolidated fuel purchasing. If this were to reduce delivered fuel costs for a given utility by 25 cents per gallon – a generous assumption on fuel cost savings – and if the diesel generating efficiency for the utility were 12 kWh per gallon – roughly the average for all PCE utilities – then the reduction in the cost of power would be about 2 cents per kWh. While certainly valuable, savings of this magnitude would have a relatively small impact on the power cost differential between urban and rural Alaska.

- Alternative energy. While established alternatives such as small hydro should be pursued where favorable prospects exist, and while developing technologies such as wind and fuel cells should be further tested and improved, there is little evidence that these alternatives will reduce power costs in the near future on an unsubsidized basis. In those limited cases where alternative energy projects can result in lower rates, the reason can most often be traced to the use of government grants or other favorable project financing.

The Committee concludes that there is no utility cost reduction program that can begin to provide the near-term impact that PCE has on utility rates. For power to be widely affordable in rural Alaska within the foreseeable future, there is no practical alternative to direct rate reduction through PCE or an alternative rate support program.

C. Eliminating PCE would create financial hardship.

There is an additional reason for the Committee's basic recommendation eliminating PCE would create financial hardship for many rural families. If further budget reductions are needed to match sustainable revenues, the State should avoid targeting the population that, overall, is least able to afford it. At the present time, the average PCE benefit per residential customer is about $550 per year.

The Committee retained Prof. Scott Goldsmith of ISER to examine the likely impact on rural consumers, rural utilities, and village economies if PCE were eliminated and no other program were established to take its place. The Executive Summary of his report, "The Economic Significance of the Power Cost Equalization Program," is included in Attachment 3, and the full report is available under separate cover. Key findings from the report are as follows:

- All but 8 of the 190 communities that receive PCE have populations below 1,000. The median population size is 264.

- For the median (or "typical") community, average household income is $35,203 compared with $65,054 for non-PCE communities.

- The cost of electricity in the typical PCE community is $.42 per kWh compared with about $.10 per kWh in Anchorage. After accounting for PCE assistance, residential customers in PCE communities still pay about $.20 per kWh – roughly twice the Anchorage cost.

- Average residential consumption in the typical PCE community is 3,921 kWh per year, or 51% of the Anchorage average.

- Eliminating PCE would immediately result in higher electricity prices. Higher prices would cause a reduction in electricity usage. Lower usage would lead, in turn, to additional rate hikes as utilities try to cover fixed costs with a smaller sales base.

- For a representative village like Elim – population 281 – eliminating PCE would be expected to have the following impacts:

  i. The residential price of electricity would increase 190 percent – from $.19 to $.55.

  ii. Average residential consumption would fall by 38 percent – from 4,202 kWh per year to 2,608 kWh per year.

  iii. The average monthly residential bill would increase by 80% – from $66 to $119.

- The financial viability of rural electric utilities without PCE depends on how sensitive electricity sales are to price increases:

  i. If doubling the price led to a 20% decrease in consumption, most rural utilities are projected to survive although with much higher prices and lower sales.

  ii. If doubling the price led to a 30% decrease in consumption, utilities in half the communities now served by PCE are projected to become financially insolvent.

Recommendation #2 – Limit rate support to "lifeline" residential usage equal to one-half of the statewide average consumption per household each month, and to community facilities that are directly related to public health and safety.

The Committee recommends that future rate support be limited only to the most essential uses of electric power. The reasons for this are both philosophical and practical:

- Although electric power is a necessity that should be affordable in every established community, a key principle of economic efficiency and of utility regulation is that prices should vary in proportion to actual costs. Excessive rate support sends the wrong price signals to consumers and reinforces dependence on continuing subsidy.

  Limiting rate support to essential usage cuts a middle path between these two objectives: power is available at a lower price for necessities but is otherwise priced at its full cost. Because consumers will more often be faced with full cost power at the margin of use, incentives will be strengthened both for end-use conservation by consumers and for cost reduction by utility management.

- In view of the expected decline in oil revenues, it will be increasingly difficult to obtain rate support funding for discretionary electrical usage. It is the Committee's judgment that continued funding for PCE or an alternative rate support program will require that all such assistance be focused on the most basic power requirements in high cost service areas.

Implementing this recommendation would require the following changes to the existing PCE program:

	Estimated Annual Reduction In PCE Requirement
• Remove commercial customers from program eligibility.	$2.6 million
• Reduce the monthly cap for eligible usage from 700 kWh to one-half of the statewide average consumption per household each month.	$3.7 million
• Limit the definition of community facilities to those that are directly related to public health and safety.	$1.0 million
Total Estimated Reduction	$7.3 million

A. Remove commercial customers

PCE benefits are currently paid for residential customers, commercial customers, and community facilities that are owned and operated by local government. The Committee believes that residential customers and community facilities should have priority:

i. Residential customers are the core of the program, representing about 70% of all electrical consumption that is presently eligible for PCE assistance. Affordable power for lights, heating systems, and refrigeration in residential housing is the most basic need that the program addresses.

ii. When costs such as the electrical bill go up, most commercial customers can try to increase revenue by raising prices. However, residential customers in rural villages do not have a comparable method to raise household income. Local governments with no taxing authority have some options to raise revenue by adjusting prices and fees for local services, but still fall short of the revenue-raising capability of commercial entities.

iii. Because schools are typically not owned and operated by the local government, they are considered "commercial facilities" for purposes of the PCE program and account for about 10% of the PCE-eligible electrical consumption in the commercial category. Like all such institutions, rural schools are always facing budget limitations. But relative to other institutions in rural Alaska, schools operate with relatively large budgets and have greater capability than most to absorb an increase in electricity prices. Schools are not heavily dependent on continuation of PCE benefits since PCE now provides assistance for only the first 700 kWh per month, which is much less than schools typically consume. On average, school districts are presently entitled to approximately $100 per month in PCE benefits per community.

iv. For other commercial customers, FY97 statistics indicate an average PCE benefit of about $34 per month (or about $400 per year). The Committee does not minimize the significance of this benefit to many rural businesses but concludes that, overall, commercial customers can tolerate a cut-off of PCE benefits with less difficulty than either residential customers or local governments.

B. Reduce the monthly cap for residential customers from 700 kWh to one-half of the statewide average consumption per household each month. While this amount would vary each month, the average monthly limit over the course of a year would be approximately 350 kWh.

Program statistics indicate that residential customers received PCE assistance for an average of 340 kWh per month in FY96. This is about half of the average monthly residential consumption in the southern Railbelt region. The Committee believes that a major reduction in the monthly cap for PCE eligibility is a key measure to ensure that PCE benefits are paid only for a very basic level of usage.

Although it is difficult to define where "necessary" power consumption leaves off and "discretionary" begins, adopting this recommendation would clearly address any concern that PCE is subsidizing discretionary usage. The program would no longer purport to equalize power costs for residential consumers in urban and rural Alaska – it would focus on providing affordable power for a much lower level of consumption than is typical in Anchorage, Fairbanks, and Juneau.

Included in Attachment 4 is recent monthly data on residential electricity usage in southcentral Alaska. Based primarily on this data, the following estimates are provided on the monthly kWh limits that would initially define a lifeline supply of power under the Committee's proposal:

January	461 kWh
February	419
March	376
April	343
May	312
June	284
July	301
August	277
September	290
October	318
November	358
December	394

These limits average 344 kWh per month over the course of an entire year. The Committee's concept is intended to ensure that households have access to a "lifeline" supply of affordable power – i.e. enough to run essential lights, heating pumps, refrigeration, and other basic elements of household maintenance. Attachment 5 shows how 326 kWh could be used in a typical village home in an average month.

C. Limit community facilities to public health and safety.

Only those community facilities that are directly related to health and safety are proposed to remain eligible for rate subsidy, including water and sewer projects, health clinics, public safety office, street lights, and washeteria. Other community facilities such as community halls or recreation halls would no longer be eligible. This measure is expected to reduce rate support for community facilities by roughly 25% overall.

Recommendation #3 – Program funding from 60% of Four Dam Pool debt service, $20 million Swan-Tyee intertie loan, and enactment of universal service fund.

Rural electric utilities need financial stability before long-term planning and investment can succeed on a broad scale. Financial stability will depend, in turn, on a stable source of funding for an effective rate support program.

The Committee believes that continued reliance on State general fund appropriations is inconsistent with this need for long-term financial stability. As a result, the Committee's recommended option is based on alternative sources of revenue:

A. 60% of Annual Four Dam Pool Debt Service

The starting point is the revenue stream that has already been established for the PCE program. The 1993 legislature enacted a revenue allocation plan whereby the annual debt service paid to the State by the Four Dam Pool is used as follows:

- 40% for PCE.
- 40% for the "Southeast Energy Fund," the initial purpose of which is to help fund the Tyee-Swan intertie.
- 20% for the "Power Project Fund," a loan fund administered by the Division of Energy to help finance small power projects, bulk fuel storage facilities, and potable water supply.

In a typical year and for the remaining term of the existing power sales agreement, annual Four Dam Pool debt service is estimated at $11.0 - $11.5 million. Of this amount, the existing 40% allocation would supply roughly $4.4 million per year for PCE. Four Dam Pool debt service is scheduled to be paid to the State annually through the year 2030.

The Committee is aware of the vulnerability of these funds to the "self-help" provision of the Four Dam Pool power sales agreement. That provision allows the utilities to withhold debt service that would otherwise be due the State if the funds are needed to repair certain project deficiencies. It is presently expected that $1.6 million will be withheld by the utilities in FY2000 under this provision, and unknown additional amounts could be withheld after that.

Despite the uncertainty in any given year created by the "self-help" provision of the power sales agreement, Four Dam Pool debt service still provides an important long-term source of recurring energy revenues. The Committee proposes to re-allocate to PCE, or to an alternative rate support program, the 20% share of these revenues that now goes to the Power Project Fund loan program. This would add approximately $2.2 million per year to the revenue stream allocated to rate support, bringing the total annual contribution from Four Dam Pool debt service to about $6.6 million.

The Power Project Fund was converted to a revolving loan fund in 1993 legislation, with principal and interest payments from prior loans now coming back to the Fund where they augment the balance available for new loans. At present, these repayments are sufficient to meet the demand for new loans. While loan demand may increase in the future, the Committee believes that continuing rate support for essential needs serves a more critical purpose.

B. $20 Million Swan-Tyee Intertie Loan

The 40% allocation of Four Dam Pool debt service to the Southeast Energy Fund was enacted by the legislature in 1993 as part of an overall, statewide "package" on energy projects, policies, and funding, and must be understood in that context. The Committee does not recommend altering this percentage – however, the Committee does recommend that $20.0 million appropriated by the 1993 legislature as a 3% loan for the Swan/Tyee intertie be re-appropriated to the PCE Fund. The City of Ketchikan, which is the primary intertie proponent, has suggested that it is willing to forgo the $20.0 million loan in exchange for State bonding of Swan/Tyee intertie costs. Depending on the final project cost, most or all of the debt service associated with such bonds would be paid from the 40% share of Four Dam Pool debt service allocated to the Southeast Energy Fund.

C. Universal Service Fund

The Committee recommends that the legislature enact a universal service fund for electric utility service, similar to the universal service fund already authorized for telephone service. Funding would be provided by a monthly surcharge on all electric utility bills statewide. The proceeds of the fund would be used solely to ensure that a lifeline supply of power will be available in all established communities at a designated "lifeline rate." The Committee considered setting the lifeline rate at either 100% or 150% of the statewide average residential rate. At 100%, a lifeline supply of power would be made available at approximately 11.3 cents per kWh. At 150%, a lifeline supply would be made available at approximately 17.0 cents per kWh.

The financial implications of these alternatives are as follows:

- At 150%, the estimated cost of the lifeline program is $14.7 million per year. With 60% of Four Dam Pool debt service providing $6.6 million in program revenue during a typical year, the annual amount needed from the universal service fund is estimated at $8.1 million. Based on estimated electric utility sales of 5.0 billion kWh per year statewide, the required surcharge would be about 0.16 cents per kWh. This would cost an average residential customer in the Railbelt about $14 per year.

  The $14.7 million estimated program cost is comparable to the estimated cost of PCE given the program changes recommended above. The estimated PCE cost net of recommended changes is as follows:

$23,000.0	Preliminary estimate – full funding of PCE in FY 2000.
- 2,600.0	Remove commercial customers from eligibility.
- 3,700.0	Cut eligible kWh (residential) from 700 per month to one-half the monthly statewide average.
- 1,000.0	Limit community facilities to public health and safety.
$15,700.0	FY 2000 PCE cost following proposed amendments.

  Spreadsheets included in Attachment 6 show the estimated annual payments to utilities under three scenarios:

i. The "lifeline rate" program benchmarked at 17.0 cents per kWh (i.e. 150% of the statewide average residential rate).

ii. The "lifeline rate" program benchmarked at 11.3 cents per kWh (i.e. 100% of the statewide average residential rate).

iii. The existing PCE program.

At the 17.0 cent per kWh benchmark, the lifeline rate program would cost an estimated $14.7 million per year. A summary spreadsheet of Option 1A (the "150% option") is included in Attachment 7.

Only one additional community would be added to the program that is not currently eligible for PCE – Glennallen. A lower benchmark rate would add more communities.

If the lifeline rate were set at 100% of the statewide average (11.3 cents rather than 17.0 cents), the initial year program cost would be approximatley $22.9 million, $16.3 million of which would come from the universal service fund. This would require a surcharge of about 0.32 cents per kWh on all electric utility bills statewide, and would cost an average residential consumer in the Railbelt about $27 per year.

The "100% option" would add several communities to the list of those receiving benefits under the rate support program – communities which are not presently eligible for PCE but whose residential rates exceed 11.3 cents. One or more of these communities could be relatively large and might therefore be entitled to a relatively large payment for community facilities. (Presently, the maximum kWhs each month that can be claimed for community facilities is equal to the community population times 70.) If the 100% option were adopted, the Committee would recommend limiting the community population to 1,000 for purposes of this calculation based on the premise that the local tax base of larger communities can better support the operating costs of public facilities.

The concept of the 100% option more closely approximates the original concept of the PCE program, which was to "equalize" rural power costs with average rates in Anchorage, Fairbanks, and Juneau. In actual practice, however, PCE has not equalized rates – average rural rates for PCE-eligible usage are still about twice as

high as urban rates. A summary spreadsheet of Option 1B (the "100% option") is included in Attachment 8.

The Committee is aware of the natural resistance that will develop to any proposal that will increase rates. However, there are many precedents for cost pooling in which the benefits of lower cost enjoyed by some consumers are shared to a limited extent with those whose cost of service is higher. It occurs within any service territory that has standard rates and occurs on a larger scale within such structures as the Four Dam Pool. The Committee believes that the proposed level of surcharge, particularly at the 150% level, is an acceptable amount to ensure that a lifeline supply of power is available to all households and essential public facilities at a reasonably affordable price.

Recommendation #4 – A statewide organization or agency should be designated to establish rural utility operating standards. State support should be withheld from rural utilities unless the standards are met or are in the process of being met.

The Committee resolved that, in exchange for continuing public support of rural electricity lifeline rates, effective measures must be taken to ensure that small, single-village utilities are properly managed and that they become, as much as possible, self-reliant. This will require a combination of operating standards, assistance in meeting these standards, and enforcement of sanctions if utility management does not make satisfactory progress. An enforceable commitment to improved utility management must be part of any recommendation to continue providing public financial support:

DISCUSSION OF ALTERNATIVE OPTIONS

As noted at the outset, the Committee believes that other options to fund PCE or an alternative rate support program should also be brought to the attention of the Governor and legislature. These options are as follows:

OPTION 2

Option 2 would extend the modified PCE program through 2013, consistent with legislative intent enacted in 1993 to fund PCE for 20 years. In addition to the funding sources that all of the options have in common – the 60% share of Four Dam Pool debt service and the re-appropriation of the $20 million Swan/Tyee intertie loan – Option 2 requires a $75 million State general fund endowment in FY 2000 to carry the program the rest of the way. A summary spreadsheet showing Option 2 is included in Attachment 9.

To keep the size of the endowment from escalating higher, Option 2 also incorporates a $17 million annual cap on PCE expenditures:

- Since its inception, the cost of the PCE program has averaged about $17 million per year. Continuing the program at this level is therefore consistent with the State's historical level of program support.

- Although the statement of "Findings and Intent" enacted by the legislature in 1993 established $17 million per year as the minimum level of PCE funding, the Committee believes that a maximum level is what is needed as the basis for a general fund commitment. The population of rural Alaska continues to grow as does the full funding requirement for the PCE program as presently structured. The Committee believes that an open-ended funding commitment for PCE is unrealistic and unlikely to be obtained. The $17 million benchmark has already been accepted by the legislature as a reasonable level of program funding.

OPTION 3

Option 3 seeks to extend the same modified PCE program for a significant length of time without recourse to a large general fund endowment or enactment of a universal service fund. Its main features are as follows:

A. Annual PCE outlays are capped at $15 million per year.

B. General fund appropriations are required beginning with $15 million for FY 2000. These appropriations can then be reduced by $2.5 million per year, reaching zero in FY 2006. These appropriations are in addition to:

   - 60% of Four Dam Pool debt service, and

   - Re-appropriation of the $20 million Swan/Tyee intertie loan

C. Given these funding sources and expenditure caps, PCE can be extended through the year 2010.

A summary spreadsheet showing Option 3 is included in Attachment 10.

OPTION 4

The Committee investigated the possibility of obtaining federal funds to support PCE or a similar program. Although the indications to date have not been promising, the Committee suggests that discussions continue in the event that some measure of federal contribution can be obtained.

Option 1A – Transitional Funding

The spreadsheet provided in Attachment 7 shows how the Committee would envision implementation of Option 1A (Universal Service Fund / 150% benchmark). Provision for transitional funding and other explanatory notes are as follows:

A. The Committee anticipates that more than one year will be required for approval and implementation of the recommended program. As a result, the spreadsheet projections allow for a two-year transitional period (FY 2000 and 2001) during which a modified PCE program would remain in place. The recommended lifeline program would begin in FY 2002.

B. The PCE modifications recommended earlier in this report would reduce the cost of PCE to $15.7 million in FY 2000, and to $16.0 million in FY 2001 assuming 2% annual growth.

C. The modified PCE program is funded during the two-year transition period by a combination of the following three revenue sources:

   i. The PCE Fund is presently expected to have a $3.2 million balance to carry forward into FY 2000.

   ii. 60% of Four Dam Pool debt service revenues are allocated to PCE starting in FY 2000.

   iii. The $20 million Swan-Tyee loan could be re-appropriated to PCE if other elements of Swan-Tyee intertie financing are resolved.

ATTACHMENT 1

COMMITTEE BALLOT AND BALLOT RESULTS

POWER COST EQUALIZATION
BLUE RIBBON COMMITTEE
BALLOT RESULTS

		Include in Committee Report							Designate As Best Option					
		Universal Service Fund				GF	Declining GF	Further Explore	Universal Service Fund			GF	Declining GF	Further Explore
		YES	150 & 100	150 only	100 only	Endowment	Approp.	Fed Funds	YES	150	100	Endowment	Approp.	Fed Funds
(see note 1)	Senator Adams	X	X			X		X	X		X			
(see note 2)	Robert Beans	X	X			X		X						
	Sam Cotten	X	X				X		X	X				
	Joe Griffith	X	X			X	X	X	X		X			
	Nancy James	X	X			X	X	X	X	X				
	Robert Martin	X	X			X	X	X	X	X				
(see note 3)	Senator Pearce	X		X				X						
	Walter Sapp					X	X	X				X		
	Randy Simmons	X		X			X	X	X	X				
	Dewey Skan	X			X	X		X	X		X			
	Eric Yould					X	X	X					X	
	TOTALS	9	6	2	1	8	7	10	7	4	3	1	1	

NOTES -- The following messages were added by Committee members to their ballots:

1. Senator Adams notes that, in his view, community centers and city offices should not be excluded from the definition of "community facilities" under a revised PCE program.

2. Robert Beans does not designate a single "best option," but suggests that a combination of options may turn out to be best.

3. Senator Pearce indicates that the Universal Service Fund benchmarked at 150% of the statewide average residential rate is an option worth considering but only for residential service, not for community facilities.

2/3/99

POWER COST EQUALIZATION
BLUE RIBBON COMMITTEE

c/o Division of Energy
Phone: 269-4630
Fax: 269-4645

January 21, 1999

The Honorable Al Adams
Alaska State Senator
State Capitol Building, Room 417
Juneau, AK 99801-1182

DELIVERY BY FAX ONLY

Subject: Ballot on Options and Recommendations
Blue Ribbon Committee on Power Cost Equalization

Dear Senator Adams:

The PCE Blue Ribbon Committee met on January 15 to consider and vote on the final set of options and recommendations to be presented to the Governor. A number of these recommendations were unanimously approved by the members in attendance, specifically:

1. PCE or an alternative rate support program for high cost service areas should be extended into the future.

2. Such rate support should be available only for:

   A. A "lifeline" supply of electric power for residential consumers – a lifeline supply is defined as one-half of the statewide average consumption per household each month; and

   B. Electric power for community facilities that are directly related to public health and safety.

3. A stable source of funding for the program should include among its components:

   A. 60% of the annual debt service paid to the State by the Four Dam Pool – this would include the 40% now allocated to PCE plus the 20% now allocated to the Power Project Fund loan program.

   B. $20 million appropriated by the 1993 legislature as a loan for the Swan/Tyee intertie, based on a proposal from Ketchikan Public Utilities to forego the loan in exchange for State bonding of Swan/Tyee intertie costs.

4. A statewide organization or agency should be designated to establish standards for rural electric utilities with respect to financial management, physical plant, and system operations. No rural electric utility should continue to receive rate support or capital project grants from the State unless it is in compliance with these standards, is making clear and continuing progress in attaining compliance, or has entered into an agreement with an existing utility or utility organization whose operation is consistent with the standards.

Since four of the eleven Committee members were absent from the meeting, the voting was inconclusive with regard to broader PCE options on which there is significant disagreement. For this reason, the Committee decided to solicit the votes of all members by means of the enclosed ballot. There are two separate issues that remain to be decided:

1. Of the options listed on the ballot, which do you believe should be included in the Committee's report as worthy of consideration by the Governor and legislature? You may vote for all of the options if you wish, or any number of them.

   Any option receiving 6 or more votes in response to Question 1 will be included in the Committee's report.

2. If you believe that one of these options should be recommended by the Committee as the single best option to pursue, which one do you support?

   A single option receiving 6 or more votes in response to Question 2 will be designated as the Committee's recommended option.

All of the options on the ballot are summarized in the attachment to this letter and are further discussed in the 12/31/98 draft report circulated to Committee members earlier this month. Please call me at 276-6222 if you would like further explanation of any of these options before casting your vote.

Since we are up against the start of the legislative session, please complete and sign your ballot as soon as possible. Your completed ballot should be faxed to Irene Tomory at the Department of Community and Regional Affairs – fax # 269-4645. The Department will ensure that the ballots are properly counted and filed and will notify all members of the results.

Sincerely,

Sam Cotten, Chairman
Blue Ribbon Committee on PCE

BLUE RIBBON COMMITTEE
POWER COST EQUALIZATION
JANUARY 21, 1999

BALLOT

Option	QUESTION 1 Include in Committee Report As Worthy of Consideration? (check up to 4)	QUESTION 2 Designate Best Option? (check no more than 1)
1. Universal service fund.	_____	_____
A. If a universal service fund should be included in the Committee report as worthy of consideration, please check only one of the following:		
☐ Both options should be included – lifeline power benchmarked at 150% and at 100% of statewide average residential rate.		
☐ Only the 150% option should be included.		
☐ Only the 100% option should be included.		
B. If a universal service fund should be designated as the best option, please check only one of the following:		
☐ The 150% benchmark is recommended.		
☐ The 100% benchmark is recommended.		
2. General Fund endowment / extend modified PCE through 2013.	_____	_____
3. Declining General Fund appropriations / extend modified PCE through 2010.	_____	_____
4. Further explore the potential for federal funding of PCE or an alternative rate support program.	_____	_____

Senator Al Adams
Committee Member

_____
Signature

Please fax completed ballot to Irene Tomory (DCRA): fax # 269-4645

January 21, 1999

SUMMARY OF OPTIONS

The following summary is based on the subcommittee report dated December 24, 1998, that was included in the January 15, 1999 Blue Ribbon Committee packet:

OPTION 1 would create the equivalent of an electric utility "universal service fund" with the following characteristics:

A. Similar to the universal service fund authorized for telephone service, it would be funded by a surcharge assessed on all electric utility bills statewide.

B. In combination with 60% of Four Dam Pool debt service, the universal service fund would provide enough annual revenue to support an "Electric Lifeline" program statewide without tapping the State General Fund.

C. The purpose of the Electric Lifeline program would be to provide affordable power for residential consumers and community facilities within the following limits of eligibility:

- For each residential customer in a high cost service area, rate support would be provided for up to one-half of the statewide average consumption per household each month.
- For community facilities in high cost service areas, rate support would be limited to those facilities directly related to public health and safety.

D. Creation of a universal service fund is anticipated to require a transitional period of two years during which a modified PCE program would continue to be administered:

- Gaining legislative approval of a universal service fund concept would probably require more than one session.
- For FY 2000 and 2001, the 60% share of Four Dam Pool debt service combined with re-appropriation of the $20 million Swan/Tyee intertie loan would be enough to fund PCE without additional draws from the General Fund.

For eligible electrical usage, rate support would lower the price of power to a selected "benchmark" level. Two alternatives are presented for the benchmark price:

A. 100% of the statewide average residential rate, which in 1985 was 11.3 cents per kWh. In other words, this alternative would make a lifeline supply of power available at approximately 11.3 cents per kWh.

The initial year program cost under this alternative is estimated at $22.9 million, $16.3 million of which would come from the universal

service fund. This would require a surcharge of about 0.32 cents/kWh on all electric utility bills statewide, and would cost an average residential customer in the Railbelt about $27 per year.

B. 150% of the statewide average residential rate, or about 17.0 cents per kWh. In other words, this alternative would make a lifeline supply of power available at approximately 17.0 cents per kWh.

The initial year program cost under this alternative is estimated at $14.7 million, $8.1 million of which would come from the universal service fund. This would require a surcharge of about 0.16 cents/kWh on all electric utility bills statewide, and would cost an average residential customer in the Railbelt about $14 per year.

OPTION 2 would extend the PCE program through 2013, consistent with legislative intent enacted in 1993 to fund PCE for 20 years. In addition to the funding sources that all of the options have in common – the 60% share of Four Dam Pool debt service and the re-appropriation of the $20 million Swan/Tyee intertie loan – Option 2 requires an estimated $75 million General Fund endowment in FY 2000 to carry the program the rest of the way.

To keep the size of the endowment from escalating higher, Option 2 also incorporates a $17 million annual cap on PCE expenditures. This is approximately equal to the average annual outlay for PCE since its inception in 1985.

OPTION 3 seeks to extend the same modified PCE program for a significant length of time without recourse to a large General Fund endowment or enactment of a universal service fund. Its main features are as follows:

A. Annual PCE outlays are capped at $15 million per year.

B. General Fund appropriations are required beginning with $15 million for FY 2000. These appropriations can then be reduced by $2.5 million per year, reaching zero in FY 2006. These appropriations are in addition to:

- 60% of Four Dam Pool debt service, and
- Re-appropriation of the $20 million Swan/Tyee intertie loan.

C. Given these funding sources and expenditure caps, PCE can be extended through the year 2010.

OPTION 4 is a recommendation to further explore the potential for federal funding of PCE or an alternative rate support program, and was added to the list at the Committee's January 15, 1999 meeting.

ATTACHMENT 2

OPTIONS FOR REDUCING RURAL POWER COSTS
WORKING PAPER – PCE BLUE RIBBON COMMITTEE
FEBRUARY 1998

OPTIONS FOR REDUCING RURAL POWER COSTS
WORKING PAPER – PCE BLUE RIBBON COMMITTEE
FEBRUARY 1998

The primary options can be organized into three categories:

1. Reduce non-fuel operating costs.

2. Reduce fuel costs.

3. Replace diesel generation with alternative energy.

Reduce non-fuel operating costs

Significant measures to reduce non-fuel operating costs per kWh involve either switching to a different mode of power generation such as hydro, or enhancing economies of scale. Alternative energy strategies are discussed in a later section of this paper. Economies of scale may be sought in either of the following ways:

1. Increase power sales. The problem is that this is not a realistic option in most rural villages.

2. Utility mergers. For example, a single-village utility could join a multi-village utility. Savings could be realized in administration, billing, and volume purchasing of parts, equipment, and fuel. Scale economies also allow for the employment of technical staff whose cost and expertise can be shared throughout the multi-village utility, and whose contribution can result in improved maintenance, longer equipment life, and fewer costly emergencies.

As noted during our initial meeting, the multi-village utilities generally do not have a record of lower rates. For example, AVEC residential rates throughout their 50-village system exceed 40 cents/kWh. Residential rates in the 6 villages served by Tlingit-Haida Regional Electrical Authority exceed 30 cents/kWh although all 6 are located in the relatively low cost region of southeast Alaska.

It may be that the main effect of joining a multi-village system is not to reduce consumer rates but rather to improve reliability, safety, and environmental protection. Further, it may be that operating cost economies are realized but that the savings are then used to "purchase" a safer and more reliable system. Overall:

1. Joining a multi-village utility to enhance economies of scale is not likely to produce significant rate reductions for the consumer.

2. Joining a multi-village utility could lead to development of a power system that is more reliable, better built, and better maintained. It is a difficult strategy to implement, however, since single-village utilities typically exist where the desire for local control is relatively high.

3. Joining a multi-village utility could lead to lower overall costs of operation and greater self-reliance even if such cost reduction is not reflected in consumer rates. Single-village utilities are more likely to seek and obtain government grants for plant replacement and emergency repairs, while multi-village utilities are more likely to finance their plant requirements and recover the associated debt service through consumer rates and PCE.

Reduce fuel costs

As discussed in the Committee's initial packet of materials, fuel costs are one reason for high rates in rural villages although the impact of fuel costs is less important than often assumed:

1. The average price of diesel fuel in 1995 for utilities in the Power Cost Equalization program was $1.01 per gallon, and the average efficiency of diesel generators for these same utilities was 12.9 kWh per gallon. The average fuel cost per kWh was therefore 7.8 cents.

2. Because the price of Cook Inlet natural gas is very favorable, the fuel cost per kWh for Anchorage area utilities is approximately 2.0 cents.

3. Therefore, the cost of fuel accounts for roughly 5.8 cents per kWh of the difference in power costs between Anchorage and the average rural Alaska community. When trying to explain power cost differentials of 20 to 30 cents or more per kWh, the fuel cost issue is important but is not a dominant factor.

Options for reducing the fuel cost component can be grouped in the following categories: increase the efficiency of power generation, increase the efficiency of power distribution, and look for ways to reduce the delivered price of fuel.

1. Increasing the fuel efficiency of power generation is typically accomplished by purchasing new diesel units that are more efficient than the old ones, by carefully matching the size of the new units with the

village demand for power, and by operating the units so that each one operates as close to maximum load as possible.

a. Like the gradual substitution of more fuel efficient cars in the nation's vehicle fleet, the widespread installation of fuel efficient diesel generators in rural Alaska has most likely been aided by government regulation but is also pushed by market forces as old equipment is periodically replaced by new.

In the case of motor vehicles, the "corporate average fuel efficiency" standards imposed by the federal government appears to have hastened the move to more fuel efficient cars. Fuel efficiency standards have also been adopted in PCE regulations. If the actual efficiency of a PCE utility is less than the standard, then the PCE subsidy rate is calculated as though the efficiency standard were met.

These standards, which have been in effect since 1993, range from 8 kWh sold per gallon for the smallest utilities to 12 kWh sold per gallon for the largest. By tying the efficiency standard to kWh sold (rather than kWh generated), the regulation encompasses both generation and distribution efficiency. Somewhat different standards pertain to those few PCE utilities that do not rely entirely on diesel generation.

A question that the Committee may wish to consider is whether any change is now warranted in the PCE efficiency standard.

b. When the opportunity arises to replace a diesel generator, it is already the policy of most utilities and of the State to select a generator size that is best matched to the power requirements of the community. This makes sense because diesel generators are most efficient when operated at or near the top of their output range.

An emerging development is the production of diesel generators designed to maintain a high level of fuel efficiency throughout a wide range of output levels. AVEC is one utility known to the Division that has been working with a manufacturer on these units and is continuing to purchase them. To the extent they are successful, the importance of carefully matching generator size with community load and the importance of operating units as close as possible to maximum load, will both decline.

2. Increasing the efficiency of power distribution means upgrading distribution systems to reduce line losses, i.e. energy lost in transit between the power plant and the consumer. Because the useful life of a distribution system can often be extended for many years with periodic repairs and piecemeal replacements, upgrades resulting in higher efficiency are not as "automatic" as they tend to be with generator equipment. There are still substantial opportunities in rural Alaska to improve fuel efficiency by upgrading distribution systems, upgrades that might not occur for many more years in the absence of government funding.

3. While the base price of fuel is largely unaffected by the actions of individual consumers, there are purchasing strategies that electric utilities can adopt to help keep the delivered price as low as possible. The key principle that operates in favor of the consumer is competition among fuel suppliers which can be encouraged as follows:

   a. By pooling together the fuel requirements of multiple consumers, the purchase order volume is increased. Higher purchase volumes generate greater competitive interest among fuel suppliers.

   b. Bids are widely and aggressively solicited for the combined purchase order.

   However, as noted by the AVEC representative at the initial Committee meeting, consolidated purchasing must not be taken so far as to eliminate suppliers from the market and end up reducing competition rather than enhancing it. AVEC's approach is to package enough of its villages in combined fuel orders to gain advantage from higher volumes without driving fuel supply competitors out of the market.

   Fuel purchasing cooperatives can be formed among electric utilities and other fuel purchasers who presently arrange for their fuel supplies independently:

   a. The "Western Alaska Fuel Group" is an informal alliance of the following electric utilities:

      Kotzebue Electric Association
      Nome Joint Utilities
      Naknek Electric Cooperative
      Nushagak Electric Cooperative (Dillingham)

Iliamna-Newhalen-Nondalton (INN) Electric Cooperative

Attached is a chart showing:

1. Average fuel prices paid by each member over the last 7 years, and

2. Average fuel prices paid by a selection of other, roughly comparable rural utilities over the same period.

Within each group, coastal communities and interior communities are shown separately to provide a somewhat better comparison. Because a number of factors determine the fuel price paid by any single utility, the average price difference between the Western Alaska Fuel Group and the selected utilities in the comparison group cannot be taken as proof that cooperative buying works. Probably the best evidence in its favor is that all of the utilities in the Western Alaska Fuel Group have chosen to remain a part of it for over 10 years.

In FY95 the combined fuel usage of the members of the Western Alaska Fuel Group was just over 6.0 million gallons. Assuming for illustration a savings from coordinated purchasing of $0.05 per gallon, the total savings are about $300,000 per year.

b. Although Nunat Uquutiit Cooperative, Inc. (NUCI) presently owns only two operational tank farms, it has 42 members located in 26 villages. In 1996 NUCI bundled together the volume requirements of about half its members and purchased fuel on their behalf at $1.27 per gallon.

Although the level of savings from the 1996 purchase is difficult to judge, the consolidated purchase was apparently viewed as a success by NUCI members since, in 1997, 39 of the 42 members chose to participate in the joint purchase. The average price obtained by NUCI in 1997 was $1.20 per gallon.

Replace diesel generation with alternative energy

Most alternative energy concepts are unproven in rural Alaska in terms of durability, reliability, and cost. For example:

1. Wind energy. There were many experiments with wind generators in rural Alaska 10-15 years ago, none of which were successful on a utility scale or over a significant period of time. We are experimenting now with the latest generation of wind technology in Kotzebue and Wales, but it will be several years of testing and evaluation before the Division of Energy could recommend wind energy for rural utilities on a broad scale.

2. Small-scale natural gas development. Economic and geophysical assessments carried out by the State on natural gas or coal bed methane development in rural Alaska have not been promising. Our information suggests that suitable deposits are not likely to be found in close proximity to rural communities, and that the cost of development for gas that is found is not likely to be competitive. While exceptions may yet be found, there is no basis to predict that natural gas will emerge as a competitive fuel source for a significant number of rural villages.

3. The Division has evaluated power plants fueled with biomass in various forms but we have yet to identify a rural community in which this option appears to be competitive.

4. The two main alternative energy technologies with a proven track record in rural Alaska are small hydro and electric energy conservation:

    a. Hydro prospects are limited in number and unevenly distributed: most are found near the arc that extends from southeast Alaska to the Aleutians. Still, undeveloped prospects remain that could serve rural Alaska communities. The Division is presently involved in the following:

        i. Pyramid Creek in Unalaska and Old Harbor on Kodiak Island. Federal grant funds have already been appropriated to help finance the Old Harbor project.

        ii. Power Creek near Cordova. The Division is financing preconstruction costs of licensing and design. Federal grant funds have also been provided to help finance Power Creek

    It is unusual to find a rural hydro project that can support market financing and still result in rate reductions for the affected community. Most of the financial benefit of these projects is therefore tied to the amount of grant or low interest loan financing they are able to attract from the State and federal government. As an alternative for reducing rural power costs, small hydro can often

be effective not because its actual cost is low relative to diesel energy but because it can serve as a tangible, one-time vehicle for attracting government subsidy that can then reduce consumer costs throughout the extended life of the project.

b. Electric energy conservation is a form of alternative energy that can pay for itself when the cost to conserve a unit of energy is less than the cost to produce it. The following are among the relevant issues when considering conservation in rural Alaska:

i. Because the cost to produce a kWh of energy is relatively high, electric energy conservation should be exceptionally cost-effective in this environment.

ii. Because the present level of electricity consumption in rural villages is already very low, the remaining opportunities for conservation may be limited.

iii. While the cost of energy for residential consumers is often considered to be the highest priority, it is most difficult to design and implement an effective energy conservation program for this segment of consumers because there are so many of them, each consuming a relatively small amount of power.

iv. Rural utilities are typically not supportive of energy conservation programs except for the purpose of customer relations. Because much of the utility's cost is fixed, lower power sales often means upward pressure on rates. The conserving customer may still benefit, but the utility and its other customers may be left to share higher fixed costs. From the rural utility's perspective, conservation goes in the opposite direction of the utility's effort to increase sales and thereby enhance economies of scale.

THE ECONOMIC SIGNIFICANCE OF THE POWER COST EQUALIZATION PROGRAM

EXECUTIVE SUMMARY

WHAT IS THE PROGRAM ?

In FY 1996 the Power Cost Equalization (PCE) Program provided $19.202 million of financial assistance to electric utilities in 190 rural Alaska communities where the cost of electric power is greater than urban Alaska because of small market size, dependence on expensive fuel oil for generation, and the high cost of doing business in remote areas.

The PCE program is designed to pay a portion, currently 95 percent, of the legitimate electric generation costs between a floor and a ceiling, for a basic level of electric service for residential and commercial customers (including public schools) and community facilities. The floor is set at a level equal to the cost for electricity generation in urban areas, 9.5 cents in 1996, and the ceiling is set at the level of reasonable maximum cost for a small utility, 52.5 cents. In recent years PCE budget restrictions have kept payments to eligible utilities below 95 percent of legitimate costs.

Thus rural utility customers pay at least as much as urban consumers for their electricity, but a portion of the extra cost of generation is covered by the PCE program. Furthermore only the first 700 kwh per month of use by each residential or commercial customer is eligible for the program, and only 70 kwh per month for each community member for community facilities is eligible. As a result, only 38 percent of all electricity sold in PCE communities in 1996 qualified for assistance. In addition only legitimate costs are covered, as determined by Alaska Public Utilities Commission (APUC).

WHO DOES IT SERVE ?

The typical (median) community served by PCE has a population of 264. Bethel, with a population of 5,195, is the largest, and only 8 other communities (Unalaska, Nome, Kotzebue, Cordova, Dillingham, Craig, Naknek, and Haines) have a population greater than 1,000. The total population served is 75,767.

The assistance provided to the utilities is primarily targeted toward residential customers in the PCE communities. The average income of PCE households is $49,825 compared to $65,054 for non PCE communities. (Although the average income in the typical PCE

community is considerably less, $35,203, because average incomes are higher in the larger PCE communities.) The unemployment rate among PCE households is 15 percent compared to 8 percent for non PCE communities. 18 percent of families in PCE communities have incomes below the poverty level compared to 6 percent in non PCE communities.

The typical PCE utility generates about 652,000 kwh annually, about the amount that Chugach Electric Association, the largest electric utility in the state, sells in a typical 6 hour period. The 9 largest utilities that serve the communities of greater than 1,000 population account for just over 50 percent of the generation of all the PCE utilities which in 1996 totaled 369 million kwh. The cost of electricity provided by the typical PCE utility is $.42 per kwh. This is the amount per kwh the residential customer would need to pay to cover all costs of production. Because of differences in size and location, some utilities have a lower cost, although none are as low as Anchorage where the average cost is about $.10 per kwh. At the other extreme some utilities report an average cost in excess of $.60 per kwh.

WHAT BENEFIT DOES IT PROVIDE ?

The typical community gets $71 thousand per year in financial assistance through the PCE program, and this covers about 31 percent of the total costs of providing electricity.

About 68 percent of the total, $13.092 million, in FY 1996 supported sales to residential customers. Financial assistance under the PCE program reduces each eligible kwh of electricity to residential customers by an average of $.22. (87 percent of residential sales are eligible for PCE.) Residential customers in PCE communities still pay twice the urban average for electricity after the PCE assistance--$.20 for the average kwh. This is because not all consumption is eligible, not all reported costs are approved by the APUC, the program pays only 95% of legitimate costs between the floor and the ceiling, some utilities have costs above the ceiling, and the program has not been fully funded in recent years. The range of residential rates after application of the PCE assistance is from $.10 to $.35 per kwh.

Because of the high cost of electricity, even with PCE assistance, and the low household income, the average residential customer in the PCE communities uses 4,933 kwh of electricity in a year, about 65 percent as much as the typical customer in Anchorage, who uses 7,619. (The average in the typical PCE community is less, 3,921 kwh per year, because average consumption is higher in the larger PCE communities.)

In spite of lower consumption, residential monthly bills are higher in PCE communities, even with PCE. The average residential customer of a PCE utility has a monthly bill of $75, after receiving assistance, compared to $61 for Anchorage. (The average in the typical PCE community is less, $66, because average consumption is higher in the larger PCE communities.) Without PCE the monthly bill would have been $121.

If the PCE residential customer used as much electricity as the average household in Anchorage, the typical utility average monthly residential bill would be $125 with PCE. In the

absence of PCE the monthly bill at the Anchorage rate of use with all utility costs paid by the customer would be $264, 433 percent of the Anchorage bill.

About 19 percent of PCE assistance, $3.683 million in FY 1996, went to support electricity use in community facilities in PCE communities--an average of $2,537 per facility per year. This assistance reduced the cost of 98 percent of the electricity used for this purpose. Since local residents bear the cost of electricity used by these facilities, the savings for the average PCE household from this assistance was $158 per year.

The remaining 13 percent of PCE assistance, $2.407 million in FY 1996, helped pay for about 10 percent of the electricity used by the commercial sector, including the public schools.

WHAT WOULD HAPPEN IF PCE DISAPPEARED ?

The typical PCE utility receives about $71 thousand of PCE financial assistance annually which accounts for about 31 percent of the total cost of the providing electricity to the community. Elimination of that assistance would put many small utilities at financial risk and require electricity users to pay substantially higher electricity bills at the same time that it reduced the amount of electricity they used.

Without PCE the utilities would be forced to raise their rates substantially, and the resulting drop in sales would require further rate increases to generate sufficient revenues to cover all costs. Although reduced sales would lower costs because less fuel would be needed, a large share of utility costs are fixed. This results in the potential for a utility to fall into a "death spiral", in which continuously rising rates are never able to generate enough revenue to cover costs. A utility caught in a death spiral cannot survive without an external source of financial assistance.

The likelihood that a utility would fall into a death spiral is a function of how sensitive electricity sales are to the higher electricity prices necessitated by the elimination of PCE. If a doubling of the price paid by customers reduced sales by 20 percent, death spirals would be unlikely. But if a doubling of the price reduce sales by 30 percent, utilities in half the communities served by PCE would be unable to cover their costs through higher rates.

The burden of the loss of PCE financial assistance to utilities would fall primarily on the residents of the communities currently served by PCE. This burden would be a combination of higher electricity bills and less electricity use. Customers would be spending more for less electricity and have less income available for other needs. For a representative community like Elim, the residential price of electricity would increase 190 percent--from $.19 to $.55. Average annual consumption would fall by 38 percent--from 4,202 to 2,608 kwh. The average monthly residential bill would increase by 80 percent--from $66 to $119. Without PCE the average residential customer would be devoting 4.4 percent of household income directly to paying for electricity. Including payments in support of community facility electricity use, 6.1 percent of household income would be devoted to payments for electricity.

Most of the remaining financial burden of the loss of PCE would fall on commercial users of electricity, and the higher costs imposed on them would be passed on to customers as higher prices and back onto workers as lower wages. Some of the burden would thus fall on local residents and some would be shifted outside the PCE communities. Since the public schools are included in this category for purposes of PCE, some of the burden, estimated at about $1.406 million would fall on the state treasury.

The remainder of the financial burden would fall on state and federal government agencies operating in PCE communities. These government agencies do not qualify for PCE assistance so the rate they are charged covers the full cost of providing their electricity. However since elimination of PCE combined with reduced sales would drive up the average cost of electricity for the PCE utilities, the rates charged to all customer classes would rise. State government agencies would pay about $.290 million in additional charges for electricity.

In addition to the quantifiable direct financial burden on local residents, utilities, and state government from the elimination of the PCE program, there are indirect burdens both for the PCE communities and for the state.

The public and private physical infrastructure necessary to deliver the educational, sanitation, health, transportation, and communication services to sustain rural Alaska communities, and enhance their opportunities for economic development, depends directly on the availability of a reliable and affordable source of electricity. Furthermore there are some special uses of electricity in rural areas that enhance the quality of life in ways urban residents often overlook, such as refrigeration for preserving subsistence harvested food and streetlights for additional safety during the long hours without sunlight in the winter.

The state which has paid for much of the investment in the public infrastructure in rural Alaska also has an interest in its continued ability to provide the services to sustain rural communities. Loss or deterioration of these services would be detrimental to the physical and psychological well being of rural Alaskans and responding to the problems this would create would put an additional burden on state financial resources.

WHAT IS THE ECONOMIC SIGNIFICANCE OF PCE ?

Elimination of PCE assistance would draw $19.202 million out of the rural Alaska economy. This loss of purchasing power translates into a loss of $4.908 million in wages and 210 jobs (annual average) throughout Alaska. Because most of the PCE communities are too small to support much business activity locally, a large share of this loss would occur in urban Alaska.

ATTACHMENT 4

RESIDENTIAL CONSUMPTION
SOUTHERN RAILBELT

AVERAGE USE PER CUSTOMER
SOUTHCENTRAL UTILITIES -- RESIDENTIAL CUSTOMERS
BY MONTH

Anchorage ML&P		Chugach Electric		Matanuska Electric		Homer Electric		weighted ave	one half wtd ave	weighted ave X 1.05	one half wt ave X 1.05
Jan-98	720	Jan-98	854	Jan-97	1009	Jan-97	929	878	439	922	461
Feb-98	563	Feb-98	906	Feb-97	830	Feb-97	695	798	399	838	419
Mar-98	509	Mar-98	755	Mar-97	827	Mar-97	659	716	358	751	376
Apr-98	527	Apr-98	759	Apr-97	553	Apr-97	645	653	326	685	343
May-98	474	May-98	635	May-97	638	May-97	542	594	297	624	312
Jun-98	431	Jun-98	541	Jun-97	613	Jun-97	556	541	271	568	284
Jul-98	419	Jul-98	644	Jul-97	554	Jul-97	573	573	286	601	301
Aug-98	460	Aug-98	547	Aug-97	546	Aug-97	518	527	264	554	277
Sep-98	446	Sep-98	548	Sep-97	694	Sep-97	458	553	276	580	290
Oct-98	449	Oct-98	590	Oct-97	683	Oct-97	714	605	302	635	318
Nov-98	585	Nov-98	619	Nov-97	875	Nov-97	665	681	340	715	358
Dec-98	581	Dec-98	687	Dec-97	955	Dec-97	818	751	376	789	394
# of Res. Cust.: (1997)	23,393		58,931		31,912		18,544	132,780	328	689	344

Explanatory Notes:

1. The "weighted average" is weighted by the number of customers. For example, use per customer for Chugach Electric is given approximately three times the weight of Homer Electric, since Chugach has approximately three times as many residential customers.

2. One-half the average residential usage of these four utilities is 439 kWh in January and 271 kWh in June. Over the entire year, one-half the average monthly use is 328 kWh.

3. These figures are multiplied by 1.05 (5.0%) to account for the fact that use per customer is slightly higher statewide than for these four utilities, and to account for load growth.

Source: Alaska Public Utilities Commission

1/27/99

ATTACHMENT 5

HOW 326 KWH MIGHT BE USED IN A VILLAGE HOME

EXCERPT FROM:
AFFORDABLE POWER IN RURAL ALASKA
EXECUTIVE SUMMARY
ARECA RURAL ISSUES FORUM REPORT
1996

Electricity Use in Rural and Urban Alaska

Rural Alaskans use electricity conservatively because it is expensive. Average usage varies between communities and in different seasons. Overall, an average of 326 kilowatt-hours (kwh) used per residential and commercial customer were eligible for PCE credit in 1995.

How 326 kwh might be used in a village home:

*Refrigerator (1,000 watt, 14 cu ft. frostless)	100
*Freezer (1,000 watt, 15 cu ft. frostless)	100
Coffee Maker	15
Toaster	3
Hair Dryer	2
Clock	2
Television	20
VCR	4
*Indoor Lighting	60
Outdoor Lighting	20
TOTAL	326

Urban homes typically have a number of other appliances that may or may not be present in rural homes. Below are examples of the estimated range of usage for additional appliances that might be in an Anchorage home:**

Electric Range (Stove)	30-60	Heat Tape or Deicer Cable	10-150
Dishwasher	20-50	Stereo	1-5
Slow Cooker	3-12	Video Games	1-4
Garbage Disposal	2-5	Computer	2-35
Vacuum Cleaner	4-6	Washing Machine	4-12
Sewing Machine	1-4	Clothes Dryer	50-150
Car Engine Heater	30-150	Water Heater	150-550

* Actual kwh used depends on appliance efficiency and use patterns. A highly efficient refrigerator or freezer opened rarely might draw 40 kwh per month while an older, less efficient model opened often could draw 200 or more kwh per month. The lighting example is based on four 100-watt bulbs on for five hours per day, though the same kwh would be used by fewer lights on for a longer period or more lights of lower wattage used for the same period.

** From *Sometimes The House That Costs More, Costs Less,* a publication of Chugach Electric Association, based in Anchorage.

ATTACHMENT 6

IMPACT OF LIFELINE RATE OPTIONS ON ELECTRIC UTILITIES

Utility/Community	Popu-lation	Resi-dential Customers	Average monthly Eligible kwh per Residential Customer (kwh)	Average monthly Eligible kwh per Community Fac./Pop. (kwh)	Utility's Avg. Residential Rate (based on 500 kwh) (cents/kwh)	Power Cost Equalization Rate (cents/kwh)	Effective Residential Rate (cents/kwh)	11.3 cents residential $/year	11.3 cents com fac $/year	17.0 cents residential $/year	17.0 cents com fac $/year	Total PCE Payment / Existing Formula	Total Payment / 11.3 cent "Lifeline"	Total Payment / 17.0 cent "Lifeline"
Chitina Electric Inc.	49	31	248	26	33.6	14.0	19.6	20,597	3,423	15,332	2,548	26,300	24,020	17,881
Circle Utilities	107	34	261	22	48.0	25.9	22.1	39,130	10,593	33,053	8,948	52,654	49,724	42,001
Platinum Power Plant (1)								-	-	-	-	0	-	-
Coffman Cove Utility Association								-	-	-	-	0	-	-
Coffman Cove	254	100	393	20	23.0	12.3	10.7	49,140	6,979	25,200	3,579	75,602	56,119	28,779
Whale Pass	92	20	359	3	23.0	12.3	10.7	9,828	421	5,040	216	16,259	10,249	5,256
Cordova Electric Cooperative, Inc.	2,568	920	432	65	21.0	9.8	11.2	374,808	193,677	154,560	79,867	714,178	568,485	234,427
Diomede Joint Utilities	154	44	275	26	43.0	26.8	16.3	46,067	15,463	37,784	12,683	61,470	61,530	50,467
Eagle Power Company	146	129	198	6	39.0	28.9	10.1	84,802	2,929	67,352	2,326	115,879	87,731	69,678
Egegik Light & Power Co.	143	65	259	32	50.0	19.5	30.5	78,145	20,976	66,635	17,887	60,790	99,121	84,522
Ekwok Electric	102	56	243	15	40.0	10.6	29.4	46,857	5,245	37,551	4,203	25,447	52,102	41,754
Elfin Cove Electric Utility	65	30	297	23	26.2	15.8	10.4	15,940	2,710	9,842	1,673	27,384	18,649	11,515
False Pass Electric Association	87	28	279	28	42.0	16.2	25.9	28,742	8,903	23,405	7,250	22,527	37,645	30,655
Far North Utilitities (Central)	161	69	168	2	43.1	24.9	18.2	44,272	1,419	36,337	1,165	63,595	45,692	37,502
G&K, Inc. (Cold Bay)	220	35	363	40	37.7	24.2	13.5	38,808	27,584	30,429	21,629	75,060	66,392	52,058
Galena, City of	527	209	277	42	30.4	10.2	20.2	132,667	50,759	93,075	35,611	113,984	183,426	128,687
Golovin Power Utilities	156	52	229	31	38.0	21.1	17.0	38,236	15,682	30,073	12,334	51,263	53,918	42,407
Gustavus Electric Company	151	254	256	16	46.5	33.1	13.4	274,924	9,959	230,405	8,346	344,161	284,883	238,751
Gwitchyaa Zhee Utilities (Fort Yukon)	663	258	231	27	30.9	16.2	14.7	139,873	42,110	99,196	29,863	171,102	181,983	129,059
Haines Light & Power	1,394	769	404	41	16.3	6.1	10.2	161,490	34,549	-	-	235,103	196,039	-
Hughes Power & Light	78	21	183	36	51.0	28.6	22.4	18,259	13,531	15,638	11,588	25,073	31,790	27,226
I-N-N Electric Cooperative	416	212	285	35	46.4	31.2	15.3	254,281	61,047	212,987	51,133	330,049	315,328	264,120
Igiugig Electric Company	33	17	196	58	58.3	24.5	33.8	18,749	10,812	16,475	9,501	23,060	29,562	25,976
Ipnatchiaq Electric Company (Deering)	153	39	339	30	38.5	27.1	11.5	43,201	14,895	34,148	11,774	62,470	58,096	45,922
King Cove, City of	879	179	278	48	20.0	6.4	13.6	51,890	44,470	17,893	15,335	75,244	96,360	33,228
Kipnuk Light Plant	470	121	379	40	27.4	13.2	14.2	81,820	35,988	52,853	23,247	128,284	117,808	76,100
Kobuk Valley Electric Company (1)								-	-	-	-	0	-	-
Kokhanok Village Council	152	43	217	16	55.1	30.2	24.9	49,060	12,897	42,675	11,219	55,035	61,957	53,894
Koliganek Village Council	181	64	249	0	50.0	13.6	36.4	74,066	-	63,157	-	62,868	74,066	63,157
Kotlik Electric Services	548	123	282	13	30.0	18.7	11.3	77,762	15,930	54,059	11,074	100,507	93,692	65,134
Kotzebue Electric Association	2,947	799	459	40	21.8	8.4	13.4	352,359	147,943	161,078	67,631	486,204	500,302	228,709
Koyukuk, City of (1)								-	-	-	-	0	-	-
Kwethluk, Inc.	688	135	252	6	44.0	17.1	26.9	133,270	15,790	110,039	13,038	84,315	149,060	123,077
Kwig Power Company (Kwigillingok)	278	73	351	5	50.0	26.7	23.3	118,654	6,681	101,178	5,697	80,476	125,335	106,875
Larsen Bay Utility Company	130	46	292	21	40.0	18.2	21.8	46,270	9,423	37,081	7,552	51,564	55,693	44,632
Levelock Electric Cooperative	105	44	311	61	44.2	27.0	17.2	54,090	25,081	44,719	20,736	60,611	79,172	65,455
Manley Utilitity Company	96	69	140	3	61.0	40.7	20.3	57,574	1,818	50,971	1,609	71,188	59,392	52,580
Manokotak Power Company	410	99	289	14	35.0	15.4	19.6	81,364	16,161	61,795	12,274	67,403	97,525	74,070
McGrath Light & Power	479	170	396	51	37.2	24.0	13.2	184,926	76,108	144,228	59,358	291,121	261,034	203,586
[illegible]							21.8	37,841	6,090	33,631	5,412	43,468	43,934	39,043
							21.8	47,051	5,829	41,815	5,225	56,261	52,930	47,037
							21.8	13,872	166	12,328	148	22,234	14,039	12,476

Utility/Community	Popu-lation	Resi-dential Customers	Average monthly Eligible kwh per Residential Customer (kwh)	Average monthly Eligible kwh per Community Fac./Pop. (kwh)	Utility's Avg. Residential Rate (based on 500 kwh) (cents/kwh)	Power Cost Equalization Rate (cents/kwh)	Effective Residential Rate (cents/kwh)	11.3 cents residential $/year	11.3 cents com fac $/year	17.0 cents residential $/year	17.0 cents com fac $/year	Total PCE Payment / Existing Formula	Total Payment / 11.3 cent "Lifeline"	Total Payment / 17.0 cent "Lifeline"
Sleetmute	106	33	175	2	62.5	40.7	21.8	35,440	1,326	31,494	1,178	38,367	36,765	32,672
Stony River	51	16	180	8	62.5	40.7	21.8	17,720	2,445	15,748	2,173	26,218	20,166	17,921
Total								-	-	-	-	0	-	-
Naknek Electric Association, Inc.	1,482	657	372	59	20.5	8.8	11.7	253,865	96,244	96,579	36,615	338,127	350,109	133,194
Napakiak Ircinraq Power Company	326	84	288	12	56.1	36.9	19.2	129,834	21,622	113,315	18,871	120,522	151,456	132,186
Napaskiak Electric Utility	404	88	265	1	45.0	21.7	23.3	94,142	1,360	78,219	1,130	59,116	95,502	79,349
Naterkaq Light Plant (Chefornak)	361	75	368	4	34.0	12.5	21.5	71,505	4,363	53,550	3,267	46,448	75,868	56,817
Nelson Lagoon Electric Cooperative, Inc.	86	42	335	18	42.0	25.4	16.6	51,800	5,829	42,182	4,747	53,714	57,629	46,929
Nightmute Power Plant	189	36	264	2	30.5	18.9	11.6	21,871	768	15,378	540	26,898	22,639	15,918
Nikolai Light & Power	125	40	226	67	50.0	21.6	28.4	42,034	38,879	35,843	33,152	55,372	80,912	68,995
Nome Joint Utility System	3,984	1417	362	36	19.6	5.0	14.6	493,966	141,565	154,736	44,346	398,880	635,531	199,082
North Slope Borough Power & Light								-	-	-	-	0	-	-
Anaktuvuk Pass	292	79	375	7	15.0	5.3	9.7	12,277	912	-	-	34,336	13,188	-
Atqasuk	233	53	474	15	15.0	5.3	9.7	8,236	1,563	-	-	28,891	9,800	-
Kaktovik	210	71	404	15	15.0	5.3	9.7	11,033	1,421	-	-	28,672	12,454	-
Nuiqsut	410	88	388	13	15.0	5.3	9.7	13,675	2,309	-	-	37,598	15,984	-
Point Hope	723	157	438	9	15.0	5.3	9.7	24,398	3,043	-	-	57,105	27,441	-
Point Lay	139	53	371	9	15.0	5.3	9.7	8,236	557	-	-	22,753	8,794	-
Wainwright	543	127	393	13	15.0	5.3	9.7	19,736	3,168	-	-	48,281	22,904	-
Total								-	-	-	-	0	-	-
Northway Power & Light	113	103	318	46	26.5	16.8	9.7	59,690	9,393	37,306	5,870	84,506	69,083	43,177
Nushagak Electric Cooperative, Inc (Dillingha	2,243	902	412	31	21.7	7.9	13.8	393,994	86,704	178,055	39,183	492,979	480,697	217,238
Ouzinkie, City of	259	72	344	28	30.0	16.8	13.2	55,503	16,131	38,585	11,214	67,933	71,633	49,798
Pedro Bay Village Council	42	27	216	48	60.0	26.6	33.4	34,104	11,725	30,112	10,353	31,024	45,829	40,465
Pelican Utility Company	209	181	178	49	15.1	1.9	13.3	14,724	4,680	-	-	11,442	19,405	-
Perryville, City of	108	36	241	0	30.0	9.2	20.8	19,469	-	13,534	-	11,214	19,469	13,534
Pilot Point Village Council	94	44	279	0	31.7	17.0	14.7	30,069	-	21,668	-	32,181	30,069	21,668
Port Heiden, City of	126	52	178	2	30.0	8.2	21.8	20,774	688	14,442	478	12,031	21,462	14,920
Puvurnaq Power Company (Kongiganak) (1)								-	-	-	-	0	-	-
Ruby, City of	210	89	179	56	54.0	17.0	37.0	81,704	60,284	70,798	52,237	64,915	141,988	123,034
Sand Point Electric Company	989	274	378	43	29.9	17.7	12.2	214,049	95,829	148,453	66,462	370,486	309,878	214,915
Sheldon Point, City of	163	38	181	37	29.0	20.9	8.1	14,580	12,663	9,885	8,585	30,559	27,243	18,470
St. George Municipal Electric Utility	195	52	406	52	31.5	19.7	11.8	44,117	24,535	31,668	17,612	70,750	68,652	49,280
St. Paul Municipal Electrqic Utility	767	150	498	63	35.0	9.5	25.5	149,310	136,455	113,400	103,637	121,142	285,765	217,037
Stevens Village Energy Systems	102	40	101	37	55.0	17.1	37.9	21,161	19,610	18,401	17,052	18,495	40,771	35,453
Takotna Community Association	62	31	192	65	48.1	21.7	26.4	26,228	17,709	22,166	14,966	33,265	43,937	37,132
Tanalian Electric cooperative, Inc.	69	53	262	0	33.7	16.5	17.2	37,363	-	27,855	-	38,469	37,363	27,855
Tanana Power Company	351	105	231	28	42.7	17.3	25.4	91,532	37,357	74,917	30,575	86,851	128,889	105,492
Tatitlek Electric Utility	114	39	176	18	39.0	15.4	23.6	22,769	6,873	18,084	5,459	14,708	29,643	23,543
Telida Village Utility (1)								-	-	-	-	0	-	-
Teller Power Company	294	79	192	20	53.8	35.8	18.0	77,535	28,018	67,136	24,260	110,892	105,553	91,396
Tenakee Springs	111	86	184	23	34.0	18.3	15.7	43,150	7,027	32,315	5,263	50,042	50,178	37,578
Thorne Bay Public Utility	650	201	313	50	25.0	6.2	18.8	103,396	53,179	60,377	31,054	68,150	156,575	91,431

Utility/Community	Popu-lation	Resi-dential Customers	Average monthly Eligible kwh per Residential Customer (kwh)	Average monthly Eligible kwh per Community Fac./Pop. (kwh)	Utility's Avg Residential Rate (based on 500 kwh) (cents/kwh)	Power Cost Equalization Rate (cents/kwh)	Effective Residential Rate (cents/kwh)	11.3 cents residential $/year	11.3 cents com fac $/year	17.0 cents residential $/year	17.0 cents com fac $/year	Total PCE Payment / Existing Formula	Total Payment / 11.3 cent "Lifeline"	Total Payment / 17.0 cent "Lifeline"
Tlingit-Haida Regional Electrical Authority								-	-	-	-	0	-	-
Angoon	601	174	439	26	33.9	18.0	15.9	165,161	41,736	123,505	31,209	214,998	206,896	154,715
Chilkat Valley	129	91	250	0	33.9	18.0	15.9	61,728	-	46,159	-	53,920	61,728	46,159
Hoonah	903	298	440	51	33.9	18.0	15.9	282,862	123,793	211,520	92,571	413,613	406,654	304,091
Kake	696	255	460	37	33.9	18.0	15.9	242,046	69,245	180,999	51,780	335,507	311,291	232,779
Kasaan	41	23	361	1	33.9	18.0	15.9	21,832	78	16,325	58	21,615	21,909	16,384
Klawock	759	336	394	8	33.9	18.0	15.9	318,931	15,683	238,493	11,728	338,214	334,614	250,221
Total								-	-	-	-	0	-	-
Tuluksak Traditional Power Utility	375	67	102	1	35.0	17.5	17.5	19,369	1,440	14,710	1,094	15,661	20,808	15,804
Tuntutuliak Community Service Assn.	300	73	277	10	46.0	24.0	22.0	84,281	12,039	70,436	10,062	71,772	96,320	80,498
Umnak Power Company (Nikolski)	35	15	197	39	45.0	23.1	21.9	11,960	5,477	9,937	4,551	17,578	17,437	14,488
Unalakleet Valley Electric Cooperative	764	250	533	49	24.9	11.4	13.5	135,665	60,796	78,805	35,315	178,455	196,461	114,120
Unalaska Electric Utility	4,083	440	422	45	20.0	6.1	13.9	160,776	192,146	55,440	66,257	227,131	352,922	121,697
Unqusraq Power Company (Newtok)	262	49	320	5	54.0	31.5	22.5	80,316	6,481	69,594	5,616	71,539	86,797	75,210
Venetie Village Electric (1)								-	-	-	-	0	-	-
White Mountain Utilities	209	67	188	42	48.0	21.8	26.2	55,334	38,237	46,740	32,298	61,512	93,571	79,038
Yakutat Power	801	257	432	28	22.2	7.6	14.6	117,655	29,685	56,129	14,162	139,047	147,340	70,291
								-	-	-	-	0	-	-
Akutan Electric Utility (8)	436	43	317	21	32.3	15.8	16.5	34,356	23,430	25,031	17,071	35,420	57,786	42,101
Alutiiq Power Company (Karluk) (11)	71	13	318	9	53.3	31.3	22.0	20,846	3,154	18,017	2,726	20,581	24,000	20,743
Buckland, City of (10)	415	80	328	0	33.0	14.8	18.2	68,287	-	50,350	-	28,001	68,287	50,350
Chenega Bay (9)	95	29	317	8	29.5	18.8	10.7	20,098	1,637	13,803	1,124	12,574	21,734	14,928
Kobuk Valley Electric Company (10)	80	34	181	57	53.0	31.1	21.9	30,710	22,766	26,512	19,654	40,186	53,476	46,166
Koyukuk, City of (6)	125	56	107	6	45.0	18.1	26.9	24,304	3,240	20,193	2,692	7,467	27,544	22,885
Platinum Power Plant (7) (1)	44	21	74	4	50.0	26.0	24.0	7,191	840	6,132	716	6,277	8,031	6,848
Puvurnaq Power Company (Kongiganak) (11)	294	68	307	18	45.0	20.9	24.1	84,384	21,731	70,111	18,056	64,490	106,115	88,167
Telida Village Utility (11)								-	-	-	-	5,467	-	-
Venetie Village Electric (11)	182	63	181	37	51.0	13.2	37.8	54,387	31,764	46,578	27,203	29,623	86,151	73,782
								16,095,297	4,916,680	11,212,889	3,373,261	19,201,515	21,011,977	14,586,150
								21,011,977		14,586,150				

Additional Communities
Lifeline Rate Program
Residential Only -- No Community Facility Estimates
(Source: 1995 Alaska Electric Power Statistics)

	Resid. Rates above 11.3 cents	Resid. Rates above 17.0 cents	Number of resid. customers	Resid. Payment / 11.3 cents	Resid. Payment / 17.0 cents
Glennallen	19.5	19.5	993	$ 341,989	$ 104,265
Kodiak	16.2		4,150	$ 854,070	
Matanuska Electric	11.5		29,848	$ 250,723	
Seward	12.2		1,511	$ 57,116	
Valdez	16.9		1,423	$ 334,690	
				$ 1,838,588	$ 104,265

"Rates" are based on 500 kWh per month and include fixed charges.

12/31/98

ATTACHMENT 7

OPTION 1A

UNIVERSAL SERVICE FUND
150% OF STATEWIDE AVERAGE RESIDENTIAL RATE

OPTION 1A

Power Cost Equalization / Universal Service Fund
Projection of Revenues and Expenditures
(FY 2000 - 2013)

	2000	2001	2002	2003	2004	2005	2006
Revenues							
60% of Four Dam Pool Debt Service	5,527	6,551	6,626	6,700	6,775	6,850	6,862
Contribution from PCE Fund	10,173	9,463					
Contribution from Universal Service Fund			8,074	8,000	7,925	7,850	7,838
Total	15,700	16,014	14,700	14,700	14,700	14,700	14,700
Expenditures							
PCE Expenditure	15,700	16,014					
Lifeline Rate Expenditure (17.0 cent benchmark)			14,700	14,700	14,700	14,700	14,700
PCE Fund							
FY 2000 Appropriation of SE Loan	20,000						
FY 2000 Appropriation of General Funds	0						
Beginning of year balance	23,200	14,114					
Interest earnings (6% of average balance)	1,087	563					
Expenditure from PCE Fund	10,173	9,463					
End of year balance	14,114	5,214					
Universal Service Fund							
Required Cents/kWh at 5.0 Billion kWh/year			0.16	0.16	0.16	0.16	0.16
Projected Four Dam Pool Debt Service:	9,212 *	10,918	11,043	11,167	11,292	11,417	11,436

* (Estimate = $10.8 million debt service minus $1.6 million "self-help")

Notes:

All dollars in thousands

Ind. Fund balance = $3.2 million at end of FY99

1/27/99

OPTION 1A

Power Cost Equalization / Universal Service Fund
Projection of Revenues and Expenditures

	2007	2008	2009	2010	2011	2012	2013
Revenues							
60% of Four Dam Pool Debt Service	6,872	6,884	6,895	6,906	6,917	6,929	6,941
Contribution from PCE Fund							
Contribution from Universal Service Fund	7,828	7,816	7,805	7,794	7,783	7,771	7,759
Total	14,700	14,700	14,700	14,700	14,700	14,700	14,700
Expenditures							
Lifeline Rate Expenditure (17.0 cent benchmark)	14,700	14,700	14,700	14,700	14,700	14,700	14,700
Universal Service Fund							
Required Cents/kWh at 5.0 Billion kWh/year	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Projected Four Dam Pool Debt Service:	11,454	11,473	11,491	11,510	11,529	11,549	11,568

1/27/99

ATTACHMENT 8

OPTION 1B

UNIVERSAL SERVICE FUND
100% OF STATEWIDE AVERAGE RESIDENTIAL RATE

OPTION 1B

Power Cost Equalization / Universal Service Fund
Projection of Revenues and Expenditures
(FY 2000 - 2013)

	2000	2001	2002	2003	2004	2005	2006
Revenues							
60% of Four Dam Pool Debt Service	5,527	6,551	6,626	6,700	6,775	6,850	6,862
Contribution from PCE Fund	10,173	9,463					
Contribution from Universal Service Fund			16,274	16,200	16,125	16,050	16,038
Total	15,700	16,014	22,900	22,900	22,900	22,900	22,900
Expenditures							
PCE Expenditure	15,700	16,014					
Lifeline Rate Expenditure (11.3 cent benchmark)			22,900	22,900	22,900	22,900	22,900
PCE Fund							
FY 2000 Appropriation of SE Loan	20,000						
FY 2000 Appropriation of General Funds	0						
Beginning of year balance	23,200	14,114					
Interest earnings (6% of average balance)	1,087	563					
Expenditure from PCE Fund	10,173	9,463					
End of year balance	14,114	5,214					
Universal Service Fund							
Required Cents/kWh at 5.0 Billion kWh/year			0.33	0.32	0.32	0.32	0.32
Projected Four Dam Pool Debt Service:	9,212 *	10,918	11,043	11,167	11,292	11,417	11,436

* (Estimate = $10.8 million debt service minus $1.6 million "self-help")

Notes:

All dollars in thousands.

PCE Fund balance = $3.2 million at end of FY99.

1/27/99

OPTION 1B

Power Cost Equalization / Universal Service Fund
Projection of Revenues and Expenditures

	2007	2008	2009	2010	2011	2012	2013
Revenues							
60% of Four Dam Pool Debt Service	6,872	6,884	6,895	6,906	6,917	6,929	6,941
Contribution from PCE Fund							
Contribution from Universal Service Fund	16,028	16,016	16,005	15,994	15,983	15,971	15,959
Total	22,900	22,900	22,900	22,900	22,900	22,900	22,900
Expenditures							
Lifeline Rate Expenditure (11.3 cent benchmark)	22,900	22,900	22,900	22,900	22,900	22,900	22,900
Universal Service Fund							
Required Cents/kWh at 5.0 Billion kWh/year	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Projected Four Dam Pool Debt Service:	11,454	11,473	11,491	11,510	11,529	11,549	11,568

1/27/99

ATTACHMENT 9

OPTION 2

MODIFIED PCE
GENERAL FUND ENDOWMENT

OPTION 2

Power Cost Equalization / Modified and Capped
Projection of Revenues and Expenditures
(FY 2000 - 2013)

	2000	2001	2002	2003	2004	2005	2006
Revenues							
60% of Four Dam Pool Debt Service	5,527	6,551	6,626	6,700	6,775	6,850	6,862
Contribution from Endowment	10,173	9,463	9,708	9,961	10,219	10,150	10,138
Total	15,700	16,014	16,334	16,661	16,994	17,000	17,000
Expenditures							
PCE Expenditure Capped at $17 Million per Year	15,700	16,014	16,334	16,661	16,994	17,000	17,000
Endowment							
FY 2000 Appropriation of SE Loan	20,000						
FY 2000 Appropriation of General Funds	75,000						
Beginning of year balance	98,200	93,614	89,484	84,853	79,685	73,940	67,922
Interest earnings (6% of average balance)	5,587	5,333	5,078	4,792	4,475	4,132	3,771
Expenditure from Endowment	10,173	9,463	9,708	9,961	10,219	10,150	10,138
End of year balance	93,614	89,484	84,853	79,685	73,940	67,922	61,555
Projected Four Dam Pool Debt Service:	9,212 *	10,918	11,043	11,167	11,292	11,417	11,436

* (Estimate = $10.8 million debt service minus $1.6 million "self-help")

Notes:

All dollars in thousands.

PCE Fund balance = $3.2 million at end of FY99.

Four Dam Pool "self-help" estimated only for FY 2000.

1/27/99

OPTION 2

Power Cost Equalization / Modified and Capped
Projection of Revenues and Expenditures

	2007	2008	2009	2010	2011	2012	2013
Revenues							
60% of Four Dam Pool Debt Service	6,872	6,884	6,895	6,906	6,917	6,929	6,941
Contribution from Endowment	10,128	10,116	10,105	10,094	10,083	10,071	10,059
Total	17,000	17,000	17,000	17,000	17,000	17,000	17,000
Expenditures							
PCE Expenditure Capped at $17 Million per Year	17,000	17,000	17,000	17,000	17,000	17,000	17,000
Endowment							
Beginning of year balance	61,555	54,817	47,686	40,139	32,150	23,694	14,743
Interest earnings (6% of average balance)	3,389	2,986	2,558	2,106	1,627	1,120	583
Expenditure	10,128	10,116	10,105	10,094	10,083	10,071	10,059
End of year balance	54,817	47,686	40,139	32,150	23,694	14,743	5,267
Projected Four Dam Pool Debt Service:	11,454	11,473	11,491	11,510	11,529	11,549	11,568

1/27/99

ATTACHMENT 10

OPTION 3

MODIFIED PCE
DECLINING GENERAL FUND APPROPRIATIONS

OPTION 3

Power Cost Equalization / Modified and Capped
Projection of Revenues and Expenditures
(FY 2000 - 2013)

	2000	2001	2002	2003	2004	2005	2006
Revenues							
60% of Four Dam Pool Debt Service	5,527	6,551	6,626	6,700	6,775	6,850	6,862
Contribution from PCE Fund	9,473	8,449	8,374	8,300	8,225	8,150	8,138
Total	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Expenditures							
PCE Expenditure Capped at $15 Million per Year	15,000	15,000	15,000	15,000	15,000	15,000	15,000
PCE Fund							
FY 2000 Appropriation of SE Loan	20,000						
General Fund appropriations	15,000	12,500	10,000	7,500	5,000	2,500	0
Beginning of year balance	38,200	43,235	47,126	48,829	48,210	45,131	39,444
Interest earnings (6% of average balance)	2,008	2,341	2,576	2,681	2,646	2,463	2,122
Expenditure from PCE Fund	9,473	8,449	8,374	8,300	8,225	8,150	8,138
End of year balance	30,735	37,126	41,329	43,210	42,631	39,444	33,428
Projected Four Dam Pool Debt Service:	9,212 *	10,918	11,043	11,167	11,292	11,417	11,436

* (Estimate = $10.8 million debt service minus $1.6 million "self-help")

Notes:

All dollars in thousands.

PCE Fund balance = $3.2 million at end of FY99.

Four Dam Pool "self-help" estimated only for FY 2000.

1/27/99

OPTION 3

Power Cost Equalization / Modified and Capped
Projection of Revenues and Expenditures

	2007	2008	2009	2010	2011	2012	2013
Revenues							
60% of Four Dam Pool Debt Service	6,872	6,884	6,895	6,906	6,917	6,929	6,941
Contribution from PCE Fund	8,128	8,116	8,105	8,094	8,083	8,071	8,059
Total	15,000	15,000	15,000	15,000	15,000	15,000	15,000
Expenditures							
PCE Expenditure Capped at $15 Million per Year	15,000	15,000	15,000	15,000	15,000	15,000	15,000
PCE Fund							
General Fund appropriations	0	0	0	0	0	0	0
Beginning of year balance	33,428	27,062	20,327	13,198	5,653	(2,333)	(10,786)
Interest earnings (6% of average balance)	1,762	1,380	976	549	97	(382)	(889)
Expenditure from PCE Fund	8,128	8,116	8,105	8,094	8,083	8,071	8,059
End of year balance	27,062	20,327	13,198	5,653	(2,333)	(10,786)	(19,734)
Projected Four Dam Pool Debt Service:	11,454	11,473	11,491	11,510	11,529	11,549	11,568

1/27/99

HB

323

<TARGET><BILL>HB 323</BILL><SUBJECT>HB 323</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska State Legislature
House of Representatives
Representative Tammie Wilson

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House Bill 323:

"An Act relating to the Alaska energy efficient home grant fund; and creating a grant program for converting homes in regions designated."

House Bill 323 is intended to assist a community that is facing air quality issues as designated by the EPA through a PM 2.5 nonattainment air quality area.

HB 323 amends the Alaska energy efficient home grant fund, which is administered by the Alaska Housing Finance Corporation, to allow homeowners who reside within a PM 2.5 nonattainment area to be eligible for up to a $10,000 grant so they can upgrade their inefficient and dirty oil fired heating device or non EPA certified wood stove to a cleaner, more efficient oil fired heating device or EPA certified wood stove.

An important component of HB 323 is only available to those who do not qualify for the AHFC's income based weatherization program or has not taken advantage of the energy rebate program. Instead, upon an inspection by an AHFC certified energy auditor, the homeowner will be able to receive a voucher to assist in the heating device upgrading process.

Currently, an EPA designated PM 2.5 nonattainment area has been established within the Fairbanks North Star Borough. During the winter season, the air quality status can reach levels which are unhealthy for many of the people who reside within the nonattainment area. HB 323 will help mitigate the air quality health concerns by installing cleaner burning heating devices in the homes of residents who are left out of the current weatherization programs offered by the state.

The consequences of not reaching EPA PM 2.5 attainment status stretch beyond health concerns. If attainment is not reached by 2014, the EPA could sanction the state of Alaska by withholding Federal highway funds amounting in the millions of dollars. This would prevent many of Alaska's roads and transportation infrastructure from being constructed or upgraded. HB 323 will be another tool avoid EPA sanctions, while also improving energy efficiency and the health of Alaska's residents.



FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **HB323**
Fiscal Note Number: 1
() Publish Date: 3/2/2012

Identifier (file name): HB323-DOR-AHFC-03-01-12
Title: Nonattainment Area Home Heating System Grants
Sponsor: Representative Tammie Wilson
Requester: (H) ENE

Dept. Affected: Revenue
Appropriation: Alaska Housing Finance Corp.
Allocation: AHFC Operations
OMB Component Number: 110

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE (Thousands of Dollars)								
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)							
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial version

Prepared by: Cary Bolling, Officer Governmental Relations & Public Affairs — Phone: 907-350-2479
Division: Alaska Housing Finance Corporation — Date/Time: 4:45pm; 3/2/2012
Approved by: Dan Fauske, CEO — Date: 5:45pm; 3/2/2012
Alaska Housing Finance Corporation

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. HB323

Analysis

HB 323 would establish a home energy efficient grant fund for converting homes in regions designated as particulate matter nonattainment areas to efficient home heating systems.

The bill amends AS18.56.410, and subject to appropriation, requires Alaska Housing Finance Corporation (AHFC) to provide grants of up to $10,000 to individual homeowners based on an energy rating. Homeowners who have participated in the AHFC Weatherization program or Home Energy Rebate program would be ineligible. Homes with heating systems at 80% efficiency or above, or homes with wood heating systems certified by US EPA would also be ineligible.

There is currently no appropriation for the grant fund. If no appropriation is made for the fund, additional staff and management costs will not be needed.

Should there be an appropriation by the legislature for HB 323 that would exceed $100 million, the Corporation would require at minimum the addition of 6 new staff positions, as well as funds for marketing, outreach and contractual considerations. The estimate for program administration would be approximately $1.8 million annually. This would be funded through the needed legislative appropriation for HB 323.

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State Implementation Plan (SIP)

Section 110 of the Clean Air Act, 42 U.S.C. §7410, requires state and local air pollution control agencies to adopt Federally approved control strategies to minimize air pollution. The resulting body of regulations is known as a State Implementation Plan (SIP).

SIPs generally establish limits or work practice standards to minimize emissions of the criteria air pollutants or their precursors.

Pollutants of concern include sulfur dioxide, particulate matter, nitrogen oxides, lead, carbon monoxide, and ozone.

EPA has established national ambient air quality standards (NAAQS) for these pollutants. SIPs also include special control strategies for nonattainment areas -- areas that are not meeting the NAAQS.

These control strategies often include items such as vehicle inspection and maintenance, lower gasoline vapor pressures, gas pump vapor recovery, and other reasonably available control technologies (RACT).

Finally, SIPs include preconstruction permit requirements for projects that may result in emission increases.[1]

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1 http://yosemite.epa.gov/r10/AIRPAGE.NSF/f3f22921988a261b882569e5005ee8bb/b2ce4780021daa07882569de007ba77f!OpenDocument

§ 6295. ENERGY CONSERVATION STANDARDS

(a) Purposes

The purposes of this section are to—

(1)provide Federal energy conservation standards applicable to covered products; and

(2)authorize the Secretary to prescribe amended or new energy conservation standards for each type (or class) of covered product.

[...]

(f) Standards for furnaces and boilers

(1)Furnaces (other than furnaces designed solely for installation in mobile homes) manufactured on or after January 1, 1992, shall have an annual fuel utilization efficiency of not less than 78 percent, except that—

(A)boilers (other than gas steam boilers) shall have an annual fuel utilization efficiency of not less than 80 percent and gas steam boilers shall have an annual fuel utilization efficiency of not less than 75 percent; and

(B)the Secretary shall prescribe a final rule not later than January 1, 1989, establishing an energy conservation standard—

(i)which is for furnaces (other than furnaces designed solely for installation in mobile homes) having an input of less than 45,000 Btu per hour and manufactured on or after January 1, 1992;

(ii)which provides that the annual fuel utilization efficiency of such furnaces shall be a specific percent which is not less than 71 percent and not more than 78 percent; and

(iii)which the Secretary determines is not likely to result in a significant shift from gas heating to electric resistance heating with respect to either residential construction or furnace replacement.

(2)Furnaces which are designed solely for installation in mobile homes and which are manufactured on or after September 1, 1990, shall have an annual fuel utilization efficiency of not less than 75 percent.

(3) Boilers.—

(A) In general.— Subject to subparagraphs (B) and (C), boilers manufactured on or after September 1, 2012, shall meet the following requirements:

Boiler Type	Minimum Annual Fuel Utilization Efficiency	Design Requirements
Gas Hot Water	82%	No Constant Burning Pilot, Automatic Means for Adjusting Water Temperature
Gas Steam	80%	No Constant Burning Pilot
Oil Hot Water	84%	Automatic Means for Adjusting Temperature
Oil Steam	82%	None
Electric Hot Water	None	Automatic Means for Adjusting Temperature
Electric Steam	None	None

Air Quality

Highway Sanctions

Status of Sanction Clocks under the Clean Air Act **Updated: 1/30/12**

- Automatic Sanctions
- Discretionary Sanctions
- FHWA Sanction Exemption Criteria
- Programs and Projects Subject to Highway Sanctions
- Programs and Projects Exempt from Highway Sanctions
  - Safety Programs and Projects
  - Congressionally Authorized Activities
  - Air Quality Improvement Programs That Do Not Encourage Single Occupant Vehicle Capacity
  - Projects That Have Virtually No Air Quality Impact and Provide Other Environmental or Aesthetic Benefits
  - Planning and Research Activities
  - Project Development Activities
- What is the Difference Between Sanctions and a Conformity Lapse
- Other References
- For More Information

Automatic Sanctions

Section 179 of the Clean Air Act (42 USC 7509) requires automatic sanctions when:

- EPA finds that a State has failed to submit a required SIP or revision
- EPA disapproves a required SIP or revision
- EPA finds that a requirement of an approved SIP is not being implemented

Sanctions must be applied unless the deficiency is corrected within 18 months after the finding or disapproval. Highway sanctions are used for purposes of enforcing deadlines for SIP submittals and the implementation of approved SIP measures or elements required under the CAA. Sanctions are intended to induce States to develop strategies to attain the air quality standards. There are two sanctions required by Section 179 (42 USC 7509) .

18 months after the finding or disapproval, the offset sanction is imposed. The offset sanction is related to the fact that owners of new or expanded stationary sources of a pollutant for which an area is in nonattainment must "offset" their increased emissions by reducing existing emissions by at least the amount of the increase. This requirement is related to air quality since it prevents economic development from increasing emissions in areas that are already violating the air quality standards. In areas that are not sanctioned, offsets are required on a sliding scale from 1.1 to 1 in cleaner nonattainment areas to 1.5 to 1 in the dirtier nonattainment areas. However, offset sanction requires new or expanded stationary sources to reduce emissions by 2 tons for every 1 ton of emission growth. Because offsets are expensive and difficult to obtain, this is a very serious penalty.

If the deficiency is not corrected within 6 months of the imposition of the offset sanction, highway sanctions are imposed. The highway sanction is a prohibition on Federal funds for transportation projects within an area, except for certain safety, transit, and air quality beneficial projects. This sanction could be air quality related in an area that is nonattainment for transportation related pollutants, but is intended primarily as an economic incentive to SIP submission. Therefore, highway sanctions could be imposed even when the SIP deficiency is not transportation related. Sanctions apply for all types of nonattainment areas, including those without transportation-related pollutant problems.

These automatic sanctions imposed under Section 179 (42 USC 7509) apply only in nonattainment areas. They do not apply in attainment or maintenance areas. EPA does have the option, under Section 110(m) (42 USC 7410) of the Clean Air Act, to apply discretionary sanctions more widely.

Discretionary Sanctions

Section 110(m) (42 USC 7410) of the Clean Air Act allows EPA to apply sanctions at any time, or any time after, making a finding, disapproval, or determination that some CAA provision has not been met, and also allows those sanctions to be applied to any portion of a State that EPA finds reasonable to ensure that CAA requirements are met. The only restriction is that EPA may not apply sanctions statewide for two years when a political subdivision is responsible for the failure to comply with the law. After two years, EPA can sanction an entire State for the failing of a single city, and it can sanction at any time a whole state for the failure of a state agency or entity, such as the State legislature.

The imposition of statewide sanctions is subject to notice and comment in the Federal Register.

FHWA Sanction Exemption Criteria

On March 11, 1996 the FHWA released a guidance document entitled "FHWA Sanction Exemption Criteria" and this memo defines the exemption criteria that will be used to determine which projects can go forward and which grants may be awarded in the event EPA imposes highway sanctions under Section 179(b) (42 USC 7509) or Section 110(m) (42 USC 7410) of the Clean Air Act. The policy information identifies which categories of highway projects are exempt from highway sanctions, such as safety, environmentally-beneficial, and planning and research activities funded under Title 23 of United States Code (Federal-aid Highway Program). The EPA and DOT have agreed that additional programs such as TCMs in EPA-approved SIPs, inspection and maintenance facilities, bicycle and pedestrian facilities, carpool/vanpool programs, and conversion of existing lanes for HOV use during peak periods are also categorically exempt during EPA highway sanctions. Additional information may be obtained via the guidance memorandum which was published in the Federal Register on April 1, 1996 (61 FR14363).

Programs and Projects Subject to Highway Sanctions

Highway sanctions, when applied, halt the approval of projects and the award of any grants funded under Title 23, United States Code, except as for those types of projects, such as safety projects, that are defined in the Clean Air Act. This applies to the following major funding programs:

1. Surface Transportation Program (STP)
2. National Highway System (NHS)
3. Interstate Maintenance Program
4. Highway Bridge Replacement and Rehabilitation Program
5. Congestion Mitigation and Air Quality Improvement Program (CMAQ)

Projects funded under all other Title 23 programs and other authorizations are also subject to sanctions, including High Priority Projects identified by Congress. Projects funded under Title 49, U.S.C. chapter 53, the Federal Transit Act, as amended, are categorically exempt from sanctions by law as are other transportation programs authorized by statutes other than Title 23.

The following types of projects generally do not meet the exemption criteria of the Clean Air Act and would be subject to highway sanctions. These include projects that expand highway capacity, nonexempt project development activities, and any other project that does not explicitly meet exemption criteria. These may include activities for:

1. The addition of general purpose through lanes to existing roads.
2. New highway facilities on new locations.
3. New interchanges on existing highways.
4. Improvements to, or reconfiguration of existing interchanges.
5. Additions of new access points to the existing road network.
6. Increasing functional capacity of the facility.
7. Relocating existing highway facilities.
8. Repaving or resurfacing except for safety purposes, as defined by section 179(b) (42 USC 7509) .
9. Project development activities, including NEPA documentation and preliminary engineering, right-of-way purchase, equipment purchase, and construction solely for non-exempt projects.
10. Transportation enhancement activities associated with the rehabilitation and operation of historic transportation buildings, structures, or facilities not categorically exempted.

Programs and Projects Exempt from Highway Sanctions

Under section 179(b)(1) of the CAA (42 USC 7509) , once EPA imposes highway sanctions, the Federal Highway Administration may not approve or award any grants in the sanctioned area except those that are specifically exempted. These exempted projects fall under three categories:

1. Safety programs and projects
2. Seven congressionally-authorized activities
3. Air quality improvement projects that would not encourage single occupancy vehicle (SOV) capacity

Safety Programs and Projects

Safety projects are those for which the principal purpose is an improvement in safety but the projects may also have other important benefits. These projects must resolve a demonstrated safety problem with the likely result being a significant reduction in or avoidance of accidents as determined by the FHWA. Such demonstration must be supported by accident or other data submitted by the State or appropriate local government. Examples of

projects generally exempt from highway sanctions include Emergency Relief (ER) projects, statewide safety improvement programs, and programs administered by NHTSA.

Justification for an exemption on the grounds of safety must be based on accident or other data. Projects exempted under the safety provision may not involve substantial functional (such as upgrading major arterial to freeways), locational, or capacity changes except when the safety problem could not otherwise be solved.

Congressionally Authorized Activities

Seven project types are identified specifically in the CAA section as exempt from highway sanctions. They include:

1. Capital programs for public transit
2. Construction or restriction of certain roads or lanes solely for the use of passenger buses or High Occupancy Vehicles (HOV) 24-hours a day.
3. Planning for requirements for employers to reduce employee work-trip related vehicle emissions.
4. Highway ramp metering, traffic signalization, and related programs that improve traffic flow and achieve a new emission reduction.
5. Fringe and transportation corridor parking facilities serving multiple occupancy vehicle programs or transit operations.
6. Programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration, particularly during periods of peak use, through road use charges, tolls, parking surcharges, or other pricing mechanisms, vehicle restricted zones or periods, or vehicle registration programs.
7. Programs for breakdown and accident scene management, non-recurring congestion, and vehicle information systems, to reduce congestion and emissions.

Air Quality Improvement Programs That Do Not Encourage Single Occupant Vehicle Capacity

Transportation programs not otherwise exempt that improve air quality and which would not encourage SOV capacity (as determined by EPA in consultation with DOT) are also exempt from highway sanctions.

The EPA and DOT have agreed that the following projects will be categorically exempt from highway sanctions, and will not require additional EPA review or an individual finding by EPA:

1. The transportation control measuress (TCMs) contained in an EPA-approved SIP which will not encourage SOV capacity.
2. Inspection and maintenance facilities and activities eligible for CMAQ funding.
3. Bicycle and pedestrian facilities and programs.
4. Carpool/Vanpool programs.
5. Conversion of existing lanes for HOV use during peak hour periods.

Projects That Have Virtually No Air Quality Impact and Provide Other Environmental or Aesthetic Benefits

The following projects are likely to have virtually no environmental impacts, provide other aesthetic benefits, do not promote SOV capacity, and are, therefore considered exempt from highway sanctions:

1. Wetland Mitigation.
2. Planting Trees, Shrubs, Wildflowers.
3. Landscaping.
4. Purchase of Scenic Easements.
5. Billboard and Other Sign Removal.
6. Historic Preservation.
7. Transportation Enhancement Activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities).
8. Noise Abatement.

Planning and Research Activities

Planning and research activities for transportation and/or air quality purposes are exempt from highway sanctions. Such planning and research is critical for the development of projects that improve safety and address an area's transportation/air quality needs.

Project Development Activities

Development and completion of studies to meet requirements under NEPA are exempt from highway sanctions as long as consideration of projects that would be exempt under this policy memorandum, such as transit or other Transportation Demand Management (TDM) measures, are actively pursued as reasonable independent alternatives. Once all alternatives that could be considered exempt from highway sanctions under this policy memorandum are eliminated, project development activities for NEPA or other purposes are no longer exempt and can no longer be approved or funded under Title 23. For example, if prior to completion of NEPA documentation, all TDM measures are eliminated from consideration and the sole remaining question is the determination of an alignment for a highway capacity-expanding project (which may include TDM), subsequent project development activities are not exempt from highway sanctions.

The FHWA may not approve preliminary engineering for final design of a project, nor can approval be granted for a project's plans, specifications, and estimates after initiation of highway sanctions for projects that are not exempt from sanctions. Neither right-of-way nor any necessary equipment may be purchased or leased with Federal funds for nonexempt projects while an area is under sanction. Federally-funded construction may not in any way begin on a project that is not exempt while an area is under sanction.

What is the Difference Between Sanctions and a Conformity Lapse?

There are two separate legislative requirements for conformity and sanctions under the CAA. The above sections discuss the sanctions provisions.

The conformity provisions of the of the CAA require that the MPO and the U.S. DOT determine the conformity of transportation plans and transportation improvement programs (TIPs) with State air quality plans. A conformity lapse results from the failure to establish conformity within required time frames or the failure to meet emissions budgets or to pass one of the conformity tests. Unlike sanctions, a conformity lapse occurs immediately, if the requirements are not met. When a conformity lapse occurs, only limited types of projects can proceed. And, unlike highways sanctions, conformity lapses affect transit capactiy projects and regionally significant non-Federal projects.

For more information regarding transportation conformity, please visit our conformity website.

Other References:

- Clean Air Act Section 179 (42 USC 7509) - Sanctions and Consequences of Failure to Attain
- Clean Air Act Section 110(m) (42 USC 7410)
- EPA Regulations on Sanctions (40 CFR Chapter 1 '52.30 - 52.32)

For More Information

For additional information regarding sanctions please contact Cecilia Ho, FHWA Office of Natural and Human Environment at (202) 366-9862 or cecilia.ho@dot.gov, or see additional contacts.

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EPA Certified Wood Stoves

Since 1988, EPA has required manufacturers of wood stoves to certify that each model line of wood stoves offered for sale in the United States comply with the EPA particulate emissions guidelines in the Clean Air Act.

EPA-certified wood stoves are cleaner and more efficient than a wood stove manufactured before 1988. As part of the certification process, each wood stove model line is required to undergo emissions testing in accordance with EPA Reference Method 28 and sampling methods 5G or 5H by an EPA-accredited laboratory.

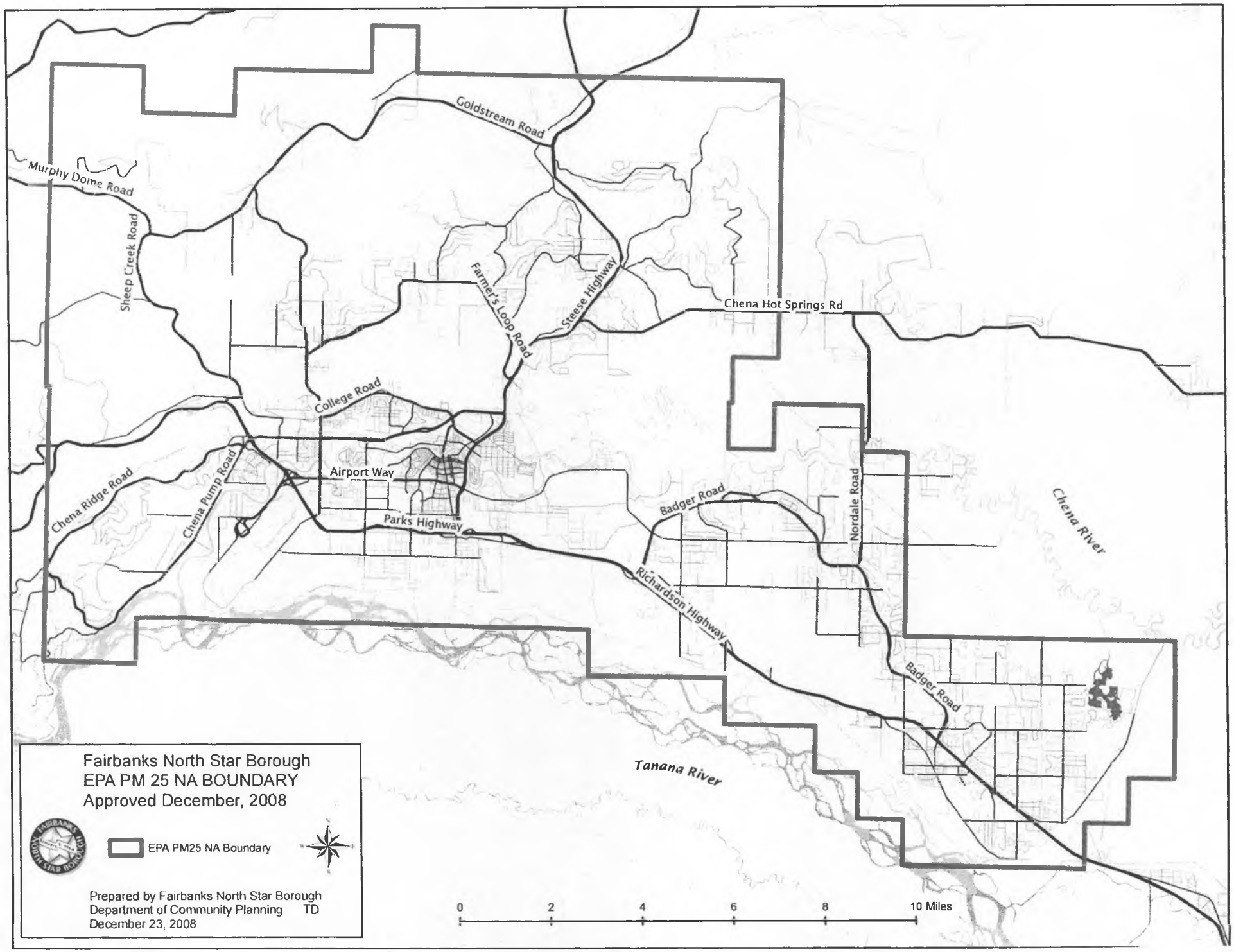
Only after successfully passing these tests can a wood stove be offered for sale in the United States.[1]

[1] "Wood Stove Certification." *Compliance Monitoring*. Environmental Protection Agency, 6/16/2009. <http://www.epa.gov/compliance/monitoring/programs/caa/whcert.html>.

Annual Fuel Utilization Efficiency (AFUE)

Table 1. Annual Estimated Savings for Every $100 of Fuel Costs by Increasing Your Heating Equipment Efficiency*

Existing System AFUE	New/Upgraded System AFUE								
	55%	60%	65%	70%	75%	80%	85%	90%	95%
50%	$9.09	$16.76	$23.07	$28.57	$33.33	$37.50	$41.24	$44.24	$47.36
55%	----	$8.33	$15.38	$21.42	$26.66	$31.20	$35.29	$38.88	$42.10
60%	----	----	$7.69	$14.28	$20.00	$25.00	$29.41	$33.33	$37.80
65%	----	----	----	$7.14	$13.33	$18.75	$23.52	$27.77	$31.57
70%	----	----	----	----	$6.66	$12.50	$17.64	$22.22	$26.32
75%	----	----	----	----	----	$6.50	$11.76	$16.66	$21.10
80%	----	----	----	----	----	----	$5.88	$11.11	$15.80
85%	----	----	----	----	----	----	----	$5.55	$10.50
90%	----	----	----	----	----	----	----	----	$5.30


Goldstream Road
Murphy Dome Road
Sheep Creek Road
Farmer's Loop Road
Steese Highway
Chena Hot Springs Rd
College Road
Chena Ridge Road
Chena Pump Road
Airport Way
Parks Highway
Badger Road
Nordale Road
Chena River
Richardson Highway
Badger Road
Tanana River
Fairbanks North Star Borough
EPA PM 25 NA BOUNDARY
Approved December, 2008
EPA PM25 NA Boundary
Prepared by Fairbanks North Star Borough
Department of Community Planning TD
December 23, 2008
0 2 4 6 8 10 Miles

CITY OF FAIRBANKS
Jerry Cleworth, Mayor
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March 5, 2012

Representative Tammie Wilson
Alaska State Legislature
State Capitol, Room 415
Juneau, AK 99801-1182

Re: House Bill 323

Dear Representative Wilson:

There are individuals residing in nonattainment areas in the Interior that would like to convert to more efficient energy systems for heating their homes, but cannot afford this on their own.

This bill gives them a tool that will help accomplish the conversion and take a positive step in achieving compliance with the PM 2.5 standard.

Taking advantage of the new technologies that are available is the only way areas in nonattainment status can hope to come into compliance.

Thank you for introducing HB323.

Sincerely,

Mayor Jerry Cleworth

Fairbanks North Star Borough
Office of the Mayor
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Fax: 907/459-1102
Email: mayor@co.fairbanks.ak.us

March 5, 2012

Representative Tammie Wilson
State Capitol
Juneau, AK 99801

Dear Representative Wilson:

HB 323 could provide a group of Borough residents within the EPA's PM 2.5 non-attainment area, a method to replace certain space heating devices through an AHFC funding structure.

It appears this legislation would address a method to finance an audit and replacement effort to those residents who have not been able to take advantage of existing State and Borough programs that provide rebates or purchase order approvals to upgrade their space heating devices.

The Legislature has previously provided state funding for the FNSB local voluntary solid fuel burning device change out and removal program. This new funding program in HB323 appears to be used as a stand-alone method, utilized when existing programs are not available.

This additional financing programming would be yet another method that will contribute to the reduction of particulate emissions through voluntary control measures that have been shown to improve our air quality locally.

Sincerely,

Luke Hopkins, Mayor

cc: Linda Anderson

CITY OF NORTH POLE

"Where the Spirit of Christmas Lives Year Round"

125 Snowman Lane • North Pole, Alaska 99705-7708
E-mail: mayor@northpolealaska.com • Website: www.northpolealaska.com

City Hall
907-488-2281
Fax: 907-488-3002

Mayor
907-488-8584

City Clerk
907-488-8583

Police Department
907-488-6902

Fire Department
907-488-2232

Utilities
907-488-6111

Director of City Services
907-488-8593

Finance
907-488-8594

February 20, 2012

Representative Tammie Wilson
Alaska State Legislature, Room 415
Juneau, Alaska 99801

Dear Representative Wilson:

I am writing in support of HB 323, "An Act relating to the Alaska energy efficient home grant fund; and creating a grant program for converting homes in regions designated as particulate matter nonattainment areas to efficient home heating systems."

Right now, it's a balmy 14°F and the Fairbanks North Star Borough's Near Real Time Air Quality website rates the air in North Pole as "Good." As you know, this is not always the case. For example, on February 12, 2012, area resident *Lynn Grover* of *2405 Eire Street* wrote:

> *For the last week, it's been nice out. I wish I would have been able to take my kids out to play in my own yards on my own property, but I couldn't and still can't today, as the coal and wood smoke is just too bad.*
>
> *Because of the smoke, this is the third year in a row that I cannot be outside on my own property and play with my kids. Also because of the smoke, we have to have air cleaners in every room of the house; if we didn't have them, we would all taste smoke in the indoor air on many winter days.*
>
> *When will I be able to play with my kids in my own yard on my own property without damaging our lungs and health in general?*
>
> *Sincerely disgusted with the lack of action on this issue, which is keeping my family members and me prisoners in our own home on beautiful and warm winter days,*

What is the solution to this woman's, and many other residents', dilemma? Obviously, it would be to help the neighbors burn more efficiently. And the neighbors would—if they could afford to.

Many Interior Alaska middle-class residents have spent their disposable income on the sky-rocketing and crushing expense of paying over $1,500.00 each month just to heat their homes, keep a light on in the house, and be able to drive to work. They have reached their credit card limits and are not eligible for more loans. They are juggling their mortgage and other bill payments in order to put food on their tables and so survive for another month.

For this testimony, middle class is defined as those people who cannot make use of existing programs, often because they can't front the money required to make energy improvements.

Added to the crushing expenses for energy, is the EPA demand that the Fairbanks North Star Borough, of which one third of the population is the North Pole area, must meet more stringent air quality standards within the next couple years. Further stressing our population is the uncertainty of whether or not many of our residents will have a job in a year due to the announced transfer of 1,600 military and civilian direct jobs to Anchorage—add to that number the many secondary and tertiary employment dependencies on Eielson. A sober person is left in shock and with few options.

Readily available wood or inexpensive coal becomes a necessity, and that hurts our air quality.

But our community will survive; many people will remain; and thus air quality standards must be attained. Even with the promise of natural gas at some uncertain, hopefully soon, date, provisions must be made to enable more efficient heating systems, especially that can be easily converted to natural gas. Without those provisions, this area will not meet the strict PM2.5 air quality standards, especially on those cold days when air inversions trap stale, smoke-laden air close to the chimney tops.

HB 232 provides the necessary provisions and protections by allowing for a qualified applicant to receive up to $10,000 in the form of a grant to purchase and install a new boiler or wood stove. The program would be administered by the AHFC, and would require a certified energy auditor to inspect their current boiler or wood stove before the grant is awarded.

This program will only apply for nonattainment areas, and once a region reaches attainment status, the program will no longer be available.

There are also stipulations in the bill which state if a person has already received equivalent improvements through the AHFC Energy Rebate program they cannot take advantage of this grant program. Also, I would encourage modifying the language of the bill on line if a person can qualify for a boiler or wood stove conversion through interior weatherization, they cannot utilize this grant. Finally, if a person accepts this grant, they cannot partake in either the Energy Rebate or income based weatherization programs.

Recognizing the need of the residents in my community, I commend this bill to you and your colleagues' for passage.

Sincerely,

Doug

Douglas W. Isaacson
Mayor

HB 336

<TARGET><BILL>HB 336</BILL><SUBJECT>HB 336</SUBJECT><COMM>HENE27</COMM></TARGET>

27-LS1403\E
Nauman
4/2/12

CS FOR HOUSE BILL NO. 336(ENE)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY THE HOUSE SPECIAL COMMITTEE ON ENERGY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES THOMPSON, Guttenberg, Herron, Edgmon, Miller, Gruenberg, Petersen, Joule, Kerttula, Foster

A BILL

FOR AN ACT ENTITLED

"An Act establishing an energy assistance program in the Alaska Housing Finance Corporation to issue an energy voucher to Alaska permanent fund dividend recipients; relating to the analysis and recommendation of an energy assistance program by the governor; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ALASKA ENERGY VOUCHER. (a) To help residents meet the high cost of energy in the state in 2011, the Alaska Housing Finance Corporation shall establish a program under which the corporation will issue not more than one energy voucher to each person who, in 2011, was an adult or an emancipated minor who was permitted to apply for a permanent fund dividend on the person's own behalf and who was determined by the Department of Revenue to be eligible for the permanent fund dividend paid in 2012.

(b) An energy voucher issued under this section is redeemable for the monetary

equivalent of 250 gallons of heating oil, the monetary equivalent of 35,000 cubic feet of natural gas, or the monetary equivalent of 1,500 kilowatt-hours of electricity. For purposes of this subsection, the monetary equivalent of 250 gallons of heating oil, 35,000 cubic feet of natural gas, or 1,500 kilowatt-hours of electricity is the retail price of 250 gallons of heating oil, 35,000 cubic feet of natural gas, or 1,500 kilowatt-hours of electricity as approved for each distributor qualified under (e) of this section. The corporation shall specify a date in 2012 for which each distributor that wants to be qualified under (e) of this section shall submit the retail price of 250 gallons of heating oil, the retail price of 35,000 cubic feet of natural gas, or the retail price of 1,500 kilowatt-hours of electricity, as applicable. On receipt of a voucher and eligible claim, the corporation shall issue a payment to the qualified distributor of the monetary amount determined under this subsection using the retail price approved by the corporation under (e) of this section for a qualified distributor for the applicable type of energy or fuel. On receipt of the payment from the state, a qualified distributor shall credit the full amount of the payment to the account that services the principal residence of the recipient of the voucher. A payment made under this section may not be used for costs unassociated with the purchase of the energy or fuel, may not be transferred between customer accounts, and may not be paid out in cash. If an account with a remaining balance from a payment made under this section is closed, a qualified distributor shall return the balance of the account attributable to the energy voucher to the state.

(c) The energy voucher

(1) shall be numbered and state the name of the person to whom the voucher is issued;

(2) must require the recipient of the voucher to sign, and date, and certify, on a form bearing notice that false statements made in the form are punishable by law, that the recipient of the voucher is complying with all the requirements of the voucher, including the requirement that the voucher amount be used to supply heating oil, natural gas, or electricity to the voucher recipient's primary residence in the state;

(3) is nontransferable and may not be sold, transferred, or traded for any other compensation, except as provided in (g) and (*l*) of this section;

(4) is redeemable only at a distributor qualified under (e) of this section and may not be split among multiple distributors;

(5) is not valid for submission to a distributor more than four months after the date the energy voucher is issued;

(6) is valid for heating oil, natural gas, or electricity delivered to the voucher recipient's primary residence in the state; and

(7) shall be issued by the corporation not more than 30 days following the issuance in 2012 of the permanent fund dividend.

(d) A distributor qualified under (e) of this section shall, within 30 days after accepting the voucher, issue a document acknowledging receipt of the voucher to the person exchanging the voucher. The corporation shall issue the amount determined under (b) and (e) of this section to the qualified distributor for an energy voucher not later than 20 days after receiving an eligible claim from a qualified distributor. Submitted claims must include

(1) the number of the voucher;

(2) the name of the recipient, as stated on the voucher; and

(3) the address or other identifying information requested by the corporation listed on the heating oil, natural gas, or electricity account that the voucher will credit.

(e) The corporation shall maintain a list of qualified distributors eligible to accept and redeem vouchers. A distributor of oil, natural gas, or electricity is qualified if the distributor

(1) is licensed to do business in the state;

(2) is regularly engaged in the business of distributing oil, natural gas, or electricity;

(3) submits a retail price of oil, natural gas, or electricity, as applicable, for the quantities described in (a) of this section, submits all evidence for that retail price requested by the corporation, and responds to inquiries of the corporation related to that retail price, and the corporation finds that retail price is representative of the price charged under similar circumstances; and

(4) meets other eligibility requirements that the corporation may adopt under AS 18.56.088 or emergency regulations adopted under sec. 3 of this Act.

(f) In determining the eligibility of an individual under a public assistance program, a heating assistance program, or a veterans' benefits program in which eligibility for assistance is based on financial need, the state may not consider an energy voucher as income or resources received by the recipient or by a member of the recipient's household.

(g) If a recipient of an energy voucher certifies on a form provided by the corporation, bearing notice that false statements made on the form are punishable by law, that the recipient

(1) does not pay directly for the heating oil, natural gas, or electricity used in the recipient's residence or does not have reasonable access to a qualified distributor of the type of fuel or electricity used in the recipient's primary residence in the state, the recipient may exchange the voucher with the corporation

(A) for a replacement voucher in the name of the landlord of the primary residence in the state in which the recipient resides, the full value of which shall be deducted by the landlord from the recipient's rent; or

(B) upon certification that the $250 will be used toward rent, energy, or heating costs at the recipient's primary residence in the state, for a check for $250 in the recipient's name;

(2) heats the recipient's primary residence exclusively with a fuel that is not heating oil, natural gas, or electricity, does not have reasonable access to a qualified distributor of heating oil or natural gas, and that the $500 will be used toward heating costs at the recipient's primary residence in the state, the recipient may exchange the voucher with the corporation for a check for $500 in the recipient's name.

(h) Except as provided in (j) of this section or as may be provided by regulations adopted by the corporation, an energy voucher issued under this section is not valid unless it is signed and dated by the individual named on the face of the voucher.

(i) A replacement voucher issued to a landlord under (g) of this section is not valid until the landlord certifies on a form provided by the corporation bearing notice that false statements made in the form are punishable by law that the full amount of the voucher will be used to provide energy or heat to the primary residence of the original recipient of the voucher and certifies that the landlord will apply the full amount of the voucher against the rent of the original recipient of the voucher.

(j) Certification or signature on an energy voucher or other certification under this section required of an individual who is disabled or incompetent may be signed or certified by the individual's legal guardian or other authorized representative. An individual may complete, sign, and redeem an energy voucher on behalf of a member of the armed forces of the United States who is serving on active duty outside of the United States if the individual

has a power of attorney from the member of the armed forces that, in specific or general terms, authorizes the individual to redeem the voucher.

(k) An individual who is disabled or incompetent may not maintain a claim against the state or an officer or employee of the state based on the manner in which the guardian or authorized representative other than a public agency of the state managed or disposed of an energy voucher received on behalf of the disabled or incompetent individual.

(*l*) If a person is eligible for an energy voucher but dies before the energy voucher is issued or redeemed, the energy voucher may be transferred to a personal representative of the estate or to a successor claiming personal property under AS 13.16.680.

(m) In addition to any criminal penalties imposed by state law, if an individual or qualified distributor is convicted of a crime in connection with a false statement made in a certification required under this section, in a submission for a reimbursement under (d) of this section, or in connection with forging an energy voucher, and the conviction is not reversed, vacated, or set aside, or if an individual or qualified distributor is found by the Alaska Housing Finance Corporation to have bought, sold, traded, or otherwise violated the terms of the voucher, that individual or qualified distributor forfeits the energy voucher, or the monetary amount received from the voucher, and the individual is not eligible for a future permanent fund dividend.

(n) If an individual is aggrieved by a decision of the Department of Revenue with respect to the individual's eligibility for a permanent fund dividend, and thus an energy voucher, the individual may request that the department review its decision under AS 43.23.015(g).

(o) If an individual or distributor is aggrieved by a decision of the Alaska Housing Finance Corporation with respect to the individual's authority to claim an energy voucher on behalf of another, or reimbursement of a distributor, or other decision under (e), (g), or (m) of this section, the individual or distributor may request that the corporation review its decision. Within 12 months after an administrative appeal under this subsection is filed, the corporation shall provide the individual or distributor with a final written decision. If the individual or distributor is aggrieved by the final written decision of the corporation, the individual or distributor may appeal that decision to the superior court in accordance with AS 44.62.560. An appeal to the court under this subsection does not entitle the aggrieved individual or

distributor to a trial de novo. The appeal shall be based on the record of the administrative proceeding from which appeal is taken, and the scope of appeal is limited to matters contained in the record of the administrative proceeding.

(p) If the corporation determines that an energy voucher or a cash payment made in exchange for a voucher should not have been issued to an individual or a reimbursement should not have been made to a distributor, the state may use all collection procedures or remedies available under AS 43 to recover the energy voucher or the cash value of the voucher that was improperly issued or for which reimbursement was improperly made. Except as provided in (q) of this section, a notice of an improperly issued voucher or improper reimbursement shall be sent to the individual or distributor, as applicable, within

(1) three years after the energy voucher was issued if the notice is sent to an individual; or

(2) three years after the distributor received reimbursement if the notice is sent to a distributor.

(q) The three-year time limit under (p) of this section for the corporation to send notice of an improperly issued voucher or an improper reimbursement is extended to six years if the corporation determines that the individual or distributor

(1) exercised gross negligence or reckless disregard with respect to a material fact in connection with a false statement on the energy voucher or submission for reimbursement; or

(2) forged an energy voucher.

(r) If notice is not sent within the time required under (p) or (q) of this section, administrative or judicial proceedings may not be commenced for recovery of an improperly issued energy voucher or improper reimbursement.

(s) An energy voucher, account credit, or cash payment provided under this section is exempt from garnishment, levy, or execution by a private party or the state.

(t) To the extent allowed by federal law and notwithstanding other state law that may be to the contrary, the department shall, on request of the corporation, electronically provide the corporation with information about applicants who the department has determined are eligible for the permanent fund dividend paid in 2012. Information requested by the corporation under this subsection may include the name of the applicant, the address of the

applicant, the date of birth of the applicant, the social security number of the applicant, and any other information necessary to execute the energy voucher program. Information from the department may be used by the corporation only for the purpose of executing the energy voucher program created under this section.

(u) In this section,

(1) "corporation" means the Alaska Housing Finance Corporation created under AS 18.56;

(2) "department" means the Department of Revenue;

(3) "disabled" means physically or mentally unable to sign an energy voucher or make a certification required in this section because of serious emotional disturbance, visual, orthopedic, or other health impairment, or developmental disability that is attributable to mental retardation, cerebral palsy, epilepsy, autism, or other cause; "disabled" does not mean "incompetent."

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ANALYSIS AND RECOMMENDATION OF AN ENERGY ASSISTANCE PROGRAM. (a) The governor shall take public testimony, consider the recommendations from organizations involved in providing energy or energy assistance to Alaskans, analyze the energy assistance options in (b) of this section, and analyze alternate options to those proposed in (b) of this section for providing energy assistance to Alaskans and, before October 1, 2012, the governor shall provide a report to the legislature making a recommendation for an energy assistance program to be implemented in the fiscal year ending June 30, 2014, that

(1) correlates the amount of assistance to the local cost of residential heating, taking into consideration the price of fuel and heating degree days in each community;

(2) is implemented based on crude oil price or heating oil price;

(3) has total funding based on state revenue;

(4) minimizes administrative costs;

(5) makes participation of fuel distributors voluntary;

(6) includes a hold harmless provision for recipients of public assistance and veterans' benefits; and

(7) includes penalties for fraud, including ineligibility for a future permanent fund dividend.

(b) The governor shall analyze the following options and may analyze alternate options to provide energy assistance to Alaskans:

(1) a fuel price reduction program with the following features:

(A) state reimbursement to a heating oil or natural gas distributor of a portion of the wholesale purchase price of fuel that the distributor sold to heat residential structures;

(B) an amount of reimbursement necessary to reduce the wholesale purchase price of a distributor by a specified amount or to a specified price;

(C) a limit on the amount of fuel that a person may purchase and for which a distributor received a state reimbursement; and

(2) an individual account program with the following features:

(A) application on a permanent fund dividend application for energy assistance in the form of a state payment to the applicant's account with a fuel distributor or electric utility;

(B) assistance based on heating degree days and the cost of energy in the community;

(C) electronic selection of

(i) a fuel distributor or electric utility to receive the individual's energy assistance payment; and

(ii) an optional amount from the applicant's dividend to be deposited in the individual's account with a fuel distributor or electric utility;

(D) a statewide base amount to be sent with the applicant's permanent fund dividend for an applicant for energy assistance who fails to select a fuel distributor or electric utility to receive the individual's energy assistance payment.

(c) The governor's report to the legislature under (a) of this section shall evaluate

(1) the estimated cost of the program for the first five years;

(2) the cost of administering the program compared to the assistance provided;

(3) whether the program provides the highest level of assistance to the individuals with the highest heating costs; and

(4) whether the program can be structured so that energy assistance is not subject to federal taxation.

(d) In this section, "heating degree days" means the average temperature for a day minus the reference temperature of 65 degrees Fahrenheit.

*** Sec. 3.** The uncodified law of the State of Alaska is amended by adding a new section to read:

EMERGENCY REGULATION AND PROCUREMENT PROVISIONS. Notwithstanding AS 18.56.088, the Alaska Housing Finance Corporation may adopt emergency regulations under AS 44.62.250 and 44.62.260 necessary to implement the Alaska energy voucher program in sec. 1 of this Act without making written findings under AS 44.62.250. The legislature finds that the adoption of emergency regulations is necessary to implement this Act and for the immediate preservation of public health and general welfare. In addition, the Alaska Housing Finance Corporation is exempt from AS 36.30, including AS 36.30.015(f), for the purposes of implementing the Alaska energy voucher program.

*** Sec. 4.** This Act takes effect immediately under AS 01.10.070(c).

27-LS1403\I
Nauman
3/26/12

CS FOR HOUSE BILL NO. 336( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES THOMPSON, Guttenberg, Herron, Edgmon, Miller, Gruenberg, Petersen, Joule, Kerttula, Foster

A BILL

FOR AN ACT ENTITLED

"An Act establishing an energy assistance program in the Alaska Housing Finance Corporation to issue an energy voucher to Alaska permanent fund dividend recipients; relating to the analysis and recommendation of an energy assistance program by the governor; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ALASKA ENERGY VOUCHER. (a) To help residents meet the high cost of energy in the state in 2011, the Alaska Housing Finance Corporation shall establish a program under which the corporation will issue not more than one energy voucher to each person who, in 2011, was an adult or an emancipated minor who was permitted to apply for a permanent fund dividend on the person's own behalf and who was determined by the Department of Revenue to be eligible for the permanent fund dividend paid in 2012.

(b) An energy voucher issued under this section is redeemable for the monetary

equivalent of 250 gallons of heating oil, the monetary equivalent of 35,000 cubic feet of natural gas, or the monetary equivalent of 1,500 kilowatt-hours of electricity. For purposes of this subsection, the monetary equivalent of 250 gallons of heating oil, 35,000 cubic feet of natural gas, or 1,500 kilowatt-hours of electricity is the retail price of 250 gallons of heating oil, 35,000 cubic feet of natural gas, or 1,500 kilowatt-hours of electricity as approved for each distributor qualified under (e) of this section. The corporation shall specify a date in 2012 for which each distributor that wants to be qualified under (e) of this section shall submit the retail price of 250 gallons of heating oil, the retail price of 35,000 cubic feet of natural gas, or the retail price of 1,500 kilowatt-hours of electricity, as applicable. On receipt of a voucher and eligible claim, the corporation shall issue a payment to the qualified distributor of the monetary amount determined under this subsection using the retail price approved by the corporation under (e) of this section for a qualified distributor for the applicable type of energy or fuel. On receipt of the payment from the state, a qualified distributor shall credit the full amount of the payment to the account that services the principal residence of the recipient of the voucher. A payment made under this section may not be used for costs unassociated with the purchase of the energy or fuel, may not be transferred between customer accounts, and may not be paid out in cash. If an account with a remaining balance from a payment made under this section is closed, a qualified distributor shall return the balance of the account attributable to the energy voucher to the state.

(c) The energy voucher

(1) shall be numbered and state the name of the person to whom the voucher is issued;

(2) must require the recipient of the voucher to sign, and date, and certify, on a form bearing notice that false statements made in the form are punishable by law, that the recipient of the voucher is complying with all the requirements of the voucher, including the requirement that the voucher amount be used to supply heating oil, natural gas, or electricity to the voucher recipient's primary residence in the state;

(3) is nontransferable and may not be sold, transferred, or traded for any other compensation, except as provided in (g) and (*l*) of this section;

(4) is redeemable only at a distributor qualified under (e) of this section and may not be split among multiple distributors;

(5) is not valid for submission to a distributor more than four months after the date the energy voucher is issued;

(6) is valid for heating oil, natural gas, or electricity delivered to the voucher recipient's primary residence in the state; and

(7) shall be issued by the corporation not more than 30 days following the issuance in 2012 of the permanent fund dividend.

(d) A distributor qualified under (e) of this section shall, within 30 days after accepting the voucher, issue a document acknowledging receipt of the voucher to the person exchanging the voucher. The corporation shall issue the amount determined under (b) and (e) of this section to the qualified distributor for an energy voucher not later than 20 days after receiving an eligible claim from a qualified distributor. Submitted claims must include

(1) the number of the voucher;

(2) the name of the recipient, as stated on the voucher; and

(3) the address listed on the heating oil, natural gas, or electricity account that the voucher will credit.

(e) The corporation shall maintain a list of qualified distributors eligible to accept and redeem vouchers. A distributor of oil, natural gas, or electricity is qualified if the distributor

(1) is licensed to do business in the state;

(2) is regularly engaged in the business of distributing oil, natural gas, or electricity;

(3) submits a retail price of oil, natural gas, or electricity, as applicable, for the quantities described in (a) of this section, submits all evidence for that retail price requested by the corporation, and responds to inquiries of the corporation related to that retail price, and the corporation finds that retail price is representative of the price charged under similar circumstances; and

(4) meets other eligibility requirements that the corporation may adopt under AS 18.56.088 or emergency regulations adopted under sec. 3 of this Act.

(f) In determining the eligibility of an individual under a public assistance program, a heating assistance program, or a veterans' benefits program in which eligibility for assistance is based on financial need, the state may not consider an energy voucher as income or resources received by the recipient or by a member of the recipient's household.

(g) A recipient of an energy voucher who does not pay directly for the heating oil, natural gas, or electricity used in the recipient's residence or who does not have reasonable access to a qualified distributor of the type of fuel or electricity used in the recipient's residence in the state may certify that fact on a form provided by the corporation bearing notice that false statements made in the form are punishable by law, and may exchange the voucher with the corporation

(1) if applicable, for a replacement voucher in the name of the landlord or owner of the residence in the state in which the recipient resides, the value of which may, subject to negotiations between the landlord and tenant, be deducted from rent; or

(2) upon certification that the $250 will be used toward rent, energy, or heating costs at the recipient's primary residence in the state, for a check for $250 in the name of the recipient of the energy voucher.

(h) Except as provided in (j) of this section or as may be provided by regulations adopted by the corporation, an energy voucher issued under this section is not valid unless it is signed and dated by the individual named on the face of the voucher.

(i) A replacement voucher issued to a landlord under (g) of this section is not valid until the landlord certifies on a form provided by the corporation bearing notice that false statements made in the form are punishable by law that the amount of the voucher will be used to provide energy or heat to the primary residence of the original recipient of the voucher and certifies to the amount that the landlord will apply against the rent of the original recipient of the voucher.

(j) Certification or signature on an energy voucher or other certification under this section required of an individual who is disabled or incompetent may be signed or certified by the individual's legal guardian or other authorized representative. An individual may complete, sign, and redeem an energy voucher on behalf of a member of the armed forces of the United States who is serving on active duty outside of the United States if the individual has a power of attorney from the member of the armed forces that, in specific or general terms, authorizes the individual to redeem the voucher.

(k) An individual who is disabled or incompetent may not maintain a claim against the state or an officer or employee of the state based on the manner in which the guardian or authorized representative other than a public agency of the state managed or disposed of an

energy voucher received on behalf of the disabled or incompetent individual.

(*l*) If a person is eligible for an energy voucher but dies before the energy voucher is issued or redeemed, the energy voucher may be transferred to a personal representative of the estate or to a successor claiming personal property under AS 13.16.680.

(m) In addition to any criminal penalties imposed by state law, if an individual or qualified distributor is convicted of a crime in connection with a false statement made in a certification required under this section, in a submission for a reimbursement under (d) of this section, or in connection with forging an energy voucher, and the conviction is not reversed, vacated, or set aside, or if an individual or qualified distributor is found by the Alaska Housing Finance Corporation to have bought, sold, traded, or otherwise violated the terms of the voucher, that individual or qualified distributor forfeits the energy voucher, or the monetary amount received from the voucher, and the individual is not eligible for a future permanent fund dividend.

(n) If an individual is aggrieved by a decision of the Department of Revenue with respect to the individual's eligibility for a permanent fund dividend, and thus an energy voucher, the individual may request that the department review its decision under AS 43.23.015(g).

(o) If an individual or distributor is aggrieved by a decision of the Alaska Housing Finance Corporation with respect to the individual's authority to claim an energy voucher on behalf of another, or reimbursement of a distributor, or other decision under (e), (g), or (m) of this section, the individual or distributor may request that the corporation review its decision. Within 12 months after an administrative appeal under this subsection is filed, the corporation shall provide the individual or distributor with a final written decision. If the individual or distributor is aggrieved by the final written decision of the corporation, the individual or distributor may appeal that decision to the superior court in accordance with AS 44.62.560. An appeal to the court under this subsection does not entitle the aggrieved individual or distributor to a trial de novo. The appeal shall be based on the record of the administrative proceeding from which appeal is taken, and the scope of appeal is limited to matters contained in the record of the administrative proceeding.

(p) If the corporation determines that an energy voucher or a cash payment made in exchange for a voucher should not have been issued to an individual or a reimbursement

should not have been made to a distributor, the state may use all collection procedures or remedies available under AS 43 to recover the energy voucher or the cash value of the voucher that was improperly issued or for which reimbursement was improperly made. Except as provided in (q) of this section, a notice of an improperly issued voucher or improper reimbursement shall be sent to the individual or distributor, as applicable, within

(1) three years after the energy voucher was issued if the notice is sent to an individual; or

(2) three years after the distributor received reimbursement if the notice is sent to a distributor.

(q) The three-year time limit under (p) of this section for the corporation to send notice of an improperly issued voucher or an improper reimbursement is extended to six years if the corporation determines that the individual or distributor

(1) exercised gross negligence or reckless disregard with respect to a material fact in connection with a false statement on the energy voucher or submission for reimbursement; or

(2) forged an energy voucher.

(r) If notice is not sent within the time required under (p) or (q) of this section, administrative or judicial proceedings may not be commenced for recovery of an improperly issued energy voucher or improper reimbursement.

(s) An energy voucher, account credit, or cash payment provided under this section is exempt from garnishment, levy, or execution by a private party or the state.

(t) To the extent allowed by federal law and notwithstanding other state law that may be to the contrary, the department shall, on request of the corporation, electronically provide the corporation with information about applicants who the department has determined are eligible for the permanent fund dividend paid in 2012. Information requested by the corporation under this subsection may include the name of the applicant, the address of the applicant, the date of birth of the applicant, the social security number of the applicant, and any other information necessary to execute the energy voucher program. Information from the department may be used by the corporation only for the purpose of executing the energy voucher program created under this section.

(u) In this section,

(1) "corporation" means the Alaska Housing Finance Corporation created under AS 18.56;

(2) "department" means the Department of Revenue;

(3) "disabled" means physically or mentally unable to sign an energy voucher or make a certification required in this section because of serious emotional disturbance, visual, orthopedic, or other health impairment, or developmental disability that is attributable to mental retardation, cerebral palsy, epilepsy, autism, or other cause; "disabled" does not mean "incompetent."

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ANALYSIS AND RECOMMENDATION OF AN ENERGY ASSISTANCE PROGRAM. (a) The governor shall take public testimony, consider the recommendations from organizations involved in providing energy or energy assistance to Alaskans, analyze the energy assistance options in (b) of this section, and analyze alternate options to those proposed in (b) of this section for providing energy assistance to Alaskans and, before October 1, 2012, the governor shall provide a report to the legislature making a recommendation for an energy assistance program to be implemented in the fiscal year ending June 30, 2014, that

(1) correlates the amount of assistance to the local cost of residential heating, taking into consideration the price of fuel and heating degree days in each community;

(2) is implemented based on crude oil price or heating oil price;

(3) has total funding based on state revenue;

(4) minimizes administrative costs;

(5) makes participation of fuel distributors voluntary;

(6) includes a hold harmless provision for recipients of public assistance and veterans' benefits; and

(7) includes penalties for fraud, including ineligibility for a future permanent fund dividend.

(b) The governor shall analyze the following options and may analyze alternate options to provide energy assistance to Alaskans:

(1) a fuel price reduction program with the following features:

(A) state reimbursement to a heating oil or natural gas distributor of a portion of the wholesale purchase price of fuel that the distributor sold to heat residential structures;

(B) an amount of reimbursement necessary to reduce the wholesale purchase price of a distributor by a specified amount or to a specified price;

(C) a limit on the amount of fuel that a person may purchase and for which a distributor received a state reimbursement; and

(2) an individual account program with the following features:

(A) application on a permanent fund dividend application for energy assistance in the form of a state payment to the applicant's account with a fuel distributor or electric utility;

(B) assistance based on heating degree days and the cost of energy in the community;

(C) electronic selection of

(i) a fuel distributor or electric utility to receive the individual's energy assistance payment; and

(ii) an optional amount from the applicant's dividend to be deposited in the individual's account with a fuel distributor or electric utility;

(D) a statewide base amount to be sent with the applicant's permanent fund dividend for an applicant for energy assistance who fails to select a fuel distributor or electric utility to receive the individual's energy assistance payment.

(c) The governor's report to the legislature under (a) of this section shall evaluate

(1) the estimated cost of the program for the first five years;

(2) the cost of administering the program compared to the assistance provided;

(3) whether the program provides the highest level of assistance to the individuals with the highest heating costs; and

(4) whether the program can be structured so that energy assistance is not subject to federal taxation.

(d) In this section, "heating degree days" means the average temperature for a day minus the reference temperature of 65 degrees Fahrenheit.

*** Sec. 3.** The uncodified law of the State of Alaska is amended by adding a new section to

read:

EMERGENCY REGULATION AND PROCUREMENT PROVISIONS. Notwithstanding AS 18.56.088, the Alaska Housing Finance Corporation may adopt emergency regulations under AS 44.62.250 and 44.62.260 necessary to implement the Alaska energy voucher program in sec. 1 of this Act without making written findings under AS 44.62.250. The legislature finds that the adoption of emergency regulations is necessary to implement this Act and for the immediate preservation of public health and general welfare. In addition, the Alaska Housing Finance Corporation is exempt from AS 36.30, including AS 36.30.015(f), for the purposes of implementing the Alaska energy voucher program.

* **Sec. 4.** This Act takes effect immediately under AS 01.10.070(c).

ALASKA STATE LEGISLATURE

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REPRESENTATIVE STEVE THOMPSON
DISTRICT 10

Sponsor Statement CSHB 336

"An Act establishing an energy assistance program in the Department of Revenue to issue an energy voucher to Alaska permanent fund dividend recipients; and relating to the analysis and recommendation of an energy assistance program by the governor."

Alaskans are struggling to heat their homes in the face of high energy costs. This crisis is undercutting families and stifling local economies, particularly in communities with the harshest climates and highest fuel costs.

House Bill 336 provides Alaskans with energy relief through fuel vouchers this fall, and develops a program to help residents deal with high heating costs during the transition to more affordable energy supplies.

HB 336 directs the Alaska Housing and Finance Corporation to send a voucher to every adult Permanent Fund Dividend recipient in the fall of 2012, which can be redeemed at the fuel distributor or utility of their choice for either 250 gallons of heating oil, an equivalent amount of natural gas, or 1,500 KWH of electricity. By providing an equal amount of fuel to each adult, the voucher system accounts for the disparate cost of different fuels and prices in different locations.

Renters and others who certify that they do not pay directly for home heating oil, natural gas or electricity may request the reissuance of their voucher in the name of their landlord or a $250 cash payment.

The second section of the bill requires the governor to analyze two specific options for energy relief in FY13 and beyond: an evaluation of a "fuel price reduction program" and an "individual account program." The executive branch may also analyze alternatives to those options before making a recommendation. The analysis and recommendation are due back to the legislature by October 1, 2012.

E-mail Representative_Steve_Thompson@legis.state.ak.us

The program recommended by the state must correlate the amount of assistance to the local cost of residential heating, taking into consideration the price of fuel and "heating degree days" in each community, as well as satisfy other requirements designed to ensure an efficient and equitable program.

The third section authorizes AHFC to adopt regulations to implement the program

The fourth section provides for an immediate effective date for the program

HB 336 will provide needed relief this year, and develop a program to help families in the future. I ask for your support.

27-LS1403\B
Nauman
3/22/12

CS FOR HOUSE BILL NO. 336( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES THOMPSON, Guttenberg, Herron, Edgmon, Miller, Gruenberg, Petersen, Joule, Kerttula, Foster

A BILL

FOR AN ACT ENTITLED

"An Act establishing an energy assistance program in the Alaska Housing Finance Corporation to issue an energy voucher to Alaska permanent fund dividend recipients; relating to the analysis and recommendation of an energy assistance program by the governor; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ALASKA ENERGY VOUCHER. (a) To help residents meet the high cost of energy in the state in 2011, the Alaska Housing Finance Corporation shall establish a program under which the corporation will issue not more than one energy voucher to each person who, in 2011, was an adult or an emancipated minor who was permitted to apply for a permanent fund dividend on the person's own behalf and who was determined by the Department of Revenue to be eligible for the permanent fund dividend paid in 2012.

(b) An energy voucher issued under this section is redeemable for the monetary

equivalent of 250 gallons of heating oil, the monetary equivalent of 350,000 cubic feet of natural gas, or the monetary equivalent of 1,500 kilowatt-hours of electricity. For purposes of this subsection, the monetary equivalent of 250 gallons of heating oil, 350,000 cubic feet of natural gas, or 1,500 kilowatt-hours of electricity is the retail price of 250 gallons of heating oil, 350,000 cubic feet of natural gas, or 1,500 kilowatt-hours of electricity as approved for each distributor qualified under (e) of this section. The corporation shall specify a date in 2012 for which each distributor that wants to be qualified under (e) of this section shall submit the retail price of 250 gallons of heating oil, the monetary equivalent of 350,000 cubic feet of natural gas, or the monetary equivalent of 1,500 kilowatt-hours of electricity, as applicable. On receipt of a voucher and eligible claim, the corporation shall issue a payment to the qualified distributor of the monetary amount determined under this subsection using the retail price approved by the corporation under (e) of this section for a qualified distributor for the applicable type of energy or fuel. On receipt of the payment from the state, a qualified distributor shall credit the full amount of the payment to the account that services the principal residence of the recipient of the voucher. A payment made under this section may not be used for costs unassociated with the purchase of the energy or fuel, may not be transferred between customer accounts, and may not be paid out in cash. If an account with a remaining balance from a payment made under this section is closed, a qualified distributor shall return the balance of the account attributable to the energy voucher to the state.

(c) The energy voucher

(1) shall be numbered and state the name of the person to whom the voucher is issued;

(2) must require the recipient of the voucher to sign, and date, and certify, on a form bearing notice that false statements made in the form are punishable by law, that the recipient of the voucher is complying with all the requirements of the voucher, including the requirement that the voucher amount be used to supply heating oil, natural gas, or electricity to the voucher recipient's primary residence in the state;

(3) is nontransferable and may not be sold, transferred, or traded for any other compensation, except as provided in (g) and (*l*) of this section;

(4) is redeemable only at a distributor qualified under (e) of this section and may not be split among multiple distributors;

(5) is not valid for submission to a distributor more than four months after the date the energy voucher is issued;

(6) is valid for heating oil, natural gas, or electricity delivered to the voucher recipient's primary residence in the state; and

(7) shall be issued by the corporation not more than 30 days following the issuance in 2012 of the permanent fund dividend.

(d) A distributor qualified under (e) of this section shall, within 30 days after accepting the voucher, issue a document acknowledging receipt of the voucher to the person exchanging the voucher. The corporation shall issue the amount determined under (b) and (e) of this section to the qualified distributor for an energy voucher not later than 20 days after receiving an eligible claim from a qualified distributor. Submitted claims must include

(1) the number of the voucher;

(2) the name of the recipient, as stated on the voucher; and

(3) the address listed on the heating oil, natural gas, or electricity account that the voucher will credit.

(e) The corporation shall maintain a list of qualified distributors eligible to accept and redeem vouchers. A distributor of oil, natural gas, or electricity is qualified if the distributor

(1) is licensed to do business in the state;

(2) is regularly engaged in the business of distributing oil, natural gas, or electricity;

(3) submits a retail price of oil, natural gas, or electricity, as applicable, for the quantities described in (a) of this section submits all evidence for that retail price requested by the corporation, and responds to inquiries of the corporation related to that retail price, and the corporation finds that retail price is representative of the price charged under similar circumstances; and

(4) meets other eligibility requirements that the corporation may adopt under AS 18.56.088 or emergency regulations adopted under sec. 3 of this Act.

(f) In determining the eligibility of an individual under a public assistance program, a heating assistance program, or a veterans' benefits program in which eligibility for assistance is based on financial need, the state may not consider an energy voucher as income or resources received by the recipient or by a member of the recipient's household.

(g) A recipient of an energy voucher who does not pay directly for the heating oil, natural gas, or electricity used in the recipient's residence or who does not have reasonable access to a qualified distributor of the type of fuel or electricity used in the recipient's residence in the state may certify that fact on a form provided by the corporation bearing notice that false statements made in the form are punishable by law, and may exchange the voucher with the corporation

(1) if applicable, for a replacement voucher in the name of the landlord or owner of the residence in the state in which the recipient resides, the value of which may, subject to negotiations between the landlord and tenant, be deducted from rent; or

(2) upon certification that the $250 will be used toward rent, energy, or heating costs at the recipient's primary residence in the state, for a check for $250 in the name of the recipient of the energy voucher.

(h) Except as provided in (j) of this section or as may be provided by regulations adopted by the corporation, an energy voucher issued under this section is not valid unless it is signed and dated by the individual named on the face of the voucher.

(i) A replacement voucher issued to a landlord under (g) of this section is not valid until the landlord certifies on a form provided by the corporation bearing notice that false statements made in the form are punishable by law that the amount of the voucher will be used to provide energy or heat to the primary residence of the original recipient of the voucher and certifies to the amount that the landlord will apply against the rent of the original recipient of the voucher.

(j) Certification or signature on an energy voucher or other certification under this section required of an individual who is disabled or incompetent may be signed or certified by the individual's legal guardian or other authorized representative. An individual may complete, sign, and redeem an energy voucher on behalf of a member of the armed forces of the United States who is serving on active duty outside of the United States if the individual has a power of attorney from the member of the armed forces that, in specific or general terms, authorizes the individual to redeem the voucher.

(k) An individual who is disabled or incompetent may not maintain a claim against the state or an officer or employee of the state based on the manner in which the guardian or authorized representative other than a public agency of the state managed or disposed of an

energy voucher received on behalf of the disabled or incompetent individual.

(*l*) If a person is eligible for an energy voucher but dies before the energy voucher is issued or redeemed, the energy voucher may be transferred to a personal representative of the estate or to a successor claiming personal property under AS 13.16.680.

(m) In addition to any criminal penalties imposed by state law, if an individual or qualified distributor is convicted of a crime in connection with a false statement made in a certification required under this section, in a submission for a reimbursement under (d) of this section, or in connection with forging an energy voucher, and the conviction is not reversed, vacated, or set aside, or if an individual or qualified distributor is found by the Alaska Housing Finance Corporation to have bought, sold, traded, or otherwise violated the terms of the voucher, that individual or qualified distributor forfeits the energy voucher, or the monetary amount received from the voucher, and the individual is not eligible for a future permanent fund dividend.

(n) If an individual is aggrieved by a decision of the Department of Revenue with respect to the individual's eligibility for a permanent fund dividend, and thus an energy voucher, the individual may request that the department review its decision under AS 43.23.015(g).

(o) If an individual or distributor is aggrieved by a decision of the Alaska Housing Finance Corporation with respect to the individual's authority to claim an energy voucher on behalf of another, or reimbursement of a distributor, or other decision under (e), (g), or (m) of this section, the individual or distributor may request that the corporation review its decision. Within 12 months after an administrative appeal under this subsection is filed, the corporation shall provide the individual or distributor with a final written decision. If the individual or distributor is aggrieved by the final written decision of the corporation, the individual or distributor may appeal that decision to the superior court in accordance with AS 44.62.560. An appeal to the court under this subsection does not entitle the aggrieved individual or distributor to a trial de novo. The appeal shall be based on the record of the administrative proceeding from which appeal is taken, and the scope of appeal is limited to matters contained in the record of the administrative proceeding.

(p) If the corporation determines that an energy voucher or a cash payment made in exchange for a voucher should not have been issued to an individual or a reimbursement

should not have been made to a distributor, the state may use all collection procedures or remedies available under AS 43 to recover the energy voucher or the cash value of the voucher that was improperly issued or for which reimbursement was improperly made. Except as provided in (q) of this section, a notice of an improperly issued voucher or improper reimbursement shall be sent to the individual or distributor, as applicable, within

(1) three years after the energy voucher was issued if the notice is sent to an individual; or

(2) three years after the distributor received reimbursement if the notice is sent to a distributor.

(q) The three-year time limit under (p) of this section for the corporation to send notice of an improperly issued voucher or an improper reimbursement is extended to six years if the corporation determines that the individual or distributor

(1) exercised gross negligence or reckless disregard with respect to a material fact in connection with a false statement on the energy voucher or submission for reimbursement; or

(2) forged an energy voucher.

(r) If notice is not sent within the time required under (p) or (q) of this section, administrative or judicial proceedings may not be commenced for recovery of an improperly issued energy voucher or improper reimbursement.

(s) An energy voucher, account credit, or cash payment provided under this section is exempt from garnishment, levy, or execution by a private party or the state.

(t) To the extent allowed by federal law and notwithstanding other state law that may be to the contrary, the department shall, on request of the corporation, electronically provide the corporation with information about applicants who the department has determined are eligible for the permanent fund dividend paid in 2012. Information requested by the corporation under this subsection may include the name of the applicant, the address of the applicant, the date of birth of the applicant, the social security number of the applicant, and any other information necessary to execute the energy voucher program. Information from the department may be used by the corporation only for the purpose of executing the energy voucher program created under this section.

(u) In this section,

(1) "corporation" means the Alaska Housing Finance Corporation created under AS 18.56;

(2) "department" means the Department of Revenue;

(3) "disabled" means physically or mentally unable to sign an energy voucher or make a certification required in this section because of serious emotional disturbance, visual, orthopedic, or other health impairment, or developmental disability that is attributable to mental retardation, cerebral palsy, epilepsy, autism, or other cause; "disabled" does not mean "incompetent."

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ANALYSIS AND RECOMMENDATION OF AN ENERGY ASSISTANCE PROGRAM. (a) The governor shall take public testimony, consider the recommendations from organizations involved in providing energy or energy assistance to Alaskans, analyze the energy assistance options in (b) of this section, and analyze alternate options to those proposed in (b) of this section for providing energy assistance to Alaskans and, before October 1, 2012, the governor shall provide a report to the legislature making a recommendation for an energy assistance program to be implemented in the fiscal year ending June 30, 2014, that

(1) correlates the amount of assistance to the local cost of residential heating, taking into consideration the price of fuel and heating degree days in each community;

(2) is implemented based on crude oil price or heating oil price;

(3) has total funding based on state revenue;

(4) minimizes administrative costs;

(5) makes participation of fuel distributors voluntary;

(6) includes a hold harmless provision for recipients of public assistance and veterans' benefits; and

(7) includes penalties for fraud, including ineligibility for a future permanent fund dividend.

(b) The governor shall analyze the following options and may analyze alternate options to provide energy assistance to Alaskans:

(1) a fuel price reduction program with the following features:

(A) state reimbursement to a heating oil or natural gas distributor of a portion of the wholesale purchase price of fuel that the distributor sold to heat residential structures;

(B) an amount of reimbursement necessary to reduce the wholesale purchase price of a distributor by a specified amount or to a specified price;

(C) a limit on the amount of fuel that a person may purchase and for which a distributor received a state reimbursement; and

(2) an individual account program with the following features:

(A) application on a permanent fund dividend application for energy assistance in the form of a state payment to the applicant's account with a fuel distributor or electric utility;

(B) assistance based on heating degree days and the cost of energy in the community;

(C) electronic selection of

(i) a fuel distributor or electric utility to receive the individual's energy assistance payment; and

(ii) an optional amount from the applicant's dividend to be deposited in the individual's account with a fuel distributor or electric utility;

(D) a statewide base amount to be sent with the applicant's permanent fund dividend for an applicant for energy assistance who fails to select a fuel distributor or electric utility to receive the individual's energy assistance payment.

(c) The governor's report to the legislature under (a) of this section shall evaluate

(1) the estimated cost of the program for the first five years;

(2) the cost of administering the program compared to the assistance provided;

(3) whether the program provides the highest level of assistance to the individuals with the highest heating costs; and

(4) whether the program can be structured so that energy assistance is not subject to federal taxation.

(d) In this section, "heating degree days" means the average temperature for a day minus the reference temperature of 65 degrees Fahrenheit.

* **Sec. 3.** The uncodified law of the State of Alaska is amended by adding a new section to

read:

EMERGENCY REGULATION AND PROCUREMENT PROVISIONS. Notwithstanding AS 18.56.088, the Alaska Housing Finance Corporation may adopt emergency regulations under AS 44.62.250 and 44.62.260 necessary to implement the Alaska energy voucher program in sec. 1 of this Act without making written findings under AS 44.62.250. The legislature finds that the adoption of emergency regulations is necessary to implement this Act and for the immediate preservation of public health and general welfare. In addition, the Alaska Housing Finance Corporation is exempt from AS 36.30, including AS 36.30.015(f), for the purposes of implementing the Alaska energy voucher program.

*** Sec. 4.** This Act takes effect immediately under AS 01.10.070(c).

ALASKA STATE LEGISLATURE

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REPRESENTATIVE STEVE THOMPSON
DISTRICT 10

House Bill 336 Sponsor Statement

"An Act to provide Alaskans with immediate energy relief and create a program to help residents deal with high energy costs during the transition to more-affordable energy supplies."

Section 1: State sends a voucher to every adult PFD recipient in the fall of 2012, which can be redeemed at a fuel distributor or utility for 250 gallons of heating oil, or for the natural gas BTU equivalent, or for 1,500 KWH of electricity.

- Fuel distributors apply to be added to the list of qualified distributors.
- Vouchers are numbered, state the recipient's name and are non-transferable.
- Vouchers may be redeemed at any qualified fuel distributor in the state.
- Fuel may be delivered to any address in the state.
- Recipients who certify that they do not pay directly for home heating oil, natural gas or electricity may return their vouchers to the department and receive either: a replacement voucher in the name of their landlord, or a check for $250.
- Distributors submit claims for reimbursement to the state that list voucher numbers, names of voucher owners, fuel delivery addresses and the retail price of fuel on the delivery date.
- The program will be administered by the Department of Revenue/AHFC

Section 2: Executive branch evaluates options and makes a recommendation for an energy assistance program for Alaskans in 2013 and beyond.

The analysis and recommendation are due October 1, 2012. The analysis will include evaluation of a "fuel price reduction" program, an "individual account" program and alternate options, as well as a recommendation for the best program that can be instituted in FY14:

Fuel price reduction option:

E-mail Representative_Steve_Thompson@legis.state.ak.us

The state makes payments to fuel distributors to lower the price they charge Alaskans for residential heating fuel.

Distributors of heating oil and natural gas submit to the state proof of the wholesale purchase price for the fuel they distribute, and the state reimburses those distributors the amount necessary to effectively reduce that wholesale price a specified amount or to a specified price. Distributors receive this reimbursement for all fuel they sell in the state for residential heating. The executive branch analysis will include consideration of the limiting the number of gallons each Alaskan may purchase at the reduced rate.

Individual account option:

Alaskans apply through the annual PFD process and qualify for an amount of money to be deposited by the state in an account in their name at a fuel distributor or electric utility of their choice in their community. The amount of assistance varies depending on energy costs and heating degree days in each community.

The Permanent Fund Division creates an electronic system similar to "pick-click-give" through which applicants may select a fuel distributor or utility. Individuals who do not select a fuel distributor or utility receive a standard, statewide "base" amount of assistance in the form of a check to their PFD mailing addresses. The executive branch analysis will consider allowing Alaskans to deposit a portion of their PFD's into their fuel accounts, in addition to their energy assistance.

The executive branch analysis of the options and its recommended program must include evaluation of the following:

1. Whether the program can be structured so the resulting energy assistance will not be subject to federal taxation.
2. The estimated cost of the program in FY14 and for the following 4 years.
3. The cost of administering the program relative to the assistance provided to Alaskans.
4. The extent to which the program provides the most assistance to those Alaskans who have the highest heating costs.

The recommended program must include the following:

- Amount of assistance correlated to the cost of home heating in different communities.
- Program triggered by ANS crude oil price or a heating oil price, and total program funding level dependent on state revenue.
- Penalties for fraud similar to PFD provisions, including loss of future PFD's.
- Voluntary participation by fuel distributors.
- Administrative costs kept to a minimum.

ALASKA STATE LEGISLATURE

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REPRESENTATIVE STEVE THOMPSON
DISTRICT 10

House Bill 336 - Sectional Analysis

"An Act establishing an energy assistance program in the Department of Revenue to issue an energy voucher to Alaska permanent fund dividend recipients; and relating to the analysis and recommendation of an energy assistance program by the governor."

Section 1: The state will send a voucher to every adult PFD recipient in the fall of 2012. This can be redeemed at a fuel distributor or utility of your choice for the value of 250 gallons of heating oil, 350 CCF of natural gas, or for 1,500 KWH of electricity.

- The recipient decides whether to use the voucher for heating oil or natural gas or electricity, then gives the voucher to the distributor of their choice. If the recipient does not already have an account with the distributor, they open an account.
- Distributors send the vouchers to the state and submit claims for payment that list the voucher number, name of voucher owner, the delivery address and other information.
- Upon receipt of a claim from a distributor, the state sends payment to the distributor to be credited to the voucher recipient's account.
- The amount of the state payment will be calculated by multiplying the quantity of fuel provided by the voucher, by the distributor's retail price for that type of energy on a specific date in 2012.
- The credit may be used only for energy at the recipient's primary residence in Alaska, and may not be transferred to another account or paid in cash to the account holder.
- The credit may be used to pay a recipient's debt with the distributor.
- Each voucher may only be used at one distributor.
- Distributors can decide whether to deliver fuel immediately after they receive a voucher, or to wait until they receive payment from the state.
- The credit remains in the account until it is spent on energy delivered to the recipient's home.
- If the account is closed before all the credit is used, then the distributor sends the balance back to the state.

E-mail Representative_Steve_Thompson@legis.state.ak.us

- Vouchers state the recipient's name, may not be sold or transferred, and require signature by both the recipient and the distributor.
- Recipients who certify that they do not pay directly for heating oil, natural gas or electricity at their primary residence may return their vouchers to the state and receive either: a replacement voucher in the name of their landlord, or a check for $250. Individuals may also qualify for $250 if they do not have a qualified distributor in their community.
- Participation by distributors is voluntary, and interested businesses can apply to be added to the list of qualified distributors.
- The program will be administered by the Alaska Housing Finance Corporation (AHFC).

Section 2: The Governor must evaluate options and make a recommendation for the best energy relief program that can be instituted in 2013 and beyond.

This recommendation is due October 1, 2012. This analysis must include an evaluation of a "fuel price reduction" program, an "individual account" program, and alternate options.

Section 3: AHFC may adopt regulations necessary to implement the program.
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Section 4: This legislation takes effect immediately.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **CS HB 336 (ENE)**
Fiscal Note Number: 1
() Publish Date:

Identifier (file name): HB336CS(ENE)-DOR-PFD-03-27-12
Dept. Affected: Revenue
Title: Energy Assistance Program & Voucher
Appropriation: Tax & Treasury
Allocation: Permanent Fund Dividend
Sponsor: Representative Thompson
Requester: House Energy
OMB Component Number: 981

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services	72.9						
Travel							
Services	218.6						
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**291.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF	291.5						
1005	GF/Prgm (DGF)							
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**291.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

POSITIONS							
Full-time							
Part-time							
Temporary	**2**						

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Updated for new CS.

Prepared by: Deborah M. Bitney — Phone: 465-4785
Division: Permanent Fund Dividend — Date/Time: 3/28/12 4:02 PM
Approved by: Alicia Egan, Legislative Liaison — Date: 3/29/2012
Department of Revenue

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** CS HB 336 (ENE)
2012 LEGISLATIVE SESSION

Analysis

PFD expects this fiscal note to change as more clarification and information is provided to the Department of Revenue. Note corrected fund source

The bill creates an energy benefit by means of a voucher for Adults who are determined eligible for the 2012 PFD. The bill proposes the energy benefit to be distributed no later than December 1, 2012. The bill also tasks the Governor with determining how to make the program permanent through the PFD Division.

PFD expects increased appeals of ineligible applicants because of the value of the benefit added to dividend eligibility, a situation similar to that of the 2008 Resource Rebate at which time the Informal Appeals unit received approximately 900 additional appeals by applicants who were ineligible as a matter of law. Additional appeals staff, Range 12 PFD Tech II is needed to render informal appeals decisions within the statutorily designated time frame of 180 days.

Additionally, approximately 100 additional Formal level appeals were heard by Administrative Law Judges with Office of Administrative Hearings in which the divisions decision the applicant was ineligible was upheld. Increased OAH RSA is expected in the amount of $113.6K.

As the value and benefit of the annual dividend program increases, so does the potential for fraud. $105.K is requested to hire a firm to assist the division in auditing existing applicants and creating new audit recommendations for continued assurance that opportunity for fraud is minimized.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **CSHB 336 (ENE)**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB336CS(ENE)-DOR-AHFC-04-02-12
Dept. Affected: Revenue
Title: Energy Assistance Program & Vouchers
Appropriation: Alaska Housing Finance Corp.
Allocation: AHFC Operations
Sponsor: Representative Thompson
Requester: House Energy Committee
OMB Component Number: 110

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services	1,495.0		742.5	742.5	742.5	445.5	445.5
Travel	50.0		25.0	15.0	5.0	5.0	5.0
Services	13,195.0		763.5	460.0	460.0	313.4	313.4
Commodities							
Capital Outlay	10.0						
Grants, Benefits							
Miscellaneous	250.0						
TOTAL OPERATING	**15,000.0**	**0.0**	**1,531.0**	**1,217.5**	**1,207.5**	**763.9**	**763.9**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1061	CIP Rcpts (Other)	15,000.0		1,531.0	1,217.5	1,207.5	763.9	763.9
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**15,000.0**	**0.0**	**1,531.0**	**1,217.5**	**1,207.5**	**763.9**	**763.9**

POSITIONS							
Full-time	**10**		5	3	3	2	2
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 465,000.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial version.

Prepared by: Stacy Schubert, Director Governmental Relations & Public Affairs — Phone: 907-301-4556
Division: Alaska Housing Finance Corporation — Date/Time: 4/2/12 8:05 PM
Approved by: Dan Fauske, Alaska Housing Finance Corporation — Date: 4/2/2012
Department of Revenue

(Revised 11/18/2011 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. CSHB 336 (ENE)

Analysis

This bill requires Alaska Housing Finance Corporation (AHFC) to issue an energy voucher to each adult eligible for the permanent fund dividend in 2012. The energy voucher would be redeemable for 250 gallons of heating oil, the monetary equivalent of 35,000 cubic feet of natural gas, or the monetary equivalent of 1,500 kilowatt-hours of electricity. The voucher would be redeemable with a qualified energy distributor.

AHFC would be required to specify a date in 2012 for which each qualified distributor shall submit its retail prices for the fuel or energy source, and to issue payment for the published price of fuel on a certain date to a qualified distributor upon receipt of a voucher.

The energy distributor would credit the full amount to the recipient's account upon receipt of payment by AHFC. The energy voucher must be issued to eligible recipients not more than 30 days following the issuance of 2012 permanent fund dividend, and is valid for four months from date of issuance. The voucher is nontransferable except under specific circumstances including:

By a tenant to a landlord for rent deduction if the tenant does not pay directly for energy use or is unable to access an eligible distributor;

By an individual who is unable to access an eligible distributor. The individual may receive a check for $250 from AHFC; or

If the voucher recipient dies before the voucher is issued or redeemed, it may be transferred to a personal representative or successor.

AHFC would be required to work closely with Department of Revenue (PFD division) to access qualified recipient information to develop and implement the voucher program with appropriate controls.

Section 2 of this bill directs the Office of the Governor to provide a report to the legislature before October 1, 2012 that analyzes and recommends an energy assistance program to be implemented in the fiscal year ending June 30, 2014.

Fund Amount:
In developing this fiscal note, there is an assumption that capital funds will be appropriated. A complete and accurate fiscal impact will be dependent on a number of factors which are presently unknown and include:

The date specified and agreed on by AHFC of the reimbursable price for the energy provided in each community; and

The number of participating distributors, number of Alaskans eligible to receive the voucher, and number of vouchers reimbursed for a negotiated rent reduction or a $250 check.

Given the above-mentioned uncertainty, AHFC estimates cost impact of this bill will range from $328,325,753 to $465,000,000.

Analysis Continued

Administrative Costs:
AHFC recognizes that it will not be possible to ramp up staff capacity to achieve the objectives described in the bill within the time constraints established in the bill. Therefore, AHFC intends to contract the majority of the work to obtain services, including, but not limited to:

Establish dedicated program database for tracking, administration and management of voucher recipients and distributors;
Create and establish dedicated website with online claim filing capabilities;
Establish and maintain toll-free telephone number at call center for customer support;
Develop and implement an outreach program, including possible grassroots campaign to reach Alaska residents;
Provide direct mail notice to Alaska residents and potentially qualified distributors regarding the program;
Receive and process distributor requests for qualification;
Establish procedures to qualify distributors for participation in the program;
Maintain list of qualified distributors;
Receive and process distributor claims for reimbursement;
Create and issue personalized, nontransferable uniquely numbered vouchers to Alaska residents;
Issue reimbursement checks to distributors who submit valid claims for reimbursement;
Track voucher redemption;
Handle replacement voucher requests, as needed;
Process claims for a $250 check in lieu of the voucher and determine eligibility, as required;
Issue $250, as needed, to eligible recipients, as required ;
Create and issue 1099's for recipients, as required.
Receive and process administrative mail from distributors and/or Alaska residents;
Providing reporting of status of the administrative activities; and
Maintain a record of all program contacts and responses thereto.

Based on the list of services above, AHFC anticipates the cost of services at $15 million in FY13.

This fiscal note is based on the bill language that establishes the "voucher program" as a one year program. Given the scope and nature of utilization of contract services, extensive ramp-up will be required. Some elements for appeal processes extend up to six years, and there will be costs for the ramp down and dismantling of the program.

This estimate is based upon the possible requirements of AHFC as established in the bill. AHFC staff will be required to manage the necessary contract(s). Additional staff and expenses include administration, information systems, human resources, audit, and accounting support, computers and office space and systems, communications and travel.

Furthermore, as one of the state's largest landlords, AHFC's public housing division will be required to respond to tenant inquiries as it relates to the negotiation allowed under Section 1 (g) of the bill.

Total estimated operating costs for FY13 are $15 million. This amount is listed as CIP Receipts as it will come from the capital appropriation.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **CSHB 336 (ENE)**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB336CS(ENE)-DOR-AHFC-04-02-12
Dept. Affected: Revenue
Title: Energy Assistance Program & Vouchers
Appropriation: Alaska Housing Finance Corp.
Allocation: AHFC Operations
Sponsor: Representative Thompson
Requester: House Energy Committee
OMB Component Number: 110

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services	1,495.0		742.5	742.5	742.5	445.5	445.5
Travel	50.0		25.0	15.0	5.0	5.0	5.0
Services	13,195.0		763.5	460.0	460.0	313.4	313.4
Commodities							
Capital Outlay	10.0						
Grants, Benefits							
Miscellaneous	250.0						
TOTAL OPERATING	**15,000.0**	**0.0**	**1,531.0**	**1,217.5**	**1,207.5**	**763.9**	**763.9**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1061	CIP Rcpts (Other)	15,000.0		1,531.0	1,217.5	1,207.5	763.9	763.9
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**15,000.0**	**0.0**	**1,531.0**	**1,217.5**	**1,207.5**	**763.9**	**763.9**

POSITIONS							
Full-time	**10**		5	3	3	2	2
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 465,000.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial version.

Prepared by: Stacy Schubert, Director Governmental Relations & Public Affairs — Phone: 907-301-4556
Division: Alaska Housing Finance Corporation — Date/Time: 4/2/12 8:05 PM
Approved by: Dan Fauske, Alaska Housing Finance Corporation — Date: 4/2/2012
Department of Revenue

(Revised 11/18/2011 OMB)

Analysis

This bill requires Alaska Housing Finance Corporation (AHFC) to issue an energy voucher to each adult eligible for the permanent fund dividend in 2012. The energy voucher would be redeemable for 250 gallons of heating oil, the monetary equivalent of 35,000 cubic feet of natural gas, or the monetary equivalent of 1,500 kilowatt-hours of electricity. The voucher would be redeemable with a qualified energy distributor.

AHFC would be required to specify a date in 2012 for which each qualified distributor shall submit its retail prices for the fuel or energy source, and to issue payment for the published price of fuel on a certain date to a qualified distributor upon receipt of a voucher.

The energy distributor would credit the full amount to the recipient's account upon receipt of payment by AHFC. The energy voucher must be issued to eligible recipients not more than 30 days following the issuance of 2012 permanent fund dividend, and is valid for four months from date of issuance. The voucher is nontransferable except under specific circumstances including:

By a tenant to a landlord for rent deduction if the tenant does not pay directly for energy use or is unable to access an eligible distributor;

By an individual who is unable to access an eligible distributor. The individual may receive a check for $250 from AHFC; or

If the voucher recipient dies before the voucher is issued or redeemed, it may be transferred to a personal representative or successor.

AHFC would be required to work closely with Department of Revenue (PFD division) to access qualified recipient information to develop and implement the voucher program with appropriate controls.

Section 2 of this bill directs the Office of the Governor to provide a report to the legislature before October 1, 2012 that analyzes and recommends an energy assistance program to be implemented in the fiscal year ending June 30, 2014.

Fund Amount:
In developing this fiscal note, there is an assumption that capital funds will be appropriated. A complete and accurate fiscal impact will be dependent on a number of factors which are presently unknown and include:

The date specified and agreed on by AHFC of the reimbursable price for the energy provided in each community; and

The number of participating distributors, number of Alaskans eligible to receive the voucher, and number of vouchers reimbursed for a negotiated rent reduction or a $250 check.

Given the above-mentioned uncertainty, AHFC estimates cost impact of this bill will range from $328,325,753 to $465,000,000.

Analysis Continued

Administrative Costs:
AHFC recognizes that it will not be possible to ramp up staff capacity to achieve the objectives described in the bill within the time constraints established in the bill. Therefore, AHFC intends to contract the majority of the work to obtain services, including, but not limited to:

Establish dedicated program database for tracking, administration and management of voucher recipients and distributors;
Create and establish dedicated website with online claim filing capabilities;
Establish and maintain toll-free telephone number at call center for customer support;
Develop and implement an outreach program, including possible grassroots campaign to reach Alaska residents;
Provide direct mail notice to Alaska residents and potentially qualified distributors regarding the program;
Receive and process distributor requests for qualification;
Establish procedures to qualify distributors for participation in the program;
Maintain list of qualified distributors;
Receive and process distributor claims for reimbursement;
Create and issue personalized, nontransferable uniquely numbered vouchers to Alaska residents;
Issue reimbursement checks to distributors who submit valid claims for reimbursement;
Track voucher redemption;
Handle replacement voucher requests, as needed;
Process claims for a $250 check in lieu of the voucher and determine eligibility, as required;
Issue $250, as needed, to eligible recipients, as required ;
Create and issue 1099's for recipients, as required.
Receive and process administrative mail from distributors and/or Alaska residents;
Providing reporting of status of the administrative activities; and
Maintain a record of all program contacts and responses thereto.

Based on the list of services above, AHFC anticipates the cost of services at $15 million in FY13.

This fiscal note is based on the bill language that establishes the "voucher program" as a one year program. Given the scope and nature of utilization of contract services, extensive ramp-up will be required. Some elements for appeal processes extend up to six years, and there will be costs for the ramp down and dismantling of the program.

This estimate is based upon the possible requirements of AHFC as established in the bill. AHFC staff will be required to manage the necessary contract(s). Additional staff and expenses include administration, information systems, human resources, audit, and accounting support, computers and office space and systems, communications and travel.

Furthermore, as one of the state's largest landlords, AHFC's public housing division will be required to respond to tenant inquiries as it relates to the negotiation allowed under Section 1 (g) of the bill.

Total estimated operating costs for FY13 are $15 million. This amount is listed as CIP Receipts as it will come from the capital appropriation.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version **HB336**
Fiscal Note Number
() Publish Date

Identifier (file name) HB336-DOA-OAH-3-8-12
Title Energy Assistance Program & Vouchers
Sponsor Representative Thompson
Requester House Special Committee on Energy

Dept. Affected Administration
Appropriation Centralized Administrative Services
Allocation Office of Administrative Hearings
OMB Component Number 2771

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services	113.6						
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**113.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)							
1037	GF/MH (UGF)							
1007	I/A Rcpts (Other)	113.6						
TOTAL		**113.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Not applicable, initial version

Prepared by Terry L. Thurbon, Chief Administrative Law Judge — Phone 465-1886
Division Office of Administrative Hearings — Date/Time 03/08/2012 1:34 p.m.
Approved by John Cramer, Deputy Commissioner — Date 3/8/2012
Department of Administration

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** HB336
2012 LEGISLATIVE SESSION

Analysis

This bill provides for issuance of energy vouchers to adults eligible for the 2012 Permanent Fund Dividend (PFD), and for the vouchers to be redeemed with qualified distributors of heating oil, natural gas and electricity. Applicants determined to be ineligible for the PFD are entitled to a formal hearing conducted by the office of administrative hearings. The department of revenue, PFD division, estimates an increase of 100 formal appeals. The bill contemplates that those would be concluded within 12 months after filing.

Under the bill, distributors determined not to be qualified also would be entitled to an administrative hearing. The department of revenue could, but is not required to, ask the office of administrative hearings to conduct the distributor appeal hearings as voluntary referrals pursuant to AS 44.64.030(b). The number of distributor appeals that would reach the formal appeal level and be heard by the office of administrative hearings could be quite small, or even non-existent if the department of revenue elected not to refer them to the office.

The bill also provides that the energy voucher not be considered income for financial needs-based assistance programs, unless so required by federal law. If disputes arise between assistance claimants and assistance program managers in the department of health and social services about whether the energy voucher is required by federal law to be treated as income, this could affect the complexity of some cases, or possibly lead to an unquantifiable increase in cases, reaching the formal hearing stage before the office of administrative hearings.

OAH does not anticipate that the resulting one-time, limited duration spike in caseload would increase the office's caseload beyond OAH's capacity to handle the additional cases at approved staffing levels that will be in place as of the July 1, 2012 effective date of Executive Order 116. OAH might need to act sooner than planned to fill an existing vacancy, or if the crush of time-sensitive PFD eligibility appeals so dictated, might need to bring on board a temporary ALJ to handle some of the cases. The cost to OAH of performing the services would be recovered from the affected departments through interagency receipts, based on the time commitment required for hearings and mediations. The $113.6 figure corresponds to the department of revenue's estimate, based on 2008 Resource Rebate experience, of the increase in interagency receipts it would have to pay from the permanent fund to OAH for the anticipated increase of 100 cases. Whether OAH would in fact need to increase expenditures or need increased interagency receipts authority in that amount depends on unpredictable caseload dynamics.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **HB 336**
Fiscal Note Number: 1
() Publish Date:

Identifier (file name): HB336-DOR-PFD-03-02-12
Title: Energy Assistance Program & Voucher
Sponsor: Representative Thompson
Requester: Energy Committee

Dept. Affected: Revenue
Appropriation: Tax & Treasury
Allocation: Permanent Fund Dividend
OMB Component Number: 981

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services	72.9						
Travel							
Services	213.6						
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**286.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)	286.5						
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**286.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

POSITIONS							
Full-time							
Part-time							
Temporary	**2**						

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial note.

Prepared by: Deborah M. Bitney — Phone: 465-4785
Division: Permanent Fund Dividend — Date/Time: 3/2/12 4:02 PM
Approved by: Alicia Egan, Legislative Liaison — Date: 3/6/2012
Department of Revenue

(Revised 1/17/2012 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. HB 336

Analysis

PFD expects this fiscal note to change as more clarification and information is provided to the Department of Revenue.

The bill creates an energy benefit by means of a voucher for Adults who are determined eligible for the 2012 PFD. The bill proposes the energy benefit to be distributed no later than December 1, 2012. The bill also tasks the Governor with determining how to make the program permanent through the PFD Division.

PFD expects increased appeals of ineligible applicants because of the value of the benefit added to dividend eligibility, a situation similar to that of the 2008 Resource Rebate at which time the Informal Appeals unit received approximately 900 appeals by applicants who were ineligible as a matter of law . Additional appeals staff, Range 12 PFD Tech II is needed to render informal appeals decisions within the staturorily designated time frame of 180 days.

Additionally, approximately 100 Formal level appeals were heard by Administrative Law Judges with Office of Administrative Hearings in which the divisions decision the applicant was ineligible was upheld. OAH RSA expected in the amount of $113.6.

As the value and benefit of the annual dividend program increases, so does the potential for fraud. $100.K is requested to hire a firm that would assist the division in auditing existing applicants and creating new audit recommendations for continued assurance that opportunity for fraud is minimized.

This fiscal note is written assuming distribution of the energy vouchers will be handled by AHFC, per the sponsor statement and conversations with the bill sponsor.

FISCAL NOTE

STATE OF ALASKA cost ≠ codes
2012 LEGISLATIVE SESSION

Bill Version: **HB 336**
Fiscal Note Number: 1
Publish Date:

Identifier (file name): HB336-DOR-TAX-03-02-12
Dept. Affected: Revenue
Title: Energy Assistance Program & Vouchers
Appropriation: Taxation and Treasury
Allocation: Tax Division
Sponsor: Representatives Thompson, et al
Requester: House Energy
OMB Component Number: 2476

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	***	**0.0**	***	***	***	***	***

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)							
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		***	**0.0**	***	***	***	***	***

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimated SUPPLEMENTAL (FY12) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial version.

Prepared by: Johanna Bales, Deputy Director — Phone (907) 269-6628
Division: Tax — Date/Time 3/2/2012 2:30 p.m.
Approved by: Alicia Egan, Legislative Liaison — Date 3/2/2012 7:15 p.m.
Department of Revenue

(Revised 8/17/2011 OMB)

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

BILL NO. HB 336

Analysis

The Department of Revenue expects this fiscal note to change as more clarification and information is provided to the Department.

Bill Language:
This bill would require the Department of Revenue to issue an energy voucher to each adult eligible for the permanent fund dividend in 2012. The energy voucher would be redeemable for 250 gallons of heating oil, the natural gas equivalent of 250 gallons of heating oil, or 1,500 kilowatt hours of electricity. The voucher would be redeemable with a qualified distributor through April 30, 2013 and can be used for heating oil, natural gas, or electricity delivered to a residence or business.

Revenues:
In calendar year 2011, approximately 490,000 adults were eligible for the permanent fund dividend. In calendar year 2010, the average cost of heating oil throughout Alaska was $3.50 per gallon. We expect the current average cost is higher. The current average cost of a kilowatt hour of electricity in Alaska is approximately 15.5 cents. Based on the number of adults eligible for the voucher and the average cost of heating fuel and electricity, the Department expects this program will cost anywhere from $115 million to $430 million for the fiscal year 2013. Although this bill will not directly affect revenues received by the department, general fund monies in 2013 will decrease as a result of this bill.

Expenditures:
The Department of Revenue will be tasked with redeeming the vouchers submitted by qualified distributors. The bill language requires the department to redeem the voucher within 20 days of submittal. In addition, the department has 3 years to audit the redemption of a voucher to ensure that it was properly redeemed. It is unclear which division within the department will administer this program. However, the bill sponsor has indicated that the Alaska Housing Finance Corporation will have a role. The department expects that the administration of this bill could be as much as 10% of the amount distributed under the voucher system due to the responsibility it will have to mail, redeem and audit the vouchers. In addition, the department will have reporting responsibilities to the Internal Revenue Service. At this time, total expenditures are indeterminate.

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March12, 2012

The Honorable Neil Foster, Co-Chair
House Energy Committee
Alaska Capitol, Room 434
Juneau, AK 99801-1182

The Honorable Lance Pruitt, Co-Chair
House Energy Committee
Alaska Capitol, Room 421
Juneau, AK 99801-1182

RE: HB 336 (Thompson)—Support

Dear Co-Chairs Foster and Pruitt:

On behalf of the members of AARP in Alaska, we encourage you and your colleagues on the House Energy Committee to support HB 336, authored by Representative Steve Thompson and co-sponsored by your Committee colleague Representative Pete Peterson and Representatives Guttenberg, Herron, Edgmon, Miller, Gruenberg, Joule, Kerttula and you, Co-Chair Foster.

In Representative Thompson's sponsor statement he indicates this bill will provide **immediate energy relief** and create a program to help residents deal with high energy costs during the **transition to more-affordable energy supplies**.

A recent study report by Commonwealth North found that electricity, heating fuel and diesel fuel represent a very significant component of rural Alaskans' cash outlay, with the figure approaching or exceeding 40% of the household budget. When we talk to AARP members from the Interior, the first words we hear are about heating costs and whether they can remain in their Alaskan homes.

Older Alaskans are particularly vulnerable to increases in energy costs. Although they consume approximately the same amount of energy as younger people do, older Alaskans spend a greater proportion of their limited retirement income on home heating costs. Too often low-income and even moderate-income older Alaskans risk their health or comfort by choosing between cutting back on energy expenditures and reducing spending for other necessities.

Is HB 336 the answer to Alaska's high energy costs? No.

Will it help Alaskans pay their utility bills? Yes.

One of the most important recommendations of SB 203 is to have the Executive Branch evaluate options and make recommendations for an energy assistance plan for 2013 and after.

As the new Commonwealth North study report notes:
"Alaska needs a clear direction set by a state energy plan."

AARP recommends an "AYE" vote on HB 336.

Should you have any questions about our position, please feel free to contact me (586-3637) or Patrick Luby, AARP Advocacy Director (907-762-3314).

Thank you for your consideration.

Sincerely,

Marie Darlin

Marie Darlin, Coordinator
AARP Capital City Task Force
415 Willoughby Avenue, Apt. 506
Juneau, AK 99801
586-3637 (voice)
463-3580 (fax)

CC: Representative Bob Lynn
Representative Kurt Olson
Representative Dan Saddler
Representative Pete Peterson
Representative Chris Tuck
Representative Steve Thompson



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WALES
WHITE MOUNTAIN

Representative Neal Foster

State Capitol Room 434

Juneau, AK, 99801

3/5/2012

RE: House Bill 336

Honorable Representative Foster:

Kawerak, Inc., is a regional Native non-profit, serving 20 Tribes in the Bering Strait. Kawerak supports HB 336 because it will provide needed heating assistance next winter, and will help the state move forward towards an assistance program that truly meets our needs.

This winter is particularly difficult. January 2012 was the coldest month on record. Heating degree days are 23% above average. At the same time fuel oil costs an average of $6.33 / gallon across the Bering Strait region. Prices over $7 are not uncommon.

Today, high energy costs, aggravated by low income and high unemployment, are increasing the burden in our already economically distressed communities. As energy prices rise, the amount of money available for household necessities dwindles, and the quality of life is suffering as a consequence. HB336 provides the security we need for the coming year.

Kawerak supports section two of HB336 because it moves us forward towards a program that better meets our needs. It directs the Governor's office to evaluate different ways to provide heating assistance, and to make recommendations to the legislature next session.

Honorable Representative Foster, Kawerak feels it is important to pass legislation issuing energy vouchers, and studying options for future energy assistance this session. This will help insure residents will have the energy they need next winter, and will put us on the course towards a program that meets Alaska's energy needs during years to come.

MBahnke

Melanie Bahnke, Executive Vice-President

BRISTOL BAY NATIVE ASSOCIATION

P.O. BOX 310
DILLINGHAM, ALASKA 99576
PHONE (907) 842-5257

Friday, March 02, 2012

The Honorable Steve Thompson
Alaska House of Representatives
State Capitol Room 428
Juneau Alaska, 99801

Tribal Councils Served by BBNA:

Aleknagik
Chignik Bay
Chignik Lagoon
Chignik Lake
Clarks Point
Curyung
Egegik
Ekuk
Ekwok
Igiugig
Iliamna
Ivanof Bay
Kanatak
King Salmon
Kokhanok
Koliganek
Levelock
Manokotak
Naknek
New Stuyahok
Newhalen
Nondalton
Pedro Bay
Perryville
Pilot Point
Port Heiden
Portage Creek
South Naknek
Togiak
Twin Hills
Ugashik

RE: Letter of Support for House Bill 336, "Energy Voucher & Analysis of Energy Assistance Program"

Dear Mr. Thompson,

The Bristol Bay Native Association is writing to express support of House Bill 336, the creation of an energy voucher program, and analysis of energy assistance program.

The high and volatile price of energy is a serious issue for families and businesses in the Bristol Bay region, and immediate relief is severely needed. The average price of heating fuel is around $5.85 per gallon; and the average price of electricity, based on PCE reports, is around .5967 per kWh.

In general, we recognize the need for an energy assistance program with a focus on heating fuel: energy assistance is the only practical short-term solution to any energy plan set forth. We also recognize the importance of pursuing energy efficiency, conservation and alternative energy policies, programs and projects that help offset the need for fossil fuels.

We recognize House Bill 336 requests the executive branch to evaluate program options for energy assistance beyond the temporary voucher program. To that point, we respectfully recommend that rural entities such as regional non-profits be included in those discussions, analyses and recommendations to the fullest extent possible. We are very familiar with the immediate relief assistance provides to low-income families as the administrator of LIHEAP & AKHAP programs for the region. We would bring a extensive scope of knowledge, ideas and solutions to the table.

The Bristol Bay Native Association appreciates your concern with the high cost of energy, and supports your efforts in finding solutions for relief, until a transition to a more affordable energy supply is realized for all Alaskans.

Sincerely,

Ralph Andersen
President and Chief Executive Officer

Cc: Senator Gary Stevens
Senator Lyman Hoffman
Representative Bryce Edgmon
Representative Alan Austerman

STATE OF ALASKA
DEPT. OF HEALTH & SOCIAL SERVICES

Alaska Commission on Aging

SEAN PARNELL, GOVERNOR

P.O. BOX 110693
JUNEAU, ALASKA 99811-0693
PHONE: (907) 465-3250
FAX: (907) 465-1398

March 13, 2012

The Honorable Representative Neal Foster, Co- Chair
House Energy Committee
Alaska State Capitol, Room 434
Juneau, AK 99801-1182

The Honorable Lance Pruitt, Co-Chair
House Energy Committee
Alaska Capitol, Room 421
Juneau, AK 99801-1182

Subject: Support for HB 336, Energy Assistance Program & Vouchers

Dear Chair Foster and Chair Pruitt:
The Alaska Commission on Aging (ACoA) is pleased to offer our support of HB 336, a bill to establish an energy assistance program that would issue an energy voucher to all Alaskan Permanent Fund Dividend recipients. HB 336 is an interim measure to help Alaskans manage their high utility bills until more affordable energy supplies come on line. HB 336 also requires the Executive Branch to evaluate and make recommendations for a cost efficient and effective energy assistance program to be instituted by FY2014. This legislation is sponsored by Representative Thompson and co-sponsored by Representatives Guttenberg, Herron, Edgmon, Miller, Gruenberg, Petersen, Joule, Kerttula, and Foster.

The price of heating fuel is expensive but especially hard felt by Alaskans on a fixed income. As the price of heating fuel increases, older Alaskans spend more of their fixed incomes on heating their homes, especially Elders who live in rural and remote communities where energy costs are the highest. During the winter, seniors often spend much of their day at home. Older adults typically experience cooler body temperatures than younger people. Many live in older and sometimes drafty homes that are less energy efficient and poorly insulated. In order to save money, some seniors turn down their thermostats way low and may even resort to closing off rooms during the winter or more dangerous practices such as using their kitchen stoves for heat. They also cut back on food and prescription medication expenditures, measures that can compromise their health and quality of life.

ACoA supports HB 336 and believes that this program will help all Alaskans with their heating bills, especially older Alaskans. Please feel free to contact Denise Daniello, ACoA's executive director, by phone (465-4879) or email (denise.daniello@alaska.gov) should you have questions or require additional information.

Sincerely,

Sharon Howerton-Clark
Chair, Alaska Commission on Aging

Sincerely,

Denise Daniello
ACoA Executive Director

Cc: Representative Lynn, Representative Olson, Representative Saddler, Representative Peterson, Representative Tuck, Representative Thompson

HB 336 Written Testimony
Andria Agli, Shareholder & Corporate Relations Manager
Bristol Bay Native Corporation
March 27, 2012

Mr. Chairman, for the record, my name is Andria Agli. I am a shareholder of Bristol Bay Native Corporation (BBNC) and the manager for shareholder and corporate relations for BBNC. Thank you for inviting BBNC to testify in support of HB 336 today. We support this bi-partisan legislation.

I grew up in the village of South Naknek on the Alaska Peninsula and return every summer to commercial and subsistence fish. I have family that still live and work there year round. The high cost of heating fuel and electricity is a challenge that all Alaskans have to deal with. However, the problem is greater for residents of rural Alaska. Currently, the cost of heating fuel in South Naknek is $ 5.25 per gallon. The cost of electricity is more than $.50 per kWh. These prices hit everyone hard. Legislative efforts to provide financial relief for these high prices are necessary and certainly have BBNC's support.

BBNC is an economic cornerstone of the Bristol Bay region and it takes the responsibilities that come with that position very seriously. BBNC has more

than 9,000 shareholders and since 1978, BBNC has paid more than $100 million in dividends to its shareholders. In 2012 alone, BBNC will distribute another $13 million. BBNC has established an education foundation that provides scholarships for higher education and vocational training, created internships and employment opportunities; established an Elder benefit program, and advocated on behalf of the economic, cultural and subsistence rights of our shareholders. BBNC continues this work today to ensure our corporate mission of "Enriching our Native way of life."

BBNC is pursuing new responsible economic and investment opportunities in the Bristol Bay region that will help better the lives of our shareholders and regional residents. BBNC supports renewable energy programs and both renewable and non-renewable resource development that responsibly allows for shareholders to sustain their way of life.

Our Board recently directed the corporation to invest $30 million over the next 5 years within the region. Our shareholders have told us they need help with the high cost of heating fuel and electricity. BBNC's investment efforts will identify and evaluate projects that could help provide some

energy cost relief. BBNC supports the legislature's efforts to do the same with this legislation.

High energy costs represent the greatest challenge to the economic success of villages in the Bristol Bay region, where average families pay more for their home energy bills than they do for rent or mortgage payments. It is for this reason that BBNC advocates for energy programs that provide current and long-term solutions to this growing crisis.

HB 336 is a very good complement to BBNC's strategy to invest in the Bristol Bay region, and has BBNC's full support. This will not change the price of heating oil or electricity in the short-term; however, it will provide some relief to rural residents.

Section 1 of the bill will provide an energy voucher to every adult PFD recipient. For many households this will provide immediate energy relief. For households that include extended families with multiple adults living under the same roof, the total voucher amount received by this legislation will be significantly greater. While this is not a permanent fix, it will help the current economic hardships felt in our rural communities.

Section 2 of the legislation is also helpful because it will prompt ideas for longer-term assistance strategies for dealing with the recurring problem of high energy costs. BBNC applauds the legislature's efforts to get such strategies on the table as long-term energy solutions are needed statewide.

In closing, BBNC supports HB 336 because it will provide short-term energy assistance to those who are impacted the most and provide a mechanism to consider more permanent energy solutions to this ongoing crisis. Both are needed to bring energy costs to an affordable level to the benefit of all Alaskans.

Thank you for the Committee's time this afternoon. I would be happy to answer any questions the Committee may have.

HB 357

<TARGET><BILL>HB 357</BILL><SUBJECT>HB 357</SUBJECT><COMM>HENE27</COMM></TARGET>

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Representative Lance Pruitt
Co-Chair, House Energy Committee

Sponsor Statement

HB 357
AIDEA Sustainable Energy Program

Alaskans once again find themselves confronting the familiar paradox of high oil prices, which deliver windfall revenues to the treasury while burdening Alaskan communities with increased energy costs. Recognizing this, the Legislature made energy policy a priority issue and focused state resources on finding solutions. To date, we have invested millions in making our schools, homes, and public facilities more energy efficient. We have started work on an in-state gas pipeline and reinvigorated activity in Cook Inlet with targeted tax incentives and regulatory changes. We have begun developing the Susitna hydroelectric project, encouraged exploration for geothermal energy, and opened the door for emerging technologies like biomass, wind, and even small nuclear facilities.

Although each of these energy initiatives contributes to a more sustainable future for Alaska, the recent declining throughput in the trans-Alaska pipeline reminds us of how precarious our present condition is. Declining oil production and increasing demands on the treasury challenge us as policymakers to craft new strategies that to do more with less and to find sustainable ways to use Alaska's resources to grow our local economy.

ASSETS is proposing that the State recapitalize the Alaska Industrial Development and Export Authority (AIDEA) and expand AIDEA's existing authority to finance, or facilitate the financing of, energy infrastructure projects. AIDEA is already invested in energy projects such as the Snettisham hydroelectric project, which has provided low-cost, renewable power to Juneau for years. With a stronger balance sheet and greater access to credit markets, AIDEA could help finance or facilitate the financing of energy projects in Alaska. House Bill 357 creates a new fund within AIDEA: the sustainable energy transmission and supply development fund (SETS) and proposes $250,000,000 be invested in the fund.

House Bill 357 also expands the powers of AIDEA to finance, or facilitate the financing of energy projects through the SETS fund by granting the authority the ability to:

1. Insure project obligations and guarantee loans or bonds for projects.

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2. Defer principle payments and capitalize interest.

3. Offer financing terms of up to 30 years for energy projects or 50 years for transmission and hydroelectric projects.

4. Enter into lease agreements, sales-lease-back agreements, build-operate-transfer agreements and other agreements to finance energy projects.

5. Offer a reduced interest rate for renewable projects, projects in rural areas or projects that promote economic development.

These additional powers will provide flexible terms that can reduce the ultimate cost of energy to consumers and enable projects to move forward toward construction. However, HB 357 also requires legislative approval for investments that are more than one-third of a project's capital costs or if a loan guarantee exceeds $20 million. By subjecting certain investments to legislative approval, HB 357 maintains an appropriate level of due diligence for projects.

By making credit available we empower communities and give utilities an alternative to the traditional grant model that too often underfunds projects and leads to delays. Relying on credit also ensures that project sponsors have some skin in the game and a stake in a project's success or failure. Most importantly, we start to put some of Alaska's assets to work growing the economy within our state. Currently, Alaska's savings accounts are invested in stocks and bonds that drive economic activity outside Alaska. ASSETS suggests instead that some of those savings be invested here in Alaska through AIDEA, not as blank checks to development projects but as loans for energy infrastructure.

With ASSETS, Alaska has the chance to break the colonial model and sustainably grow its economy. As each loan is repaid, the capital becomes available to recycle into new loans. The recently completed Railbelt Integrated Resource Plan alone identified more than $5 billion in infrastructure that will need to be financed. Without ASSETS, debt interest payments made by Alaskan utilities will continue to leave the state. With ASSETS, Alaska will actually make money. AIDEA currently pays a dividend to the treasury of between $20 and $30 million per year. A larger balance sheet would increase AIDEA's earnings and thus its annual dividend to the state.

Together, the Legislature's commitment to fiscal prudence and its focus on energy issues lay the foundation for a bright future for our state. By putting more of our assets to work locally, we can create opportunities, develop our resources and create a sustainable economy for generations to come.

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Co-Chair, House Energy Committee

Changes to CS HB 357 (27-LS1402\M) in CS HB 357 (27-LS1402\B)

Please note that this analysis is not an authoritative interpretation of changes to the bill. The bill itself is the best statement of its contents.

The following references are to the B version of CS HB 357

Description: The proposed CS makes three broad changes to the M version of CS HB 357. The changes described below were made to clarify the treatment of "energy projects" financed under the proposed SETS program (AS 44.88.700-740) from the definition of "project" in existing AIDEA statutes by renaming "energy projects" "*qualified energy developments*." The definition of "*qualified energy development*" was refined and section 5, authorizing a moral obligation of the state was removed.

Title The following changes were made to the Title of the bill:

1. No changes.

Section 1 The following changes were made to section 1:

1. No changes.

Section 2 The following changes were made to section 2:

1. No changes.

Section 3 The following changes were made to section 3:

1. No changes

Section 4 The following changes were made to Section 4:

1. No changes.

Deletion Section 5 (page 4 lines 1-15 of the M version) was removed from the bill:

1. The subsequent sections were renumbered accordingly.

Section 5 The language in section 5 retains the language found in section 6 of the M version with the following changes:

1. Replaced "energy project" with "qualified energy development" on page 4, line 6 and page 5, line 1.

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Co-Chair, House Energy Committee

Section 6 The language in section 6 retains the language found in section 7 of the M version with the following change:

1. Replaced "energy project" with "qualified energy development" on page 5, line 29.

Section 7 The language in section 7 retains the language found in section 8 of the M version with no changes.

Section 8 The language in section 8 retains the language found in section 9 of the M version with no changes.

Section 9 The language in section 9 retains the language found in section 10 of the M version with the following change:

1. Deleted the word "energy" preceding "loan" on page 6, line 26.

Section 10 The language in section 10 retains the language found in section 11 of the M version with the following changes:

1. Deleted the word "energy" preceding "loan" on page 6, line 28.
2. Deleted the word "energy" preceding "loan" on page 7, line 6.
3. Deleted the word "energy" preceding "loan" on page 7, line 11.

Section 11 The language in section 11 retains the language found in section 12 of the M version with the following change:

1. Deleted the word "energy" preceding "loan" on page 7, line 20.

Section 12 The language in section 12 retains the language found in section 13 of the M version with no changes.

Section 13 The language in section 13 retains the language found in section 14 of the M version with the following changes:

1. Replaced "energy projects" with "qualified energy development" on page 8, line 18-19.
2. Replaced "energy projects" with "qualified energy development" on page 9, line 11.
3. Replaced "energy projects" with "qualified energy development" on page 9, line 12.

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Representative Lance Pruitt
Co-Chair, House Energy Committee

Section 13 (continued)

4. Replaced "energy projects" with "qualified energy development" on page 9, line 13-14.
5. Replaced "energy projects" with "qualified energy development" on page 9, line 22-23.
6. Replaced "energy projects" with "qualified energy development" on page 9, line 26.
7. Replaced "energy projects" with "qualified energy development" on page 10, line 5.
8. Replaced "energy projects" with "qualified energy development" on page 10, line 12-13.
9. Replaced "energy projects" with "qualified energy development" on page 10, line 15-16.
10. Replaced "energy project" with "qualified energy development" on page 10, line 18-19.

Section 14 Section 14 retains the language previously found in section 15 of the M version with the following changes:

1. Replaced "energy project" with "qualified energy development" on page 10 line 23.
2. Inserted "conservation" preceding "storage" on page 10, line 25.
3. Removed "conversion of natural gas, coal, or biomass to liquids" and replaced with new language on page 10, lines 29-30: "the chemical, catalytic, or biological upgrade or conversion of natural gas, coal, or biomass to hydrocarbon liquids."
4. Inserted new language on page 11, line 3: "gasification of coal or biomass into synthesis gas;"
5. Inserted new language on page 11, line 4-5: "the chemical, catalytic, or biological upgrade of synthesis gas into methane; or"
6. Inserted new language on page 11, line 6-7: "the manufacture of hydrogen from any feedstock, excluding the mechanical separation from air."

Section 15 Section 15 retains the language previously found in section 16 of the M version with the following change:

1. Changed the reference on page 11, line 11 from 14 to 13 to reflect the renumbering of sections.

27-LS1402\B
Kirsch
4/2/12

CS FOR HOUSE BILL NO. 357(ENE)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY THE HOUSE SPECIAL COMMITTEE ON ENERGY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES PRUITT, Foster, Costello, Olson, Thompson, Petersen, Peggy Wilson, Tammie Wilson

A BILL

FOR AN ACT ENTITLED

"An Act establishing the sustainable energy transmission and supply development program in the Alaska Industrial Development and Export Authority; and relating to the interest rates of the Alaska Industrial Development and Export Authority."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

SHORT TITLE. This Act may be known as the Alaska Sustainable Strategy for Energy Transmission and Supply (ASSETS) Act.

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

LEGISLATIVE INTENT. The legislature intends to appropriate, during fiscal years 2013 and 2014, amounts that total $250,000,000 to carry out the purposes of this Act.

*** Sec. 3.** AS 44.88.010(a) is amended to read:

(a) The legislature finds, determines, and declares that

(1) there exist areas of the state in which seasonal and nonseasonal unemployment exist;

(2) this unemployment is a serious menace to the health, safety, and general welfare, not only to the people in those areas, but also to the people of the entire state;

(3) the state lacks the basic manufacturing, industrial, **energy,** export, small business, and business enterprises and the other facilities referred to in this subsection necessary to permit adequate development of its natural resources and the balanced growth of its economy;

(4) the establishment and expansion of industrial, manufacturing, **energy,** export, small business, and business enterprises in **the state** [ALASKA] and the other facilities referred to in this subsection are essential to the development of the natural resources and the long-term economic growth of the state, and will directly and indirectly alleviate unemployment in the state;

(5) the expansion of export trade is vital to the health and growth of the state's economy;

(6) many **state** [ALASKA] businesses could benefit from additional financial and technical assistance with respect to the exportation of their products and services;

(7) the [UNITED STATES] Export-Import Bank **of the United States** has been mandated by the Export-Import Bank Act Amendments of 1983 to provide technical assistance and export financing support to small businesses in cooperation with state export finance agencies;

(8) Alaska-based exporters can be effectively assisted through the establishment, as part of the Alaska Industrial Development and Export Authority, of an export financing program designed to work with the [U.S.] Export-Import Bank **of the United States** and other federal, state, and private institutions;

(9) the achievement of the goal of full employment, and of establishment and continuing operation and development of industrial, manufacturing, **energy,** export, small business, and business enterprises in the state will be accelerated and facilitated by the creation of an instrumentality of the state with powers to incur

debt, to own and operate facilities, to make and insure loans to finance and to assist private lenders to make loans to finance the establishment, operation, and development of industrial, manufacturing, **energy,** export, small business, and business enterprises;

(10) it is in the public interest to promote the prosperity and general welfare of all citizens of the state by

(A) stimulating commercial and industrial growth and expansion by encouraging an increase of private investment by banks, investment houses, insurance companies, and other financial institutions, including pension and retirement funds, to help satisfy the need for economic expansion;

(B) encouraging the production of raw materials and goods for export, the expansion of exports and raw materials and goods, and the rendering of services abroad by residents of the state through the establishment of a program that provides financial assistance in cooperation with federal, state, and private institutions for these purposes in the form provided in this chapter;

(C) creating the Alaska Industrial Development and Export Authority with the powers necessary to accomplish the objectives stated in this paragraph, including the power to issue taxable and tax-exempt bonds and to acquire ownership interests in projects as provided in this chapter;

(11) it is in the state's interest to import private capital to create new economic activity which would not otherwise take place in the state.

* **Sec. 4.** AS 44.88.010(b) is amended to read:

(b) It is declared to be the policy of the state, in the interests of promoting the health, security, and general welfare of all the people of the state, and a public purpose, to increase job opportunities and otherwise to encourage the economic growth of the state, including the development of its natural resources, through the establishment and expansion of manufacturing, industrial, **energy,** export, small business, and business enterprises and the other facilities referred to in (a) of this section by creating the Alaska Industrial Development and Export Authority with the powers, duties, and functions as provided in this chapter.

* **Sec. 5.** AS 44.88.155(d) is amended to read:

(d) A loan participation purchased by the authority with assets of the enterprise development account or with proceeds of bonds secured by assets of the enterprise development account

(1) may not exceed $20,000,000; however, in the case of a loan participation for **qualified energy development** [A POWER TRANSMISSION INTERTIE], the loan participation may exceed $20,000,000 with legislative approval;

(2) may not be purchased unless

(A) the project applicant is not, or, if the applicant is not a single proprietorship, all members of the business enterprise or enterprises constituting the project applicant are not, in default on another loan made by the state or by a public corporation of the state; and

(B) at least 10 percent of the principal amount of the loan is retained by the loan originator**, or the loan is for financing improvements in energy efficiency**;

(3) may not be purchased if the loan to be purchased exceeds 75 percent of the appraised value of the collateral offered as security for the loan unless the amount of the loan in excess of this limit is federally insured or guaranteed or is insured by a qualified mortgage insurance company, except that the loan to be purchased under this paragraph may not exceed the total of loan proceeds used to refinance an existing debt plus the cost of new construction, expansion, or acquisition unless the proceeds from the additional amounts of the loan to be purchased are restricted to uses approved by the authority to finance commercial activity in the state by a business enterprise;

(4) may not be purchased if the participation in the loan to be purchased is for a term longer than the following, except that a loan under (A) or (C) of this paragraph may not have a term longer than three-quarters of the authority's estimate of the life of the collateral offered as security for the loan:

(A) 40 years from the date the loan is made in the case of a loan participation for a project described in AS 44.88.900(9)(E);

(B) 50 years from the date the loan is made in the case of a loan

participation for **qualified energy development** [A POWER TRANSMISSION INTERTIE];

(C) 25 years from the date the loan is made in the case of a loan participation for other projects;

(5) may be made only if the participation in the loan to be purchased contains amortization provisions; the amortization provisions

(A) must be complete and satisfactory to the authority and require periodic payments by the borrower;

(B) may allow the loan originator to amortize the portion of the loan retained by the loan originator using a shorter amortization schedule than the amortization schedule for the portion of the loan held by the authority if

(i) in the authority's opinion, the project financed can support the increased debt service; and

(ii) the accelerated amortization schedule is required to induce the originator to make the loan;

(6) may be made only if the participation in the loan to be purchased is in the form and contains the terms and provisions with respect to insurance, repairs, alterations, payment of taxes and assessments, default reserves, delinquency charges, default remedies, acceleration of maturity, secondary liens, and other matters the authority prescribes; and

(7) may be made only if the participation in the loan to be purchased is secured as to repayment by a mortgage or other security instrument in the manner the authority determines is feasible to assure timely repayment under the loan documents entered into with the borrower.

* **Sec. 6.** AS 44.88.155(g) is amended to read:

(g) Notwithstanding any other provision of this section, the authority may waive or modify the requirements of this section as it considers appropriate and prudent in order to finance a project if the authority intends to own the project or in order to finance **qualified energy development** [A POWER TRANSMISSION INTERTIE PROJECT].

* **Sec. 7.** AS 44.88.159(a) is amended to read:

(a) The interest rate on **a loan purchased from the proceeds of tax-exempt bonds secured by the sustainable energy transmission and supply development fund (AS 44.88.710) under AS 44.88.700 - 44.88.740 or** a loan participation purchased from the proceeds of tax-exempt bonds or expected by the authority to be purchased from the proceeds of tax-exempt bonds **under AS 44.88.155** shall be determined under the regulations adopted by the authority under AS 44.88.085(g)(2)(C) and shall be not less than the cost of funds to the authority. In this subsection, "cost of funds" means the true interest cost expressed as a rate on tax-exempt bonds of the authority plus an additional percentage as determined by the authority to represent the allocable expenses of operation, costs of issuance, and loan servicing costs.

*** Sec. 8.** AS 44.88.159(b) is amended to read:

(b) The interest rate on **a loan purchased from the proceeds of taxable bonds secured by the sustainable energy transmission and supply development fund (AS 44.88.710) under AS 44.88.700 - 44.88.740 or** a loan participation purchased from the proceeds of taxable bonds **under AS 44.88.155** or expected by the authority to be purchased from the proceeds of taxable bonds **under AS 44.88.155** shall be determined under the regulations adopted by the authority under AS 44.88.085(g)(2)(C) and shall be not less than the cost of funds to the authority. In this subsection, "cost of funds" means the true interest cost expressed as a rate on taxable bonds, plus an additional percentage as determined by the authority to represent the allocable expenses of operation, costs of issuance, and loan servicing costs.

*** Sec. 9.** AS 44.88.159(d) is amended to read:

(d) The provisions of this section apply only to a loan participation purchased under AS 44.88.155 - 44.88.159 **or to a loan made under AS 44.88.700 - 44.88.740**.

*** Sec. 10.** AS 44.88.159(e) is amended to read:

(e) The interest rate on **a loan made under AS 44.88.700 - 44.88.740 or** a loan participation purchased directly from the assets of the authority shall be determined under the regulations adopted by the authority under AS 44.88.085(g)(2)(C) and shall be not less than the total of a percentage as

determined by the authority to represent the allocable expenses of operation and costs of loan origination and servicing, plus the cost of funds. In this subsection,

(1) "comparable financial security" means a type or category of financial security the authority identifies in the regulations adopted by the authority under AS 44.88.085(g)(2)(C) that has a term and financial conditions comparable to the term and financial conditions of a loan participation **or a loan made under AS 44.88.700 - 44.88.740** and for which a regularly published, nationally recognized market index is available;

(2) "cost of funds" means the earnings, expressed as an annual interest rate, the authority would receive on a comparable financial security, and, for a loan participation **or a loan made under AS 44.88.700 - 44.88.740** with a fixed interest rate, the cost of funds must equal or exceed the minimum interest rate;

(3) "minimum interest rate" means the five-year return on investment funds of the authority, expressed as an annual interest rate, achieved by all internal and external investment managers of the authority combined.

* **Sec. 11.** AS 44.88.159(f) is amended to read:

(f) In determining an interest rate under the regulations adopted by the authority under AS 44.88.085(g)(2)(C), the authority may determine to disregard the minimum interest rate required under (a), (b), or (e) of this section for a loan participation purchased by the authority **or a loan made under AS 44.88.700 - 44.88.740** to resolve lending limits or reserve restrictions imposed on the financial institution and may instead determine to retain the interest rate existing at the time the authority **makes the loan or** purchases **the authority's loan participation** [A PORTION OF THE LOAN].

* **Sec. 12.** AS 44.88.159(g) is amended to read:

(g) The authority may, in the regulations adopted by the authority under AS 44.88.085(g)(2)(C), establish a program to pay to borrowers of loan participations determined by the authority to meet sufficient job creation, rural development, **renewable energy development,** or other economic development criteria incentive rate rebates of not more than one percent of the interest rate charged on the authority's portion of a loan participation. The following standards apply to the program:

(1) the payment of an incentive rate rebate may reduce the interest rate to a rate that is less than the minimum interest rate required under (a), (b), or (e) of this section;

(2) the authority may not commit to pay an incentive rate rebate for a proposed loan participation if the total of the amount of the proposed loan participation plus the combined outstanding balance of all loan participations for which the authority has committed to pay incentive rate rebates would exceed five percent of the total of the amount of the proposed loan participation plus the combined outstanding balance of all loan participations of the authority;

(3) an incentive rate rebate may not accrue for more than five years after the date the loan participation is purchased;

(4) the authority may establish a separate account for the incentive rate rebate program.

* **Sec. 13.** AS 44.88 is amended by adding new sections to read:

Article 7A. Sustainable Energy Transmission and Supply.

Sec. 44.88.700. Sustainable energy transmission and supply development program. The sustainable energy transmission and supply development program is created in the authority to promote and provide financing for qualified energy development in the state to alleviate unemployment and contribute to the state's economic welfare, economic diversity, and economic development.

Sec. 44.88.710. Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund. The Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund is established in the authority. The development fund consists of appropriations made to the development fund by the legislature, money or other assets transferred to the development fund by the authority, and unrestricted loan repayments, interest, or other income earned on loans, investments, or assets of the development fund. The development fund is not an account in the revolving loan fund established in AS 44.88.060, and the authority shall account for the development fund separately from the revolving fund. The authority may create additional accounts in the development fund. Subject to agreements made with the holders of the authority's

bonds or with other persons, the authority may transfer amounts in an account in the development fund to another account in the development fund. Amounts deposited in the development fund may be pledged to the payment of bonds of the authority or expended for the purposes of AS 44.88.700 - 44.88.740. The authority has the powers and responsibilities established in AS 37.10.071 with respect to the investment of amounts held in the development fund.

Sec. 44.88.720. Use of fund balance. Subject to the requirements of AS 44.88.710 - 44.88.740, the authority may use money in the Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund to assist in the construction, improvement, rehabilitation, and expansion of qualified energy development.

Sec. 44.88.730. Qualified energy development; powers and duties of the authority. (a) Subject to the limitations of AS 44.88.740, for qualified energy development the authority may

(1) use the Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund to finance qualified energy development, insure project obligations, guarantee loans or bonds, and establish reserves;

(2) acquire real or personal property by purchase, transfer, or foreclosure when the acquisition is necessary to protect the authority's interest in financing;

(3) defer principal payments or capitalize interest on qualified energy development financing;

(4) subject to AS 36.30.085(e), enter into lease agreements, sales-lease-back agreements, build-operate-transfer, and operate-transfer agreements, or any similar project financing agreement for a qualified energy development;

(5) enter into agreements with government entities for the transfer and control of infrastructure, facilities, rights-of-way, and studies;

(6) contract for services with a professional advisor, including an attorney, bond counsel, engineer, or other technical expert necessary to fulfill the purposes of the program; and

(7) subject to AS 44.88.090, borrow money and issue bonds.

(b) The authority shall adopt regulations to implement AS 44.88.700 - 44.88.740, including

(1) an application process for acquiring financing under this section;

(2) qualifications for qualified energy development projects applying for financing under this section; and

(3) fiscal controls and accounting procedures for the development fund.

Sec. 44.88.740. Limitations on financing. (a) Unless the authority has obtained legislative approval by law, the authority may not finance or participate in financing of

(1) more than one-third of the capital cost of qualified energy development; or

(2) a loan guarantee that exceeds $20,000,000.

(b) Financing under AS 44.88.730 is limited to the life of qualified energy development, which may not be more than

(1) 30 years; or

(2) 50 years for a transmission line or hydroelectric qualified energy development.

*** Sec. 14.** AS 44.88.900 is amended by adding new paragraphs to read:

(15) "development fund" means the sustainable energy transmission and supply development fund created in AS 44.88.710;

(16) "qualified energy development" means a project in the state that involves

(A) transmission, generation, conservation, storage, or distribution of heat or electricity;

(B) liquefaction, regasification, distribution, storage, or use of natural gas;

(C) the chemical, catalytic, or biological upgrade or conversion of natural gas, coal, or biomass to hydrocarbon liquids;

(D) processing, refining, or upgrading of oil;

(E) distribution or storage of refined petroleum products;

(F) enhanced oil recovery or carbon sequestration;

(G) gasification of coal or biomass into synthesis gas;

(H) the chemical, catalytic, or biological upgrade of synthesis gas into methane; or

(I) the manufacture of hydrogen from any feedstock, excluding the mechanical separation from air.

*** Sec. 15.** The uncodified law of the State of Alaska is amended by adding a new section to read:

REVISOR'S INSTRUCTION. References to "this chapter" in AS 44.88 apply to sec. 13 of this Act and so should not be changed.

27-LS1402\M
Kirsch
3/12/12

CS FOR HOUSE BILL NO. 357( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVES PRUITT, Foster, Costello, Olson, Thompson, Petersen, Peggy Wilson

A BILL

FOR AN ACT ENTITLED

"An Act establishing the sustainable energy transmission and supply development program in the Alaska Industrial Development and Export Authority; and relating to the interest rates of the Alaska Industrial Development and Export Authority."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* **Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

SHORT TITLE. This Act may be known as the Alaska Sustainable Strategy for Energy Transmission and Supply (ASSETS) Act.

* **Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

LEGISLATIVE INTENT. The legislature intends to appropriate, during fiscal years 2013 and 2014, amounts that total $250,000,000 to carry out the purposes of this Act.

* **Sec. 3.** AS 44.88.010(a) is amended to read:

(a) The legislature finds, determines, and declares that

(1) there exist areas of the state in which seasonal and nonseasonal unemployment exist;

(2) this unemployment is a serious menace to the health, safety, and general welfare, not only to the people in those areas, but also to the people of the entire state;

(3) the state lacks the basic manufacturing, industrial, **energy,** export, small business, and business enterprises and the other facilities referred to in this subsection necessary to permit adequate development of its natural resources and the balanced growth of its economy;

(4) the establishment and expansion of industrial, manufacturing, **energy,** export, small business, and business enterprises in **the state** [ALASKA] and the other facilities referred to in this subsection are essential to the development of the natural resources and the long-term economic growth of the state, and will directly and indirectly alleviate unemployment in the state;

(5) the expansion of export trade is vital to the health and growth of the state's economy;

(6) many **state** [ALASKA] businesses could benefit from additional financial and technical assistance with respect to the exportation of their products and services;

(7) the [UNITED STATES] Export-Import Bank **of the United States** has been mandated by the Export-Import Bank Act Amendments of 1983 to provide technical assistance and export financing support to small businesses in cooperation with state export finance agencies;

(8) Alaska-based exporters can be effectively assisted through the establishment, as part of the Alaska Industrial Development and Export Authority, of an export financing program designed to work with the [U.S.] Export-Import Bank **of the United States** and other federal, state, and private institutions;

(9) the achievement of the goal of full employment, and of establishment and continuing operation and development of industrial, manufacturing, **energy,** export, small business, and business enterprises in the state will be accelerated and facilitated by the creation of an instrumentality of the state with powers to incur

debt, to own and operate facilities, to make and insure loans to finance and to assist private lenders to make loans to finance the establishment, operation, and development of industrial, manufacturing, **energy,** export, small business, and business enterprises;

(10) it is in the public interest to promote the prosperity and general welfare of all citizens of the state by

(A) stimulating commercial and industrial growth and expansion by encouraging an increase of private investment by banks, investment houses, insurance companies, and other financial institutions, including pension and retirement funds, to help satisfy the need for economic expansion;

(B) encouraging the production of raw materials and goods for export, the expansion of exports and raw materials and goods, and the rendering of services abroad by residents of the state through the establishment of a program that provides financial assistance in cooperation with federal, state, and private institutions for these purposes in the form provided in this chapter;

(C) creating the Alaska Industrial Development and Export Authority with the powers necessary to accomplish the objectives stated in this paragraph, including the power to issue taxable and tax-exempt bonds and to acquire ownership interests in projects as provided in this chapter;

(11) it is in the state's interest to import private capital to create new economic activity which would not otherwise take place in the state.

* **Sec. 4.** AS 44.88.010(b) is amended to read:

(b) It is declared to be the policy of the state, in the interests of promoting the health, security, and general welfare of all the people of the state, and a public purpose, to increase job opportunities and otherwise to encourage the economic growth of the state, including the development of its natural resources, through the establishment and expansion of manufacturing, industrial, **energy,** export, small business, and business enterprises and the other facilities referred to in (a) of this section by creating the Alaska Industrial Development and Export Authority with the powers, duties, and functions as provided in this chapter.

* **Sec. 5.** AS 44.88.105(d) is amended to read:

(d) The **chair** [CHAIRMAN] of the authority shall annually, **not** [NO] later than January 2, certify in writing to the governor and the legislature the amount, if any, required to restore a capital reserve fund to the capital reserve fund requirement. The legislature may appropriate to the authority the amount certified by the **chair** [CHAIRMAN] of the authority. The authority shall deposit the amounts appropriated under this subsection during a fiscal year in the proper capital reserve fund. Nothing in this section creates a debt or liability of the state. In this subsection, "capital reserve fund" means a capital reserve fund that

(1) is created under this section on or before January 1, 1989;

(2) secures refunding bonds if the refunding bonds are issued to refund bonds that are secured by a capital reserve fund created under this section on or before January 1, 1989; or

(3) secures bonds issued on or after August 11, 1993, for **an energy project** [A POWER TRANSMISSION INTERTIE].

* **Sec. 6.** AS 44.88.155(d) is amended to read:

(d) A loan participation purchased by the authority with assets of the enterprise development account or with proceeds of bonds secured by assets of the enterprise development account

(1) may not exceed $20,000,000; however, in the case of a loan participation for **an energy project** [A POWER TRANSMISSION INTERTIE], the loan participation may exceed $20,000,000 with legislative approval;

(2) may not be purchased unless

(A) the project applicant is not, or, if the applicant is not a single proprietorship, all members of the business enterprise or enterprises constituting the project applicant are not, in default on another loan made by the state or by a public corporation of the state; and

(B) at least 10 percent of the principal amount of the loan is retained by the loan originator**, or the loan is for financing improvements in energy efficiency**;

(3) may not be purchased if the loan to be purchased exceeds 75

percent of the appraised value of the collateral offered as security for the loan unless the amount of the loan in excess of this limit is federally insured or guaranteed or is insured by a qualified mortgage insurance company, except that the loan to be purchased under this paragraph may not exceed the total of loan proceeds used to refinance an existing debt plus the cost of new construction, expansion, or acquisition unless the proceeds from the additional amounts of the loan to be purchased are restricted to uses approved by the authority to finance commercial activity in the state by a business enterprise;

(4) may not be purchased if the participation in the loan to be purchased is for a term longer than the following, except that a loan under (A) or (C) of this paragraph may not have a term longer than three-quarters of the authority's estimate of the life of the collateral offered as security for the loan:

(A) 40 years from the date the loan is made in the case of a loan participation for a project described in AS 44.88.900(9)(E);

(B) 50 years from the date the loan is made in the case of a loan participation for **an energy project** [A POWER TRANSMISSION INTERTIE];

(C) 25 years from the date the loan is made in the case of a loan participation for other projects;

(5) may be made only if the participation in the loan to be purchased contains amortization provisions; the amortization provisions

(A) must be complete and satisfactory to the authority and require periodic payments by the borrower;

(B) may allow the loan originator to amortize the portion of the loan retained by the loan originator using a shorter amortization schedule than the amortization schedule for the portion of the loan held by the authority if

(i) in the authority's opinion, the project financed can support the increased debt service; and

(ii) the accelerated amortization schedule is required to induce the originator to make the loan;

(6) may be made only if the participation in the loan to be purchased is

in the form and contains the terms and provisions with respect to insurance, repairs, alterations, payment of taxes and assessments, default reserves, delinquency charges, default remedies, acceleration of maturity, secondary liens, and other matters the authority prescribes; and

(7) may be made only if the participation in the loan to be purchased is secured as to repayment by a mortgage or other security instrument in the manner the authority determines is feasible to assure timely repayment under the loan documents entered into with the borrower.

*** Sec. 7.** AS 44.88.155(g) is amended to read:

(g) Notwithstanding any other provision of this section, the authority may waive or modify the requirements of this section as it considers appropriate and prudent in order to finance a project if the authority intends to own the project or in order to finance **an energy** [A POWER TRANSMISSION INTERTIE] project.

*** Sec. 8.** AS 44.88.159(a) is amended to read:

(a) The interest rate on **a loan purchased from the proceeds of tax-exempt bonds secured by the sustainable energy transmission and supply development fund (AS 44.88.710) under AS 44.88.700 - 44.88.740 or** a loan participation purchased from the proceeds of tax-exempt bonds or expected by the authority to be purchased from the proceeds of tax-exempt bonds **under AS 44.88.155** shall be determined under the regulations adopted by the authority under AS 44.88.085(g)(2)(C) and shall be not less than the cost of funds to the authority. In this subsection, "cost of funds" means the true interest cost expressed as a rate on tax-exempt bonds of the authority plus an additional percentage as determined by the authority to represent the allocable expenses of operation, costs of issuance, and loan servicing costs.

*** Sec. 9.** AS 44.88.159(b) is amended to read:

(b) The interest rate on **a loan purchased from the proceeds of taxable bonds secured by the sustainable energy transmission and supply development fund (AS 44.88.710) under AS 44.88.700 - 44.88.740 or** a loan participation purchased from the proceeds of taxable bonds **under AS 44.88.155** or expected by the authority to be purchased from the proceeds of taxable bonds **under AS 44.88.155**

shall be determined under the regulations adopted by the authority under AS 44.88.085(g)(2)(C) and shall be not less than the cost of funds to the authority. In this subsection, "cost of funds" means the true interest cost expressed as a rate on taxable bonds, plus an additional percentage as determined by the authority to represent the allocable expenses of operation, costs of issuance, and loan servicing costs.

* **Sec. 10.** AS 44.88.159(d) is amended to read:

(d) The provisions of this section apply only to a loan participation purchased under AS 44.88.155 - 44.88.159 **or to an energy loan made under AS 44.88.700 - 44.88.740**.

* **Sec. 11.** AS 44.88.159(e) is amended to read:

(e) The interest rate on **an energy loan made under AS 44.88.700 - 44.88.740 or** a loan participation purchased directly from the assets of the authority shall be determined under the regulations adopted by the authority under AS 44.88.085(g)(2)(C) and shall be not less than the total of a percentage as determined by the authority to represent the allocable expenses of operation and costs of loan origination and servicing, plus the cost of funds. In this subsection,

(1) "comparable financial security" means a type or category of financial security the authority identifies in the regulations adopted by the authority under AS 44.88.085(g)(2)(C) that has a term and financial conditions comparable to the term and financial conditions of a loan participation **or an energy loan made under AS 44.88.700 - 44.88.740** and for which a regularly published, nationally recognized market index is available;

(2) "cost of funds" means the earnings, expressed as an annual interest rate, the authority would receive on a comparable financial security, and, for a loan participation **or an energy loan made under AS 44.88.700 - 44.88.740** with a fixed interest rate, the cost of funds must equal or exceed the minimum interest rate;

(3) "minimum interest rate" means the five-year return on investment funds of the authority, expressed as an annual interest rate, achieved by all internal and external investment managers of the authority combined.

* **Sec. 12.** AS 44.88.159(f) is amended to read:

(f) In determining an interest rate under the regulations adopted by the authority under AS 44.88.085(g)(2)(C), the authority may determine to disregard the minimum interest rate required under (a), (b), or (e) of this section for a loan participation purchased by the authority **or an energy loan made under AS 44.88.700 - 44.88.740** to resolve lending limits or reserve restrictions imposed on the financial institution and may instead determine to retain the interest rate existing at the time the authority **makes the loan or** purchases **the authority's loan participation** [A PORTION OF THE LOAN].

*** Sec. 13.** AS 44.88.159(g) is amended to read:

(g) The authority may, in the regulations adopted by the authority under AS 44.88.085(g)(2)(C), establish a program to pay to borrowers of loan participations determined by the authority to meet sufficient job creation, rural development, **renewable energy development,** or other economic development criteria incentive rate rebates of not more than one percent of the interest rate charged on the authority's portion of a loan participation. The following standards apply to the program:

(1) the payment of an incentive rate rebate may reduce the interest rate to a rate that is less than the minimum interest rate required under (a), (b), or (e) of this section;

(2) the authority may not commit to pay an incentive rate rebate for a proposed loan participation if the total of the amount of the proposed loan participation plus the combined outstanding balance of all loan participations for which the authority has committed to pay incentive rate rebates would exceed five percent of the total of the amount of the proposed loan participation plus the combined outstanding balance of all loan participations of the authority;

(3) an incentive rate rebate may not accrue for more than five years after the date the loan participation is purchased;

(4) the authority may establish a separate account for the incentive rate rebate program.

*** Sec. 14.** AS 44.88 is amended by adding new sections to read:

Article 7A. Sustainable Energy Transmission and Supply.

Sec. 44.88.700. Sustainable energy transmission and supply development

program. The sustainable energy transmission and supply development program is created in the authority to promote and provide financing for energy projects in the state to alleviate unemployment and contribute to the state's economic welfare, economic diversity, and economic development.

Sec. 44.88.710. Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund. The Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund is established in the authority. The development fund consists of appropriations made to the development fund by the legislature, money or other assets transferred to the development fund by the authority, and unrestricted loan repayments, interest, or other income earned on loans, investments, or assets of the development fund. The development fund is not an account in the revolving loan fund established in AS 44.88.060, and the authority shall account for the development fund separately from the revolving fund. The authority may create additional accounts in the development fund. Subject to agreements made with the holders of the authority's bonds or with other persons, the authority may transfer amounts in an account in the development fund to another account in the development fund. Amounts deposited in the development fund may be pledged to the payment of bonds of the authority or expended for the purposes of AS 44.88.700 - 44.88.740. The authority has the powers and responsibilities established in AS 37.10.071 with respect to the investment of amounts held in the development fund.

Sec. 44.88.720. Use of fund balance. Subject to the requirements of AS 44.88.710 - 44.88.740, the authority may use money in the Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund to assist in the construction, improvement, rehabilitation, and expansion of energy projects.

Sec. 44.88.730. Energy projects; powers and duties of the authority. (a) Subject to the limitations of AS 44.88.740, for energy projects the authority may

(1) use the Alaska Industrial Development and Export Authority sustainable energy transmission and supply development fund to finance qualified projects, insure project obligations, guarantee loans or bonds, and establish reserves;

(2) acquire real or personal property by purchase, transfer, or foreclosure when the acquisition is necessary to protect the authority's interest in financing;

(3) defer principal payments or capitalize interest on energy project financing;

(4) subject to AS 36.30.085(e), enter into lease agreements, sales-lease-back agreements, build-operate-transfer, and operate-transfer agreements, or any similar project financing agreement for a qualified energy project;

(5) enter into agreements with government entities for the transfer and control of infrastructure, facilities, rights-of-way, and studies;

(6) contract for services with a professional advisor, including an attorney, bond counsel, engineer, or other technical expert necessary to fulfill the purposes of the program; and

(7) subject to AS 44.88.090, borrow money and issue bonds.

(b) The authority shall adopt regulations to implement AS 44.88.700 - 44.88.740, including

(1) an application process for acquiring financing under this section;

(2) qualifications for an energy project applying for financing under this section; and

(3) fiscal controls and accounting procedures for the development fund.

Sec. 44.88.740. Limitations on financing. (a) Unless the authority has obtained legislative approval by law, the authority may not finance or participate in financing of

(1) more than one-third of the capital cost of an energy project; or

(2) a loan guarantee that exceeds $20,000,000.

(b) Financing under AS 44.88.730 is limited to the life of an energy project, which may not be more than

(1) 30 years; or

(2) 50 years for a transmission line or hydroelectric energy project.

*** Sec. 15.** AS 44.88.900 is amended by adding new paragraphs to read:

(15) "development fund" means the sustainable energy transmission and supply development fund created in AS 44.88.710;

(16) "energy project" means a project in the state that involves

(A) transmission, generation, storage, or distribution of heat or electricity;

(B) liquefaction, regasification, distribution, storage, or use of natural gas;

(C) conversion of natural gas, coal, or biomass to liquids;

(D) processing, refining, or upgrading of oil;

(E) distribution or storage of refined petroleum products; or

(F) enhanced oil recovery or carbon sequestration.

*** Sec. 16.** The uncodified law of the State of Alaska is amended by adding a new section to read:

REVISOR'S INSTRUCTION. References to "this chapter" in AS 44.88 apply to sec. 14 of this Act and so should not be changed.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version **HB 357**
Fiscal Note Number
() Publish Date

Identifier (file name) HB357-DCCED-AIDEA-03-02-12
Title AIDEA Participation in Energy Projects
Sponsor RepresentativePruitt
Requester House Energy Committee

Dept. Affected Fund Transfer
Appropriation Op Sys DGF
Allocation Financing of Energy Projects
OMB Component Number 1234

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	***	***	***	***	***	***	***

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)							
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		***	***	***	***	***	***	***

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial Version

Prepared by Mark Davis, Deputy Director Investments, Finance, and Analysis
Phone 907-771-3080
Division Alaska Development & Export Authority
Date/Time 3/3/12 10:00 AM
Approved by JoEllen Hanrahan, Director Administrative Services
Date 3/3/2012
Commerce, Community, and Economic Development

(Revised 11/28/2011 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** HB 357
2012 LEGISLATIVE SESSION

Analysis

HB 357 adds legislative intent language to re-capitalize AIDEA with $250 million that would be used to fund the new loan and loan guarantee program for financing energy projects.

The bill accomplishes these goals by: (1) an appropriation of $250,000,000 for FY13 and FY14 to carry out the agency's statutory purposes; (2) setting up a new loan fund in AIDEA; (3) making changes to AIDEA's general powers to add energy projects as a development goal; (4) amending AIDEA's powers so that it can make direct loans or offer loan or bond guarantees for qualified energy projects; and (5) amending the definitional section of the agency's statutes to add and define the term "energy project".

The fiscal impact of this legislation cannot be accurately determined at this time. The bill states that "The legislature intends to appropriate, during the years 2013 and 2014 amounts that total 250,000,000 to carry out the purposes of this Act". However it is not known at this time how the amount will be allocated between the two years.

FISCAL NOTE

STATE OF ALASKA
2012 LEGISLATIVE SESSION

Bill Version: **HB 357**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB357-DCCED-AIDEA-03-02-12
Dept. Affected: DCCED

Title: AIDEA Participation in Energy Projects
Appropriation: Alaska Industrial Development & Export Authority

Allocation: Alaska Industrial Development & Export Authority

Sponsor: Representative Lance Pruitt
Requester: House Energy Committee
OMB Component Number: 1234

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY13 Appropriation Requested	Included in Governor's FY13 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY13**	**FY13**	**FY14**	**FY15**	**FY16**	**FY17**	**FY18**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)							
1037	GF/MH (UGF)							
1178	temp code (UGF)							
TOTAL		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY12) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY13) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial Version

Prepared by: Mark Davis, Deputy Director Investments, Finance, and Analysis
Phone: 907-771-3080
Division: Alaska Development & Export Authority
Date/Time: 3/2/2012
Approved by: JoEllen Hanrahan, Director Administrative Services
Commerce, Community, and Economic Development
Date: 3/3/2012

(Revised 11/28/2011 OMB)

FISCAL NOTE

STATE OF ALASKA **BILL NO.** HB 357
2012 LEGISLATIVE SESSION

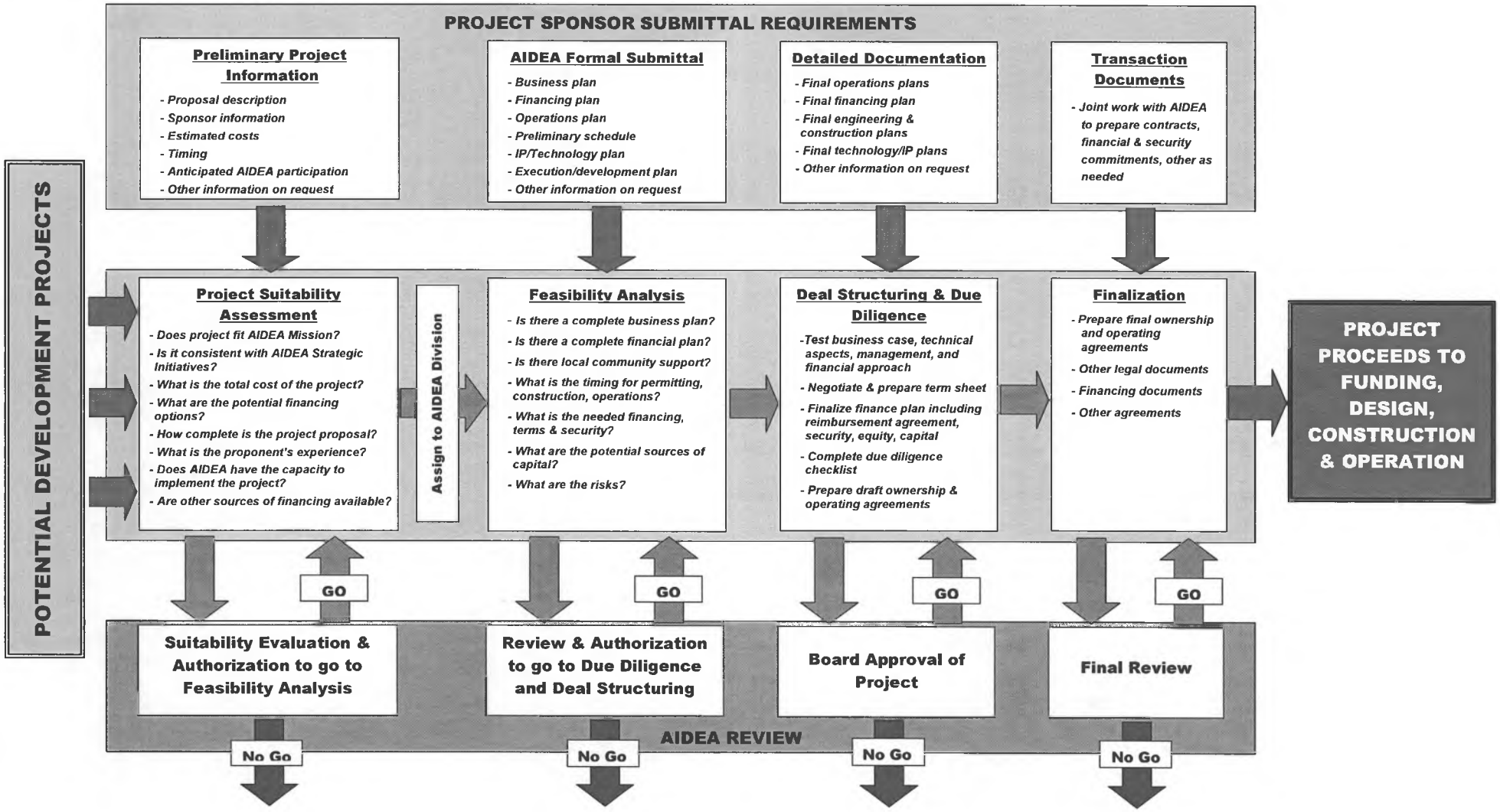
Analysis

HB 357 adds legislative intent language to re-capitalize AIDEA with $250 million for FY 13 and FY14 that would be used to fund a new loan and loan guarantee program to finance energy projects.

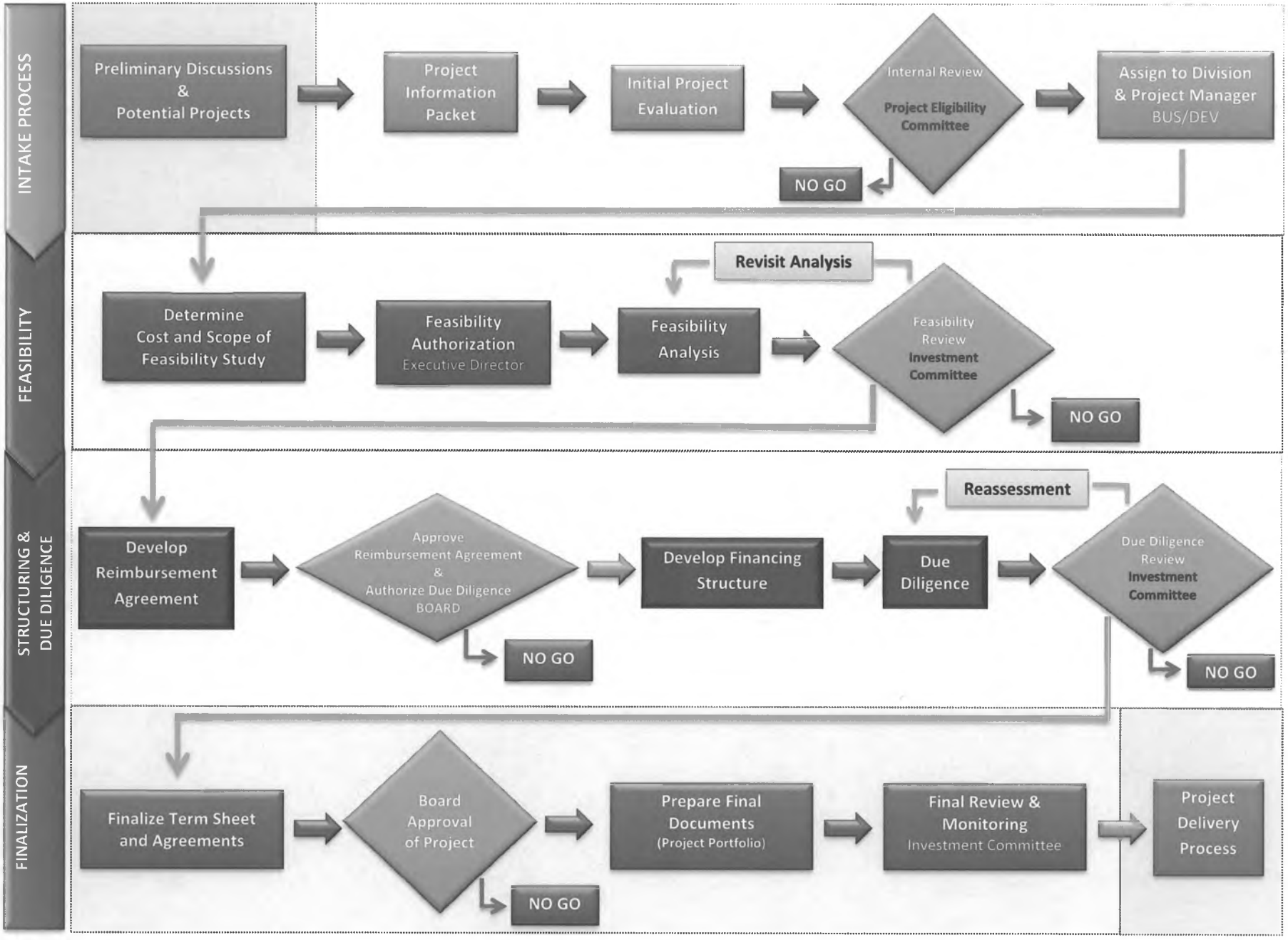
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This fiscal note represents the zero operating expenses required to administer this fund.

AIDEA DEVELOPMENT RELATED PROJECT INTAKE, ANALYSIS & DECISION MAKING PROCESS



AIDEA - Development Project Flow Chart



DRAFT L 3/12/12

Alaska Industrial Development and Export Authority



Credit Update

Credit Update Summary

Revolving Fund Security	■ AIDEA's principal fund for core business activities: development projects, substantial investment portfolio and loan program ■ Each segment produces substantial cash flow ■ Full faith and credit pledge of entire Revolving Fund
Continued Financial Strength	■ FY 2010 Debt Service Coverage 9.00x ■ 30-Jun-2010 Cash and Investments to Debt Ratio is 4.23x ■ Continued strong performance of loan portfolio, with 99.3% current (less than 90 days past due) as of 30-Jun-2010
Update Since January 2010	■ Project updates ■ FY2010 financial statements and debt service coverage

Summary of Bond Security

Development Projects

- 30-Jun-2010 Total Net Book Value: $326.1 million
- Cash Receipts FY ending 30-Jun-2010
  - — Red Dog $26.2 million
  - — Fed Ex $3.0 million
  - — Skagway $2.6 million

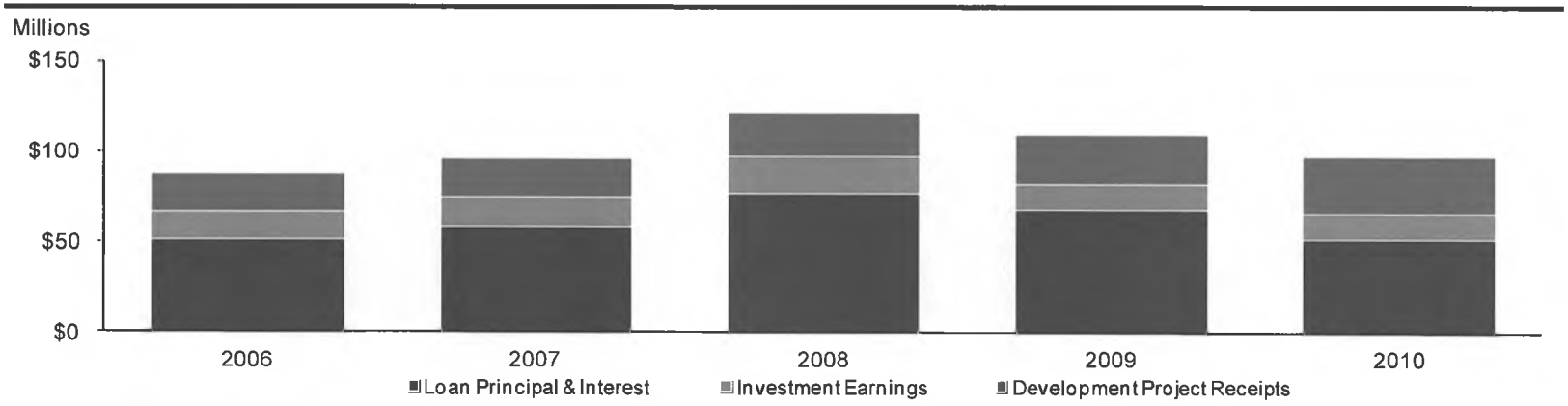
Investment Portfolio

- 30-Jun-2010 Cash and Investment Securities: $402.7 million
- Conservative investment policy in place
- Portfolio focus on quality and liquidity

Loan Program

- 30-Jun-2010 Loans Outstanding: $377.7 million
- Conservative credit criteria
- Portfolio quality is a key focus
- 99.3% of loans are current (less than 90 days past due)

Historical Coverage Components (FYE 30-Jun)



Current AIDEA Development Projects

($ in thousands)

	Figures for Fiscal Year Ending 30-Jun-2010			
Project	**Net Investment 30-Jun-2010**	**Allocable Revolving Fund Debt Outstanding**	**Minimum Annual Receipts**	**Type of Business**
DeLong Mountain Transportation System	$223,858[1]	$87,105	$17,670[2]	Public Port and Road
Healy Clean Coal Project	$45,765	–	N/A[3]	Electric Power Plant
Fed Ex Facility	$11,475[4]	$8,110	$2,999	Hangar & Maintenance Facility
Ketchikan Shipyard	$35,607	–	N/A	Marine Vessel Construction and Dry-dock Facility
Skagway Ore Terminal	$9,440	–	$3,050	Mineral Concentrate Load-Out Facility
Total	$326,145	$95,215	$23,719	

[1] *Net investment in DeLong Mountain Transportation System (DMTS) associated with the Red Dog Mine.*
[2] *Minimum Annual Assessment from DMTS. Does not include projection for future tonnage sensitive payments and zinc price escalator.*
[3] *Currently maintaining Healy Project in custodial status: In 2009, AIDEA agreed to sell the Healy Project to Tri-VEC, a wholly-owned subsidiary of GVEA, with plans to restart the Project.*
[4] *Net Investment in Fed Ex Project.*

AIDEA's Cash & Investment Portfolio

Carefully and Professionally Managed

Overview

- Total FYE 2010 Cash & Investment Portfolio: $402.7 million
- Fund management balance between external and internal
- External goals: Safety and return
- Internal goals: Safety and liquidity

Investment Policy – Internal Funds

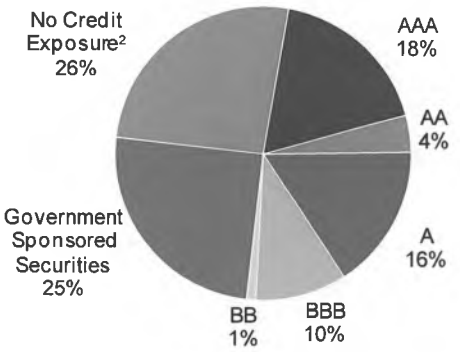
- Debt instruments issued or guaranteed by the U.S. government, its agencies and instrumentalities and Government-sponsored enterprises (GSEs)
- Money market funds and repurchase agreements collateralized by U.S. Treasury and agency securities
- Other investments specifically approved by the Board of Directors

Investment Policy - External Funds

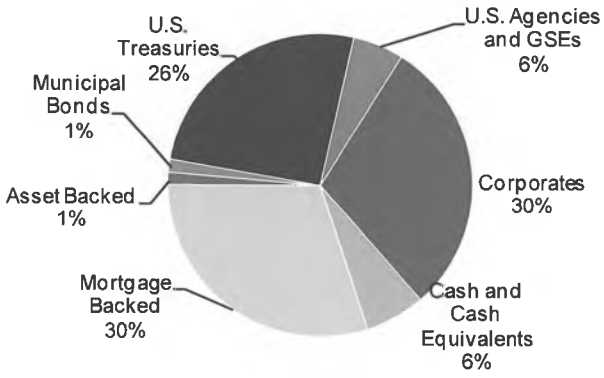
- Debt instruments issued or guaranteed by the U.S. government, its agencies and instrumentalities and GSEs
- Dollar-denominated debt instruments that have been issued by domestic and nondomestic entities
- Mortgage-backed securities issued or guaranteed by Federal agencies or GSEs
- Asset-backed securities, including collateralized mortgage backed securities and collateralized mortgage obligations (CMOs). CMOs are limited to the more stable classes; prohibited CMO classes include those where principal and interest components are separated or where leverage is employed
- Certificates of deposit and term deposits of United States domestic financial institutions provided the institutions meet guidelines set forth in the Resolution
- Other money market instruments described in the Investment Policy Resolution

Cash & Investment Portfolio on 30-Jun-2010: $402.7 mm[1]

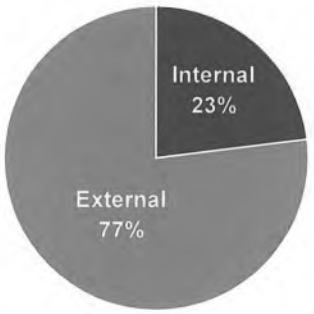
Credit Quality



Instruments



Management



Duration in Years

	Internal	External
Money Market	0.06	0.08
U.S. Treasuries	0.33	5.64
U.S. Agencies & GSEs	1.16	3.88
Corporates	–	5.65
Mortgage Backed	–	1.90
Asset Backed	–	0.60
Municipal Bonds	–	11.12

[1] Excludes $8.8 million related to the Snettisham Hydroelectric Project
[2] U.S. Treasury securities and securities of agencies of corporations explicitly guaranteed by the U.S. government are not considered to have credit risk.

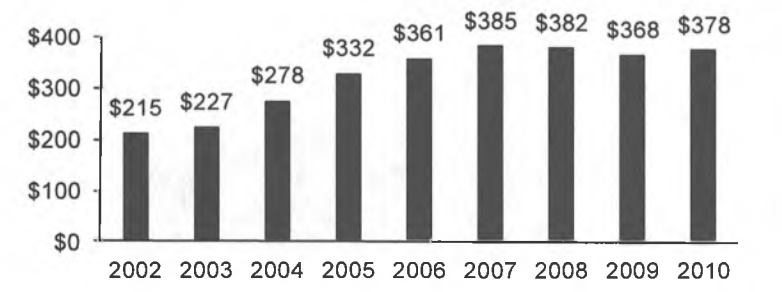
Loan Portfolio on 30-Jun-2010: $377.7 mm

AIDEA's Revolving Fund Loan Portfolio is Comprised of Three Elements: Loan Participation Program; OREO[1] Financing and Other Loans; Loans Appropriated[2] to AIDEA by the State

- Portfolio Statistics:
  - — Average loan balance on 30-Jun-2010: $1.5mm
  - — Pending loan commitments on 30-Jun-2010: $8.5mm
- Loans current (less than 90 days past due)
  - — FYE 2010: 99.3%
  - — Average since 2002: 99.1%
  - — Average for Alaska Commercial Banks: 96.39%
- AIDEA's loan history and pricing produce adequate margins for both borrowing and bad debt allowance
  - — Annual net charge-offs averaged 0.06% of fiscal year-end loan balance for all loans during FY 2006-10
  - — Loan pricing is computed as the underlying cost of funds, plus an adjustment for the cost of providing loans
    - Cost of providing loans includes salaries, allowance for loan losses and other out of pocket costs



FYE Loans Outstanding ($ in mm)



[1] *OREO refers to Other Real Estate Owned, as in the case of AIDEA, this term refers to certain assets that AIDEA has acquired through foreclosure or other means and are now for sale to the general public. These properties are either owned jointly with a financial institution or owned 100% by AIDEA. AIDEA does not possess any OREO properties at this time.*

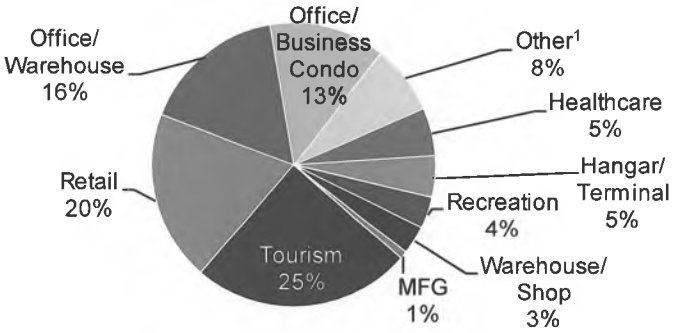
[2] *Appropriated Loans are less than 1% of AIDEA's Loan Portfolio, in the amount of $48,000.*

Loan Portfolio Analysis

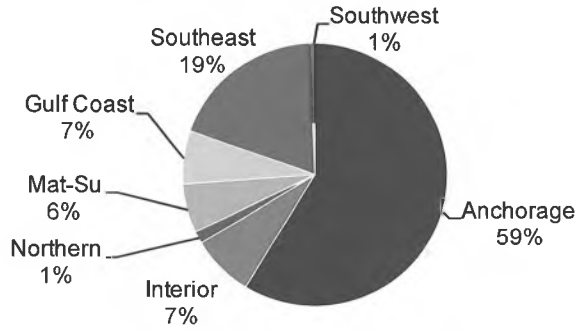
As of 30-Jun-2010

AIDEA's loan portfolio is diverse in terms of sector, geography and exposure to banks and borrowers

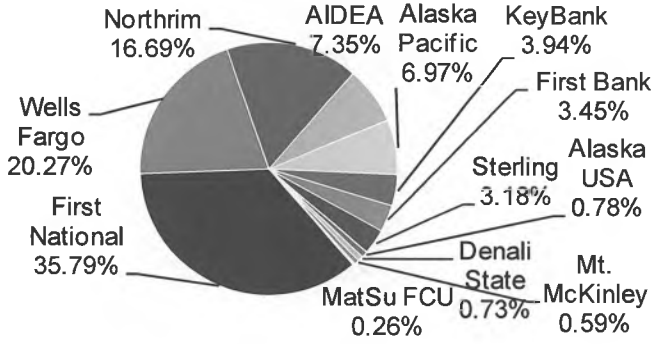
Loans by Industrial Sector ($ value)



Geographic Distribution of Loans ($ value)



Participating Bank Exposures



[1] *Includes Single Family Dwelling, Equipment, Laundromats, and Unimproved Property.*

AIDEA Revolving Fund Balance Sheet

As of 30-Jun-2010

($ in thousands)

	30-Jun-2010
Assets	
Cash and Cash Equivalents	$20,827
Investment Securities	362,951
Loans (Net)	369,343
Development Projects	81,372
Net Investment in Direct Financing Leases	244,773
Accrued Interest Receivable	5,435
Other Assets	8,188
Restricted Assets	
Cash and Cash Equivalents	$4,915
Investment Securities	14,031
Snettisham (Including Cash)	87,333
Total Assets	$1,199,168
Liabilities and Net Assets	
Debt	
Fixed Rate	$95,215
Other Liabilities	17,871
Snettisham Liabilities	87,333
Net Assets	998,749
Total Liabilities and Net Assets	$1,199,168

- Substantial investment portfolio in largely high quality investments
  - Cash and investments to debt ratio 4.23x (includes restricted)
- Large and diversified loan portfolio generates substantial income
- Fixed development project assets produce substantial revenue
- Effectively a pass through

Historical Debt Service Coverage for Revolving Fund Bonds

($ in thousands)

Historical cash coverage has been consistent and strong

	Year Ended 30-Jun				
	2006	**2007**	**2008**	**2009**	**2010**
Loan Principal and Interest Payments	$50,894	$58,283	$76,851	$67,243	$51,092
Investment Earnings[1]	15,526	16,340	19,558	13,806	14,107
Development Project Receipts[2]	20,650	20,650	24,862	27,599	31,833
Other Revenues	5,455	4,801	4,290	5,496	6,294
Total Receipts	***$92,525***	***$100,074***	***$125,561***	***$114,144***	***$103,326***
Operating & Maintenance Expenses	10,342	10,147	12,111	12,641	13,140
Net Income Available for Debt Service	**$82,183**	**$89,927**	**$113,450**	**$101,503**	**$90,186**
Annual Debt Service[3]	20,565	20,869	18,732	10,911	10,022
Debt Service Coverage	***4.00x***	***4.31x***	***6.06x***	***9.30x***	***9.00x***

Note: Excludes income, expenses and debt service related to the Snettisham Hydroelectric Project.

[1] Excludes a level amortization of the net book value of Unrestricted Investment Securities that the Revolving Fund Bond Resolution includes for projected future debt service coverage.

[2] Receipts for the DMTS and FedEx projects include the scheduled payments due each year. Actual date of July 1 payment receipts may have been the preceding June.

[3] Excludes optional redemption of general obligation debt and payment on bonds issued to finance the Snettisham Hydroelectric Project.

Pro Forma Debt Service Coverage

Projected coverage averages 24.14x during the life of the bonds

Year End 30-Jun	Revenues From Loans[1]	Revenues From Projects[2]	Investments @ 4.0%[3]	Investment Amortization[4]	Operating Expenses[5]	Net Revenues	Debt Service Requirement[6]	Cash Debt Service Coverage	Covenant Debt Service Coverage
2011	39,634	30,189	14,143	15,047	(5,057)	93,956	(12,768)	6.18	7.36
2012	38,919	25,326	15,613	15,047	(5,209)	89,696	(13,719)	5.44	6.54
2013	39,490	24,505	17,236	15,047	(5,365)	90,913	(14,240)	5.33	6.38
2014	39,465	24,464	18,970	15,047	(5,526)	92,420	(14,369)	5.38	6.43
2015	39,536	22,287	20,762	15,047	(5,692)	91,940	(12,228)	6.29	7.52
2016	59,741	19,163	22,645	15,047	(5,862)	110,734	(12,400)	7.72	8.93
2017	37,877	17,955	25,277	15,047	(6,038)	90,118	(12,558)	5.98	7.18
2018	37,349	17,955	27,079	15,047	(6,219)	91,211	(5,453)	13.97	16.73
2019	35,447	17,955	29,206	15,047	(6,406)	91,249	(5,515)	13.82	16.55
2020	34,568	18,502	31,332	15,047	(6,598)	92,851	(5,577)	13.95	16.65
2021	33,773	17,887	33,518	15,047	(6,796)	93,429	(5,639)	13.90	16.57
2022	32,303	15,542	35,725	15,047	(7,000)	91,617	(5,707)	13.42	16.05
2023	30,994	15,542	37,858	15,047	(7,210)	92,231	(5,786)	13.34	15.94
2024	27,668	15,542	40,014	15,047	(7,426)	90,845	(5,870)	12.91	15.48
2025	24,741	15,667	42,111	15,047	(7,649)	89,917	(5,948)	12.59	15.12
2026	22,280	15,414	44,135	15,047	(7,879)	88,997	(6,031)	12.26	14.76
2027	21,482	15,129	45,876	15,047	(8,115)	89,419	(6,135)	12.12	14.58
2028	18,099	15,129	47,627	15,047	(8,358)	87,544	(1,245)	58.23	70.32
2029	14,922	15,129	49,492	15,047	(8,609)	85,981	(1,246)	56.93	69.01
2030	11,548	15,187	51,284	15,047	(8,867)	84,199	(1,245)	55.54	67.63
2031	8,046	9,210	52,990	15,047	(9,134)	76,159	(1,246)	49.05	61.12
2032	4,272	3,234	54,360	15,047	(9,408)	67,505	(1,244)	42.17	54.26

[1] *Revenues from loan participations are net of all fees and expenses and exclude revenues from loans delinquent more than 90 days. Includes loan payments for wastewater treatment facility equal to projected debt service payments.*
[2] *Revenues from existing Authority development projects. Assumes minimum annual assessment from the DMTS continues uninterrupted even though revenue stream is subject to force majeure events. Includes projection for future DMTS tonnage sensitive payments and zinc price escalator. Includes $3 million estimated annual cost of maintaining Healy Project in mothball status and no revenues from the Healy Project.*
[3] *Revenues from investments computed at an assumed rate of 4% compounded annually; includes income from certain restricted investments.*
[4] *The Revolving Fund Bond Resolution directs the Authority to calculate a level amortization of the net book value of Unrestricted Investment Securities and to add such amortization amounts to net revenues to arrive at covenant coverage.*
[5] *Expenses include operating costs estimated at the Authority's fiscal year 2011 budget level as a base, with a 3% increase each year thereafter.*
[6] *Includes existing debt service and projected Series 2010B debt service*

Credit Summary Review

Solid Economic, Legal and Financial Foundation

Strong Underlying Economics	■ AIDEA maintains an active role in economic development across the State ■ State economy strong
Balanced Credit Strength	■ Security arising from diverse sources – Projects, Loans and Investments ■ Strong balance sheet
Strong Security Provisions in Resolution	■ Restrictive financial covenants ■ Statutory non-impairment covenant of State ■ Conservative Additional Bonds Test
Conservative Assumptions, Robust Results	■ Strong cash flows and liquidity ■ Strong historical and projected debt service coverage

STANDARD &POOR'S

Global Credit Portal
RatingsDirect®

December 13, 2010

Alaska Industrial Development and Export Authority; State Revolving Funds/Pools

Primary Credit Analyst:
James Breeding, Dallas (1) 214-871-1407; james_breeding@standardandpoors.com

Secondary Contact:
David G Hitchcock, New York (1) 212-438-2022; david_hitchcock@standardandpoors.com

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Rationale

Outlook

Loan Participation Program

Economic Development Account

Investment Portfolio

Related Criteria And Research

637743 | 300920538

Alaska Industrial Development and Export Authority; State Revolving Funds/Pools

Credit Profile		
US$14.47 mil revolv fd bnds (Private Activity - Non-Amt) ser 2010B dtd 12/22/2010 due 04/01/2031		
Long Term Rating	AA-/Stable	New

Rationale

Standard & Poor's Ratings Services assigned its 'AA-' rating to the Alaska Industrial Development and Export Authority's revolving fund bonds, series 2010B and affirmed its 'AA-' rating on the authority's revolving fund bonds outstanding.

The ratings reflect our opinion of:

- A pledged portfolio of private activity economic development loans;
- A currently low loan delinquency rate;
- Projected cash flows and debt service coverage that meet Standard & Poor's requirements for the 'AA' category for state revolving fund programs;
- Strong legal covenants, including an additional bonds test requiring either in excess of 1.50x annual debt service, or the maintenance of unrestricted surplus equal to $200 million or principal outstanding and never less than $100 million; and
- Covenants to maintain what we view as good liquidity in the authority's unrestricted cash equivalents balance.

The bonds are a general obligation (GO) of the authority for which the full faith and credit of the authority's revolving fund are pledged. The authority intends to issue the series 2010B bonds to fund a loan for the construction of a wastewater facility that will serve a state prison near Wasilla.

The authority has a number of programs through which it carries out its economic development activities. It conducts the majority of its business through its revolving fund, the net income and assets of which serve as the source of repayment on the bonds. As of June 30, 2010, the revolving fund had total assets of $1.2 billion, of which $1.09 billion were available to contribute toward satisfying obligations on revolving fund bonds outstanding. Total available assets included $383.8 million of unrestricted cash and investments. Other assets consist of $377.7 million in loans that had been purchased by the authority through a loan participation program, and $326.1 million of projects owned directly by the authority under its development finance program, including $224 million for an ore transportation system and $45.8 million for a clean coal generating project, which has suspended operations.

Overall financial trends for the authority have been positive, with historical annual debt service cash basis coverage in the last five years ranging from 4.00x in fiscal 2006 to 9.0x in fiscal 2010, including $31.8 million of revenue from three directly owned development projects. Coverage by loan repayments alone was more than 5.0x in 2010. At fiscal year-end June 30, 2010, less than 1% of revolving fund loans were delinquent. The authority projects debt service coverage of 7.36x in fiscal 2011 by all revenues, and 3.10x by loan revenues alone. It currently projects debt service to peak in 2014 at $14.4 million and to be covered by authority-projected revenues 6.43x, and 2.74x by loan revenues alone, commensurate with our 'AA' category rating level after being stress tested using Monte Carlo

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modeling techniques.

We anticipate debt service coverage to remain strong based on the authority's currently limited additional debt plans. The authority has $330 million in existing bond authorization for various specific projects around the state. It has indicated no immediate plans to bond for additional revolving fund loans or projects.

Legal provisions provide operational and asset-based protection to existing debt by limiting the issuance of additional parity debt unless certain provisions are met. Operationally, annual net income must produce 1.5x annual debt service in any year in which the authority has debt outstanding. Alternatively, the authority may maintain an unrestricted surplus equivalent to the lesser of $200 million or principal outstanding of bonded indebtedness. Regardless of which of the above tests apply to authority debt, the authority further pledges that at no time will it maintain a balance of the lesser of $50 million in unrestricted cash equivalents or 25% of the amount outstanding of revolving fund bonds. Allowed short-term investments were previously expanded to include 'AAA' rated money market investment funds and 'A-1' or higher rated commercial paper in addition to cash and U.S. Treasuries. All cash and cash equivalent investments must have maturity schedules of one year or less.

Outlook

The stable outlook reflects Standard & Poor's expectation of adequate debt service coverage and active program management. The outlook is also supported by the strong performance in the authority's underlying loan pool. We could lower the rating if the state's significant economic development projects fail to produce adequate revenue or experience significantly high loan delinquencies, or if there was a significant change in the reserves maintained by the authority.

Loan Participation Program

Through the enterprise development program, the authority purchases participations in loans made by financial institutions to their customers. Currently, the authority's loan portfolio consists of 283 loans with principal outstanding of $401.8 million. Revenues from loan repayments represent approximately 40% of total annual cash flows available for debt service. Loan performance is in our view strong, with a very low delinquency rate of less than 1.0%. The loan portfolio has good borrower diversity with 25% of borrowers in the tourism sector, 20% in retail, 16% in office or warehousing, and 13% in office or business condos. The 10 largest borrowers comprised 30% of loans, with the largest loan to the Anchorage Community Development LLC at $22.9 million for an office/warehouse. Geographically, the portfolio is more concentrated, with 59% of loans to borrowers in the Anchorage area. This does not include the revolving fund's $224 million direct investment and ownership in the DeLong Mountain Transportation System in support of lead/zinc mining activities in northwestern Alaska. Loan parameters and policies are good and include the following provisions:

- Participation is not to exceed 90% of the loan amount or $20 million, whichever is lesser.
- Total loan to value is not to exceed 75%.
- The term on the authority's portion of the loan may be up to 25 years when the loan is secured by real property, and up to 15 years when secured by personal property, but in either case, not more than 75% of the remaining economic life of the collateral.

Economic Development Account

Through the economic development program, the authority has the ability to own and operate facilities for economic development purposes in the state. These projects represented $326.1 million of net book value at June 30, 2010, and generated $31.8 million of net annual cash flow in fiscal 2010, or 31% of total cash flows available for debt service. Some of the major projects conducted under this program are the following:

- DeLong Mountain Transportation System (DMTS) is a 52-mile industrial haul road and shallow draft port to transport ore. The DMTS is operated by Teck Alaska Incorporated and guaranteed by Teck Resources Ltd. ('BBB' issuer credit rating) and serves the mining district that includes the Red Dog Mine, the world's largest zinc/lead producer. The authority's revolving fund interest in DMTS consists of direct ownership valued at $223.9 million as of June 30, 2010, which the authority projects will bring in a minimum of $17.7 million of net revenues per year.
- Federal Express Aircraft Maintenance Facility is a wide-body aircraft hanger at the Ted Stevens Anchorage International Airport. The authority owns the hanger and leases the space to the FedEx Corporation for $2.99 million per year. The authority's current net investment for the revolving fund in the hanger was valued at $11.5 million as of June 30, 2010. FedEx's current lease expires in March 2015.
- Ownership of the Ketchikan Shipyard, which was originally developed by the state Department of Transportation and Public Facilities, was transferred to the authority in 1997. The authority subsequently entered an operating agreement with the Alaska Ship and Drydock. The value of the shipyard stood at $35.6 million at June 30, 2010. Payments from the shipyard are uncertain and are determined on a percentage of revenues basis, with revenues first applied to reimbursing the authority for administrative costs, then to a repairs and replacements fund, and then to the authority and to other contributing local governments.
- The authority reports its Skagway Ore Terminal is substantially complete with a direct investment of $9.4 million, although completion may require further investment. The authority projects annual revenues of $3.1 million from this project.

Investment Portfolio

Interest earnings and amortized principal from the revolving fund's $383.8 million (June 30, 2010) unrestricted investment portfolio are also pledged to bond repayment and bolster coverage considerably, albeit with significant variance. In some years, investment earnings represent as much as 34% of annual cash flows, although in 2010 earnings were a lower 13.7% of pledged income. An additional $18.9 million of revolving fund investments were restricted and not available for bond debt service. Asset management is conducted both internally (23% of assets) and externally (77%) and is governed by the authority's investment policy as well as restrictions in state statute. The authority reports that as of June 30, 2010, 42% of its investment portfolio consisted of either U.S. Treasuries or U.S. guaranteed agencies or securities rated 'AAA', while an additional 25% was in government-sponsored securities, 4% was rated 'AA', 16% 'A', 10% 'BBB', and 1% 'BB'. At June 30, 2010, 26% was invested in U.S. Treasuries, 6% in U.S. agencies and government-supported entities, and 6% in cash. In addition, 30% was invested in corporate securities, 30% in mortgage-backed securities, 1% in asset-backed securities, and 1% in municipal bonds. The authority's internal investment policy objective is safety and liquidity, and limits investments to those of investment-grade credit quality ('BBB-' and higher) and precludes investment of more than five percent of the portfolio in unrated securities. Duration is limited to two years for internally managed portfolios. For externally

managed assets, the authority's goal is safety and return.

Related Criteria And Research

USPF Criteria: Long-Term Municipal Pools, Oct. 19, 2006

Ratings Detail (As Of December 13, 2010)		
Alaska Indl Dev & Export Auth state revolv fd		
Long Term Rating	AA-/Stable	Affirmed
Alaska Indl Dev & Export Auth revolv fd rfdg bnds dtd 06/20/2002 due 04/01/2007-2014		
Unenhanced Rating	AA-(SPUR)/Stable	Affirmed

Many issues are enhanced by bond insurance.

837743 | 300920538

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The McGraw-Hill Companies

HCR

9

<TARGET><BILL>HCR 9</BILL><SUBJECT>HCR
9</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska House of Representatives

Rep. Neal Foster, Co-Chair
Alaska State Capitol, Room 434
Juneau, Alaska 99801

Phone: (907) 465-3789
Fax: (907) 465-3242



Rep. Lance Pruitt, Co-Chair
Alaska State Capitol, Room 421
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House Special Committee on Energy

Sponsor Statement

HCR 9
State Energy Production Working Group

House Concurrent Resolution 9 establishes in the Alaska State Legislature the Alaska Working Group on Interstate Energy Production.

This legislation was crafted in response to legislation proposed by other states that produce energy and energy resources. Alaska, along with other states, continues to experience the negative consequences from delay or cancellation of economically viable energy-related projects because federal law and federal law enforcement too often overreach the federal government's constitutional authority to make and enforce laws.

Federal law and policy, including the National Environmental Policy Act and the Endangered Species Act, excessively limit and interfere with production of energy and energy resources in Alaska and in other states.

HCR 9 establishes the Alaska Working Group on Interstate Energy Production to work with other state Legislatures to develop a proposal for an inter-legislature agreement that will facilitate collaboration between the Alaska State Legislature and other state legislatures in efforts to influence federal energy-related law and policy and to discourage delay or cancellation of economically viable energy-related projects in the state and in other states.

I urge your support of this important legislation.

27-LS0600\B.2
Wayne
3/21/11

AMENDMENT #1

OFFERED IN THE HOUSE BY REPRESENTATIVE TUCK

TO: HCR 9

Page 2, line 11:

Delete "four"

Insert "six"

Delete "two"

Insert "three"

Page 2, line 12:

Delete "two"

Insert "three"

Page 2, following line 13:

Insert a new resolution section to read:

"**FURTHER RESOLVED** that at least one of the three senators appointed to the Alaska Working Group on Interstate Energy Production shall be a member of the largest minority caucus in the Senate, and at least one of the three representatives appointed to the Alaska Working Group on Interstate Energy Production shall be a member of the largest minority caucus in the House of Representatives; and be it"

ENERGY PRODUCER STATES' AGREEMENT

2011 GENERAL SESSION

STATE OF UTAH

Chief Sponsor: Roger E. Barrus

Senate Sponsor: David P. Hinkins

LONG TITLE

General Description:

This bill provides for the appointment of legislative members to participate in multistate discussions involving agreements that encourage the development of domestic energy resources.

Highlighted Provisions:

This bill:

- provides for the appointment of legislators to discuss creating a multistate domestic energy development agreement;
- specifies the goals of an agreement;
- provides for a report on an energy producer states' agreement; and
- provides a repeal date.

Money Appropriated in this Bill:

This bill appropriates:

- to the Legislature for fiscal year 2011-12 only:
  - from the General Fund, $25,000.

Other Special Clauses:

This bill provides an immediate effective date.

Utah Code Sections Affected:

AMENDS:

63I-1-236, as renumbered and amended by Laws of Utah 2008, Chapter 382

ENACTS:

36-12-20, Utah Code Annotated 1953

Be it enacted by the Legislature of the state of Utah:

Section 1. Section **36-12-20** is enacted to read:

36-12-20. Membership selection -- Agreements -- Goals -- Meetings -- Reports.

(1) The speaker of the House shall appoint two members and the president of the Senate shall appoint two members, of which no more than three of the four members shall be from the same political party, to study and work with legislative members of other energy producing states for the purpose of developing a proposed energy producer states' agreement.

(2) The proposed energy producer states' agreement shall have the following goals:

(a) to encourage domestic development of energy in the United States;

(b) to ensure the continued development of each state's domestic natural resources;

(c) to deliver a unified message to the federal government from energy producing states by:

(i) participating in the development of proposed federal legislation and regulations; and

(ii) making recommendations regarding existing federal law and regulations including the following:

(A) the Environmental Protection Act;

(B) the Endangered Species Act; and

(C) federal land access issues that affect the production of energy;

(d) to eliminate or reduce overly broad federal legislation; and

(e) to identify and address consequences of delays and cancellations of economically viable energy projects.

(3) Appointed members shall produce a report with recommendations regarding an energy producer states' agreement to the National Resources, Agriculture, and Environment Interim Committee and the Public Utilities and Technology Interim Committee on or before October 1, 2011.

(4) Salaries and expenses of the appointed members may be paid in accordance with Section 36-2-2 and Legislative Rules, Title 5, Chapter 3, Expenses and Mileage

Reimbursement for Authorized Legislative Meetings, Special Sessions, and Veto Override Sessions.

(5) The Office of Legislative Research and General Counsel shall provide staff assistance as requested.

Section 2. Section **63I-1-236** is amended to read:

63I-1-236. Repeal dates, Title 36.

(1) Section 36-12-20 is repealed June 30, 2012.

(2) Sections 36-26-101 through 36-26-104 are repealed December 31, 2017.

Section 3. **Appropriation.**

Under the terms and conditions of Title 63J, Chapter 1, Budgetary Procedures Act, the following sums of money are appropriated from resources not otherwise appropriated out of funds or accounts indicated for the fiscal year beginning July 1, 2011, and ending June 30, 2012. These are additions to amounts previously appropriated for fiscal year 2012.

Item 1 To Legislature - Senate

From General Fund, One-time		$12,500
Schedule of Programs:		
Administration	$12,500	

Item 2 To Legislature - House of Representatives

From General Fund, One-time		$12,500
Schedule of Programs:		
Administration	$12,500	

Section 4. **Effective date.**

If approved by two-thirds of all the members elected to each house, this bill takes effect upon approval by the governor, or the day following the constitutional time limit of Utah Constitution Article VII, Section 8, without the governor's signature, or in the case of a veto, the date of veto override.

HOUSE BILL NO. HB0217

Production states agreement.

Sponsored by: Representative(s) Lubnau and Senator(s) Bebout

A BILL

for

AN ACT relating to the legislature; providing for legislative participation to develop an energy producing state agreement; specifying goals of the agreement; providing an appropriation and for a report; and providing for an effective date.

Be It Enacted by the Legislature of the State of Wyoming:

Section 1.

(a) Two (2) members of the Wyoming house of representatives appointed by the speaker of the house, and two (2) members of the Wyoming senate appointed by the president of the senate, shall be appointed to study and work with legislative members of other energy producing

states to develop an Energy Producer State Agreement with the following goals:

(i) To encourage domestic development of energy in the United States, and to ensure continued development of each state's domestic natural resources;

(ii) To deliver a strong, unified voice to the federal government from the states that produce the energy that powers the nation's economy, by providing input on and participating in the development of existing and proposed federal legislation and federal regulatory processes, including the National Environmental Policy Act and the Endangered Species Act, and federal land access issues affecting the production of energy in the concerned states;

(iii) To eliminate or reduce overreaching federal legislation and identify and address consequences that result from delays and cancellations of economically viable energy projects.

(b) Legislators appointed pursuant to this act shall be authorized by Management Council to attend meetings as the Council determines necessary to accomplish the purposes

of this act, and shall receive salary, per diem and mileage for the performance of their duties under this act as provided in W.S. 28-5-101. Appointed legislators shall provide a single report to the Council not later than September 1, 2011, including any suggested legislation for referral to the appropriate legislative committee for consideration.

Section 2. For purposes of this act, there is appropriated from the general fund fifty thousand dollars ($50,000.00) to the legislative service office. This appropriation shall be for the period beginning with the effective date of this act and ending June 30, 2012.

Section 3. This act is effective immediately upon completion of all acts necessary for a bill to become law as provided by Article 4, Section 8 of the Wyoming Constitution.

(END)

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version: HCR 9
() Publish Date

Identifier (file name): HCR9-LEG-COU-3-21-2011
Title: "State Energy Production Working Group"
Sponsor: House Special Committee on Energy
Requester: House Special Committee on Energy, Finance

Dept. Affected: Legislature
Appropriation: Legislative Council
Allocation: Session Expenses
OMB Component Number: 782

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel		20.0	20.0				
Contractual							
Supplies							
Equipment							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**0.0**	**20.0**	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF		20.0	20.0				
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**0.0**	**20.0**	**20.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Initial Version

Prepared by: Shane Miller, Finance Manager — Phone: 465-6626
Division: Legislative Affairs Agency — Date/Time: 3/21/11 11:26 AM
Approved by: Pamela Varni, Executive Director — Date: 3/21/2011
Legislative Affairs Agency

(Revised 12/29/2010 OMB)

Analysis

The Alaska Working Group on Interstate Energy Production shall consist of four (4) members, with two (2) senators appointed by the President of the Senate and two (2) representatives appointed by the Speaker of the House of Represenatatives. Members of the Alaska Working Group on Interstate Energy Production may meet during and between regular sessions of the Alaska State Legislature and they may travel within Alaska and to other states as necessary to accomplish their purpose. The anticipated travel costs shown above provide each member of the working group with an annual travel budget of approximately $5.0. However, this fiscal note does not ask for an increment to fund this travel. These travel costs will be absorbed in the Legislature's "Legislative Council " RDU in the "Session Expenses" Component. The Alaska Working Group on Interstate Energy Productions will terminate January 18, 2013.

HCR 10

<TARGET><BILL>HCR 10</BILL><SUBJECT>HCR 10</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska State Legislature

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Representative Pete Petersen

Serving Northeast Anchorage and Muldoon

Table of Contents: Background Information for HCR 10 Encouraging Waste-to-Energy Technology

1. Original resolution language
2. Sponsor statement
3. Draft committee substitute version B
4. Summary of changes for draft CS version B
5. Energy Recovery Council 2010 Directory of Waste to Energy Plants
6. Environmental Protection Agency 8/10/07 memo concerning emissions
7. American Society of Mechanical Engineers white paper on waste-to-energy
8. Wikipedia article "Waste-to-energy"
9. Letter of support from the Energy Recovery Council

HOUSE CONCURRENT RESOLUTION NO. 10

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - FIRST SESSION

BY REPRESENTATIVE PETERSEN

Introduced: 3/18/11
Referred: House Special Committee on Energy, Community and Regional Affairs

A RESOLUTION

Encouraging the state, municipalities of the state, and private organizations in the state to weigh the benefits and costs of waste-to-energy technology and to consider waste-to-energy technology to help meet the energy and waste management needs of the state, municipalities of the state, and private organizations in the state.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS communities, families, and businesses across the state are struggling to meet high energy costs; and

WHEREAS, in 2010, the Twenty-Sixth Alaska State Legislature unanimously passed, and the Governor signed into law, House Bill No. 306, which set a goal for the state to produce 50 percent of its electricity from renewable sources by 2025; and

WHEREAS municipal waste management represents a continuing challenge and expense for communities in the state; and

WHEREAS waste-to-energy technologies using municipal solid waste have been successfully used around the world and in at least 24 states in the United States to produce energy and reduce landfills; and

WHEREAS waste-to-energy technology is currently used at Fort Wainwright, and the Municipality of Anchorage is in the process of constructing facilities to use natural gas created by the Anchorage regional landfill; and

WHEREAS several different means of creating energy from solid waste materials are currently available, including direct combustion of solid waste or using solid waste to produce a combustible fuel; and

WHEREAS modern solid waste combustion technology can produce energy while reducing landfills and emissions created by waste stored in landfills; and

WHEREAS waste-to-energy technology is generally considered to be a renewable energy source since it is produced from biomass and material that was already produced for reasons not related to energy;

BE IT RESOLVED that the Alaska State Legislature encourages the state, municipalities of the state, and private organizations in the state to weigh the benefits and costs of waste-to-energy technology and to consider waste-to-energy technology to help meet the energy and solid waste management needs of the state, municipalities of the state, and private organizations in the state.

COPIES of this resolution shall be sent to the Alaska Municipal League, the Denali Commission, the Alaska Energy Authority, and the University of Alaska.

Alaska State Legislature

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Representative Pete Petersen
Serving Northeast Anchorage and Muldoon

Sponsor Statement

HCR 10
Encouraging Waste-to-Energy Technology

This resolution encourages the state, municipalities, and private organizations to consider the benefits of costs of waste-to-energy technology and evaluate whether this technology is appropriate for their energy and waste management needs.

Across the state, residents, communities, and businesses have been struggling to pay high energy costs, and waste management is a continuing challenge and expense for communities. Waste-to-energy technology produces renewable energy from garbage while reducing the amount of landfill space needed. Modern waste-to-energy actually produces fewer emissions than if the garbage were simply dumped in a landfill.

Waste-to-energy technology has been utilized across the world and in 24 states, including Alaska. For example, at Eielson Air Force Base garbage is burned along with coal to generate electricity, and the Municipality of Anchorage is in the process of developing the ability to use natural gas produced by the Anchorage Regional Landfill.

Last year the Legislature adopted a statewide energy policy that established a goal of creating 50% of our electricity from renewable energy sources. Waste-to-energy technology has the potential to help Alaska meet this goal while also reducing the need for additional landfill space.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version: HCR 10
() Publish Date

Identifier (file name): HCR10-LEG-COU-04-04-2011
Title: "Encouraging Waste-to-Energy Technology"
Sponsor: Representative Petersen
Requester: House Spec Comm on Energy, Comm & Reg Affairs

Dept. Affected: Legislature
Appropriation: Legislative Council
Allocation: Session Expenses
OMB Component Number: 782

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual							
Supplies							
Equipment							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2011) cost _____

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Initial Version

Prepared by: Shane Miller, Finance Manager — Phone: 465-6626
Division: Administrative Services Division — Date/Time: 4/4/11 7:16 AM
Approved by: Pamela Varni, Executive Director — Date: 4/4/2011
Legislative Affairs Agency

(Revised 12/29/2010 OMB)

Analysis

This fiscal note has zero impact on the Legislative Affairs Agency.

27-LS0685\B
Bullock/Kane
3/21/11

CS FOR HOUSE CONCURRENT RESOLUTION NO. 10( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SEVENTH LEGISLATURE - FIRST SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVE PETERSEN

A RESOLUTION

Encouraging the state, municipalities of the state, and private organizations in the state to weigh the benefits and costs of waste-to-energy technology and to consider waste-to-energy technology to help meet the energy and waste management needs of the state, municipalities of the state, and private organizations in the state.

BE IT RESOLVED BY THE LEGISLATURE OF THE STATE OF ALASKA:

WHEREAS communities, families, and businesses across the state are struggling to meet high energy costs; and

WHEREAS, in 2010, the Twenty-Sixth Alaska State Legislature unanimously passed, and the Governor signed into law, House Bill No. 306, which set a goal for the state to produce 50 percent of its electricity from renewable sources by 2025; and

WHEREAS municipal waste management represents a continuing challenge and expense for communities in the state; and

WHEREAS waste-to-energy technologies using municipal solid waste have been successfully used around the world and in at least 24 states in the United States to produce energy and reduce landfills; and

WHEREAS waste-to-energy technology is currently used at Eielson Air Force Base, and the Municipality of Anchorage is in the process of constructing facilities to use natural gas created by the Anchorage regional landfill; and

WHEREAS several different means of creating energy from solid waste materials are currently available, including direct combustion of solid waste or using solid waste to produce a combustible fuel; and

WHEREAS modern solid waste combustion technology can produce energy while reducing landfills and emissions created by waste stored in landfills; and

WHEREAS waste-to-energy technology is generally considered to be a renewable energy source since it is produced from biomass and material that was already produced for reasons not related to energy;

BE IT RESOLVED that the Alaska State Legislature encourages the state, municipalities of the state, and private organizations in the state to weigh the benefits and costs of waste-to-energy technology and to consider waste-to-energy technology to help meet the energy and solid waste management needs of the state, municipalities of the state, and private organizations in the state.

COPIES of this resolution shall be sent to the Alaska Municipal League, the Denali Commission, the Alaska Energy Authority, and the University of Alaska.

Alaska State Legislature

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Representative Pete Petersen
Serving Northeast Anchorage and Muldoon

Summary of Changes from the Original to Draft CS Version B

HCR 10
Encouraging Waste-to-Energy Technology

The only change in this version is correcting and error on page 2 line 1. This version correctly notes that waste-to-energy technology is being utilized at Eielson Air Force Base, not Fort Wainwright.

The 2010 ERC Directory of Waste-to-Energy Plants



ENERGY
RECOVERY COUNCIL

By Ted Michaels

The 2010 ERC Directory of Waste-to-Energy Plants provides current information about the waste-to-energy sector in the United States. Since this Directory was last published in 2007, waste-to-energy capacity has increased for the first time in many years and additional capacity is under development. In the past three years, three facilities have completed construction on expansion units, and more expansions are both planned and under construction. Several communities are also in the process of developing greenfield waste-to-energy facilities. The development of new capacity reflects the desire of local governments to exercise control of solid waste decisions, rather than be at the mercy of economic fluctuations of distant landfills. In addition, energy generation in densely populated areas could greatly benefit communities that struggle with transmission congestion.

In 2010, 86 plants operate in 24 states and have capacity to process more than 97,000 tons of municipal solid waste per day. According to the latest BioCycle estimates, 26 million tons of trash were processed by waste-to-energy facilities in 2008. While this amount is less than the 28 million tons processed in 2006, it reflects reduced waste generation during difficult economic times rather than decreased waste-to-energy capacity. In fact, policymakers are looking at the development of waste-to-energy and other renewable resources as a source of green jobs during these difficult economic times. Policies have been put in place that are intended to spur this technology that will create a significant number of construction jobs for two to three years and an average of 58 full-time jobs per facility for the next forty to fifty years. ERC is working to ensure that additional policies are implemented that will provide waste-to-energy with opportunities to grow.

The nation's waste-to-energy facilities have the capacity to generate the energy equivalent of 2,790 megawatt hours of electricity. This figure includes an electric generating capacity of 2,572 megawatts and an equivalent of 218 megawatts based on steam exports estimated at approximately 2.8 million pounds per hour. The fact that waste-to-energy provides baseload power and that most plants operate in excess of 90 percent of the time translates to a significant number of renewable kilowatt-hours produced by waste-to-energy.

The Energy Recovery Council (ERC) was formed in 1991 and encourages the use of waste-to-energy as an integral component of a comprehensive, integrated solid waste management program. In addition to providing essential trash disposal services cities and towns across the country, today's waste-to-energy plants generate clean, renewable energy. Through the combustion of everyday household trash in facilities with state-of-the-art environmental controls, ERC's members provide viable alternatives to communities that would otherwise have no alternative but to buy power from conventional power plants and dispose of their trash in landfills.

Waste-to-Energy Reduces Greenhouse Gas Emissions

Waste-to-energy plants are tremendously valuable contributors in the fight against global warming. According to the U.S. EPA, nearly one ton of CO_2 equivalent emissions are avoided for every ton of municipal solid waste handled by a waste-to-energy plant due to the following:

- **Avoided methane emissions from landfills.** When a ton of solid waste is delivered to a waste-to-energy facility, the methane that would have been generated if it were sent to a landfill is avoided. While some of this methane could be collected and used to generate electricity, some would not be captured and would be emitted to the atmosphere.

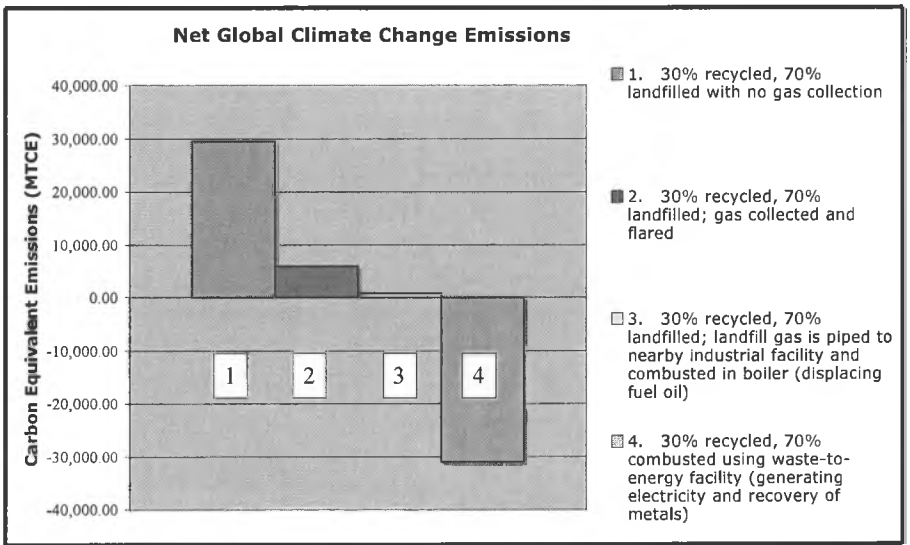
- **Avoided CO_2 emissions from fossil fuel combustion.** When a megawatt of electricity is generated by a waste-to-energy facility, an increase in carbon dioxide emissions that would have been generated by a fossil-fuel fired power plant is avoided.

- **Avoided CO_2 emissions from metals production.** Waste-to-energy plants recover more than 700,000 tons of ferrous metals for recycling annually. Recycling metals saves energy and avoids CO_2 emissions that would have been emitted if virgin materials were mined and new metals were manufactured, such as steel.

The United States Conference of Mayors adopted a resolution in 2005 endorsing the U.S. Mayors Climate Protection Agreement, which identifies waste-to-energy as a clean, alternative energy source which can help reduce greenhouse gas emissions. As of September 30, 2010, over 1,040 mayors have signed the agreement.

In the European Union, waste-to-energy facilities are not required to have a permit or credits for emissions of CO_2, because of their greenhouse gas mitigation potential. In a 2008 briefing, the European Environment Agency attributes reductions in waste management greenhouse gas emissions to waste-to-energy.

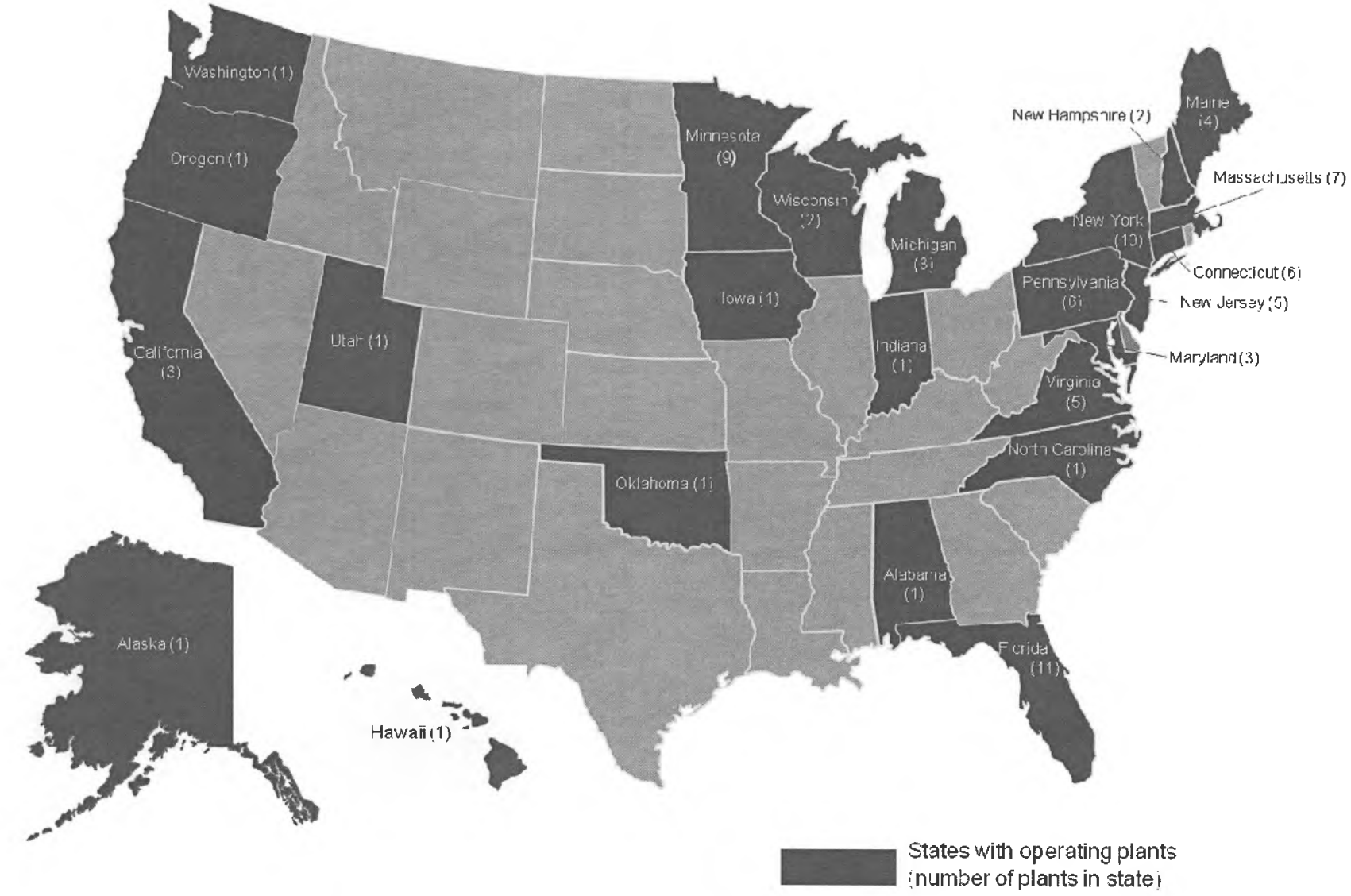
Under the Kyoto Protocol, by displacing fossil fuel-fired electricity generation and eliminating methane production from landfills, waste-to-energy plants can generate tradable credits (Certified Emission Reductions [CERs]) through approved Clean Development Mechanism protocols. These CERs are accepted as a compliance tool in the European Union Emissions Trading Scheme.



Data Source: Thorneloe SA, Weitz K, Jambeck J. Application of the U.S. Decision Support Tool for Materials and Waste Management. WM Journal 2006 August.

In the United States, Lee County (FL) has been certified by the Voluntary Carbon Standard to generate carbon offsets which can be sold to those entities wishing to acquire carbon credits. The 636 ton-per-day expansion of Lee County's waste-to-energy plant is the first waste-to-energy capacity in the nation to sell its own carbon credits on the voluntary market.

Operating WTE Plants in the U.S. – By State



Source: Ted Michaels, Energy Recovery Council, October 2010.

Waste-to-Energy is a Renewable Resource

Waste-to-energy meets the two basic criteria for establishing what a renewable energy resource is—its fuel source (trash) is *sustainable* and *indigenous*. Waste-to-energy facilities recover valuable energy from trash after efforts to "reduce, reuse, and recycle" have been implemented by households and local governments.

Waste-to-energy facilities generate clean renewable energy and deserve the same treatment as any other renewable energy resource.

Federal Statutes and Policies Defining Waste-to-Energy as Renewable (as of 10/1/10)
American Recovery and Reinvestment Act of 2009
Energy Policy Act of 2005
Federal Power Act
Public Utility Regulatory Policy Act (PURPA) of 1978
Biomass Research and Development Act of 2000
Pacific Northwest Power Planning and Conservation Act
Internal Revenue Code (Section 45)
Executive Orders 13123 and 13423
Federal Energy Regulatory Commissions Regulations (18 CFR.Ch. I, 4/96 Edition, Sec. 292.204)

- **Trash Would Otherwise go to a Landfill.** Waste-to-energy facilities use no fuel sources other than the waste that would otherwise be sent to landfills.

- **State Renewable Statutes Already Include Waste-to-Energy.** 25 states, the District of Columbia, and Puerto Rico have defined waste-to-energy as renewable energy in various state statutes and regulations, including renewable portfolio standards.

- **Communities with Waste-to-Energy Have Higher Recycling Rates.** Several studies have demonstrated that communities served by waste-to-energy have recycling rates that are nearly twenty percent higher than the national average.

- **Waste-to-Energy Emissions Comply with EPA's Most Stringent Standards**. All waste-to-energy facilities comply with EPA's Maximum Achievable Control Technology (MACT) standards. After analyzing the inventory of waste-to-energy emissions, EPA concluded that waste-to-energy facilities produce electricity "with less environmental impact than almost any other source of electricity."

- **Waste-to-Energy Has a Long History as Renewable**. Waste-to-energy has been recognized as renewable by the federal government for nearly thirty years under a variety of statutes, regulations, and policies. Many state have recognized as renewable under state statutes as well. The renewable status has enabled waste-to-energy plants to sell credits in renewable energy trading markets, as well as to the federal government through competitive bidding processes.

States Defining Waste-to-Energy as Renewable in State Law (as of 10/1/10)		
Alaska	Maine	Oklahoma
Arkansas	Maryland	Oregon
California	Massachusetts	Pennsylvania
Connecticut	Michigan	Puerto Rico
District of Columbia	Minnesota	South Carolina
Florida	Nevada	South Dakota
Hawaii	New Hampshire	Virginia
Iowa	New Jersey	Washington
Indiana	New York	Wisconsin

- **Renewable Designations Benefit Many Local Governments and Residents.** The sale of renewable energy credits creates revenue for local governments that own waste-to-energy facilities, helping to reduce a community's cost of processing waste. The U.S. Conference of Mayors has adopted several resolutions supporting the inclusion of waste-to-energy as a renewable resource.

EPA's Solid Waste Hierarchy

Waste-to-Energy is Preferable to Landfilling

Waste-to-energy has earned distinction through the U.S. Environmental Protection Agency's solid waste management hierarchy, which recognizes combustion with energy recovery (as they refer to waste-to-energy) as preferable to landfilling. EPA's hierarchy reflects what EPA has stated previously—that the nation's waste-to-energy plants produce electricity with "less environmental impact than almost any other source of electricity." EPA's hierarchy is also consistent with actions taken by the European Union, which established a legally binding requirement to reduce landfilling of biodegradable waste.



Source: U.S. Environmental Protection Agency

The Waste-to-Energy Research and Technology Council (www.wtert.org)

By Prof. Nickolas J. Themelis, Director of Earth Engineering Center of Columbia University

Sustainable waste management

The mission of the Earth Engineering Center (EEC) is to analyze existing and novel technologies for the recovery of materials and energy from "waste" materials, carry out additional research as required, and disseminate this information by means of the EEC publications, web pages, and meetings. The guiding principle is that "wastes" are resources and must be managed on the basis of science and best available technology and not on ideology or economics that exclude environmental costs. One of the EEC activities is a survey of waste generation and disposition in the U.S., carried out in collaboration with BioCycle journal. The *State of Garbage in America* (SOG) is based on data provided by the waste management departments of the fifty states. By now, the results of the SOG Survey are used by U.S.EPA for estimating the Greenhouse gas (GHG) effects of MSW management.



In recognition of the fact that there was not enough academic research on the subject of sustainable waste management, especially energy recovery from wastes, in 2003 EEC co-founded, with Energy Recovery Council (than called IWSA), the Waste-to-Energy Research and Technology Council. WTERT brings together scientists, engineers, and managers concerned with advancing sustainable waste management in the U.S. and worldwide. During the first decade of this century, WTERT has sponsored nearly thirty academic research theses and published about one hundred papers on all means of waste management, including waste reduction, recycling, aerobic and anaerobic composting, waste-to-energy by combustion and by gasification, and landfill gas recovery from modern sanitary landfills (see www.wtert.org, Publications). By now WTERT has sister organizations in Brazil, Canada, China, France, Germany, Greece, Japan, and the U.K.

COLUMBIA UNIVERSITY
EARTH ENGINEERING CENTER
Advancing the Goals of Sustainable Waste Management

Public Information on Sustainable Waste Management

During each year, WTERT and its sister organizations (e.g., look up www.wtert.eu and www.wtert.gr) receive many requests for information on WTE and on waste management practice, in general. The principal means of communication between WTERT and the general public is its web page (www.wtert.org). It continues to be the premier source of up-to-date technical information on domestic and international waste-to-energy and sustainable waste management.

Workplace Health & Safety — A Waste-to-Energy Priority

The Occupational Safety & Health Administration (OSHA) sets standards for America's workers to ensure employees are safe and their health is protected. Waste-to-energy facilities, like all other workplaces, must meet these tough standards. The waste-to-energy industry takes tremendous pride in its health and safety programs and often goes beyond what is required by law. Great importance is placed on developing and implementing successful programs that protect the people working in our plants.

OSHA has recognized the stellar accomplishments of 51waste-to-energy facilities with the designation of STAR status under the Voluntary Protection Program (VPP). VPP STAR status is the highest honor given to worksites with comprehensive, successful safety and health management systems. STAR sites are committed to effective employee protection beyond the requirements of federal standards and participants develop and implement systems to effectively identify, evaluate, prevent, and control occupational hazards to prevent injuries and illnesses. The keys to health and safety success under VPP are the employee engagement and ongoing involvement in on-site health and safety program development combined with long-term commitment and support from management. VPP-level recipients routinely incur injury and illness rates that are at or below the state average for their specific industry.

Impressively, 51 of the 86 waste-to-energy facilities have earned VPP STAR status. Less than 0.02 percent of all worksites in the United States are enrolled in VPP, yet more than 59 percent of U.S. waste-to-energy facilities are have achieved STAR status. This illustrates the commitment of this sector is superior attention to health and safety.

SAFETY: DO IT FOR LIFE

Created under an ERC-OSHA Alliance Agreement, ERC and its members have designated the month of June as "Hauler Safety Month". Throughout the month of June each year, ERC members host a "Hauler Safety Day" at their facilities to educate public and private waste haulers, municipal and private owners and operators, and facility employees about best health & safety practices to ensure a safe and healthy workplace. ERC member companies have coordinated the event by developing and utilizing a unified campaign with posters, stickers and "12 Rule" cards to get the message out regarding health and safety on waste-to-energy tipping floors. Our goal is to ensure that everyone who conducts business at or visits a waste-to-energy facility will return home safe and sound at the end of each and every day.



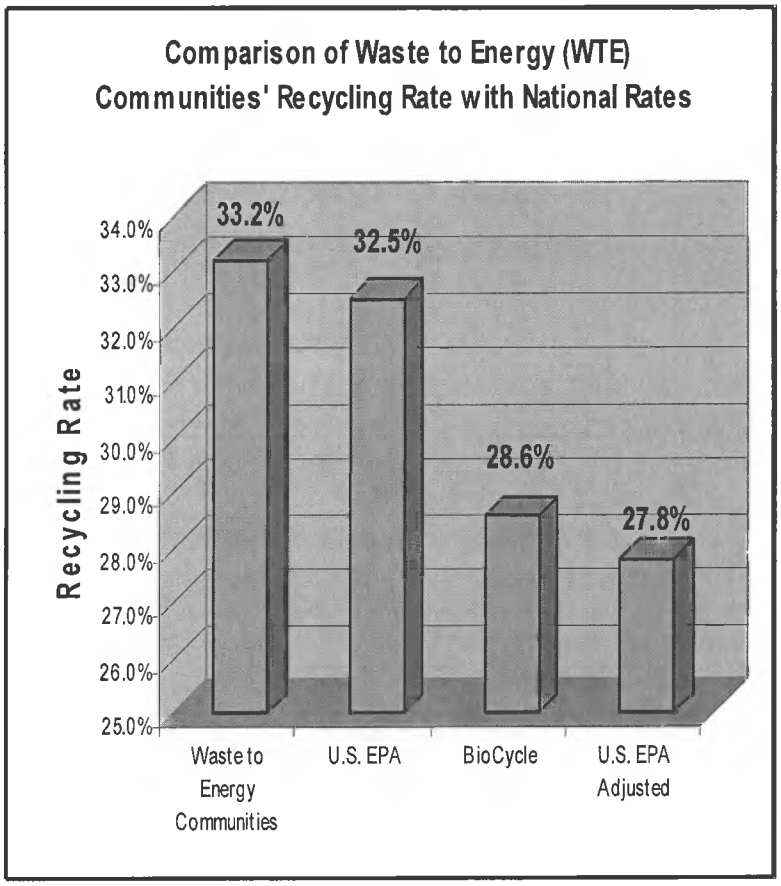
A Compatibility Study: Recycling and Waste-to-Energy Work in Concert

By Eileen Brettler Berenyi, Ph.D.
Government Advisory Associates, Inc.

Executive Summary (for the full report, please visit www.energyrecoverycouncil.org):

Critics of waste-to-energy have argued the presence of a waste combustion facility in an area inhibits recycling and is an obstacle to communities' efforts to implement active recycling programs. As this study will show, this contention has no basis in fact. In an examination of recycling rates of more than 500 communities in twenty-two states, which rely on waste-to-energy for their waste disposal, it is demonstrated that these communities recycle at a rate higher than the national average. Many of these areas have recycling rates at least three to five percentage points above the national average and in some cases are leading the country in recycling. The study concludes that recycling and waste-to-energy are compatible waste management strategies, which are part of an integrated waste management approach in many communities across the United States.

Key Findings:



- The study covers 82 waste-to-energy facilities in 22 states. Recycling data was obtained from 567 local governments, including 495 cities, towns and villages and 72 counties, authorities or districts. In addition, statewide data was obtained for each of the 22 states.

- Communities nationwide using waste-to-energy have an aggregate recycling rate **at least 5 percentage points** above the national average.

- Communities using waste-to-energy for disposal are recycling at about 33.3%, which is higher than the national rate, no matter how the national rate is calculated as shown to the right.

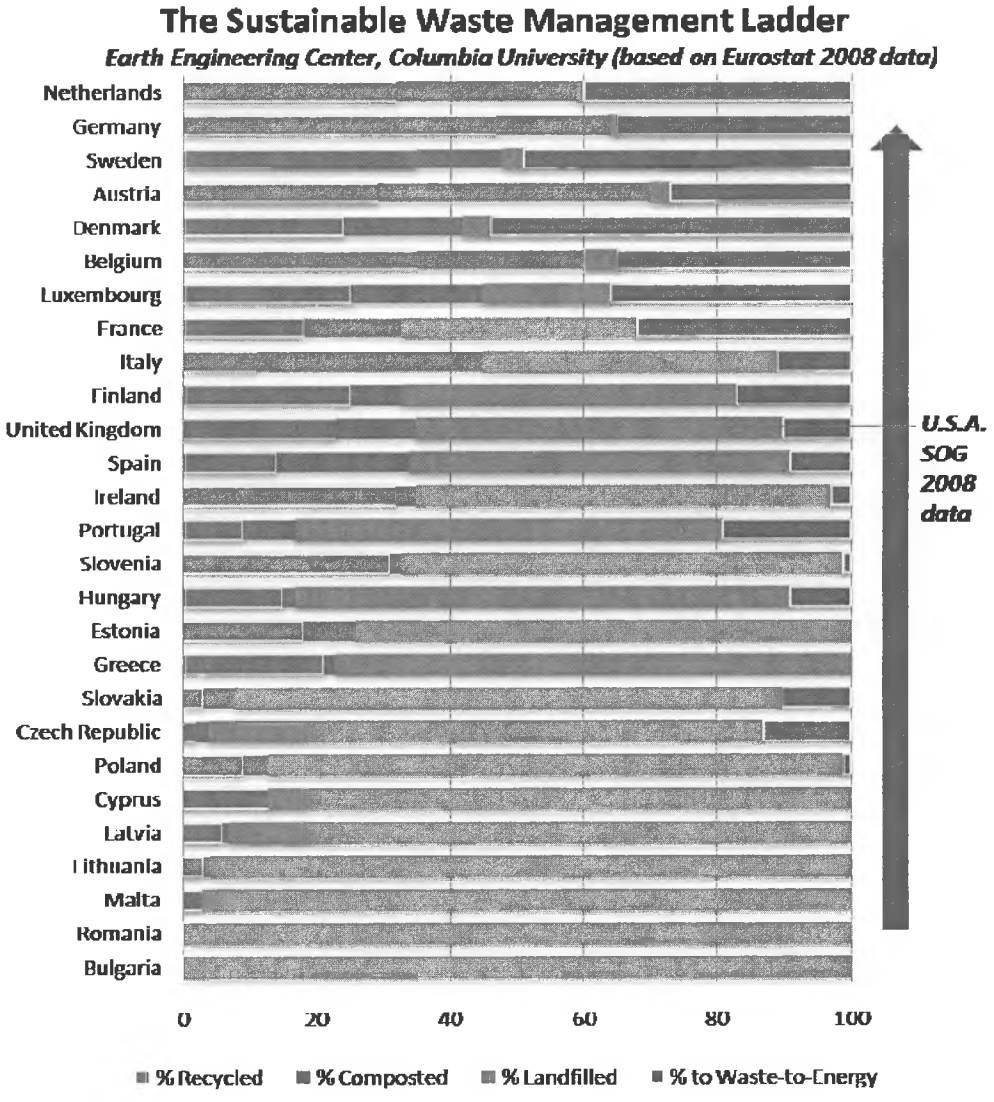
- The unadjusted U.S. EPA computed national recycling rate is computed using a waste stream model and includes certain commercial/industrial components and yard waste. These materials are often excluded in individual state and local recycling tonnages. Therefore the figure to the right also includes an adjusted EPA rate, which excludes these tonnages, adjusting the rate downwards.

- Almost all communities using waste-to-energy provide their residents an opportunity to recycle and most have curbside collection of recyclables. In fact, some of these communities are leaders in the adoption of innovative recycling programs, such as single stream collection and food waste collection and composting. The coincident nature of recycling programs and waste-to-energy in each community is evidence that these two waste management strategies are compatible.

Waste-to-Energy is an Important Factor in Sustainability

This publication provides information on waste-to-energy plants in the United States, but it is important to acknowledge the role of waste-to-energy in the waste management practices of countries around the world. Waste-to-energy has proven itself successful in nations that have high population densities, limited available landfill space, and intense energy demands.

For instance, nations in Western Europe and Asia have utilized waste-to-energy as an environmentally friendly method of waste disposal and energy production that will assist in the reduction of greenhouse gas emissions. The European Union (EU) requires all members to reduce landfilling of biodegradable municipal solid waste by 65 percent by 2020, which has placed higher emphasis on waste-to-energy and recycling. Countries within the EU, such as Germany, have an outright ban on landfilling of biodegradable waste. As such, nation's that rely on waste-to-energy also tend to have exceptional recycling rates, while minimizing landfilling. The figure below highlights the waste management practices of European countries. Not surprisingly, the countries that landfill the most also recycle the least and do not utilize waste-to-energy. This is another illustration (as described in more detail on page 9) of how waste-to-energy and recycling are compatible.



ERC Membership

Waste-to-Energy Providers

Covanta Energy Company
445 South Street
Morristown, NJ 07960
(862) 345-5000
www.covantaenergy.com

Babcock & Wilcox
20 South Van Buren Avenue
Barberton, OH 44203-0351
(330) 753-4511
www.babcock.com

Wheelabrator Technologies Inc.
4 Liberty Lane West
Hampton, NH 03842
(800) 682-0026
www.wheelabratortechnologies.com

ERC Municipal Members

City of Alexandria/Arlington County (VA)
Bristol (CT) Resource Recovery Facility Operating Committee
Broward County, FL
Camden County (NJ) Pollution Control Financing Authority
City of Long Beach, CA
City of Red Wing, MN
City of Tampa, FL
Connecticut Resource Recovery Authority
Dade-Miami County, FL
Delaware Solid Waste Authority
ecomaine
Fairfax County, VA
Islip (NY) Resource Recovery Agency
Lancaster County (PA) Solid Waste Management Authority
Montgomery County (PA) Waste Systems Authority
Northeast Maryland Waste Disposal Authority
Onondaga County (NY) Resource Recovery Agency
Olmsted, MN
Pinellas County (FL)
Polk County (MN) Solid Waste Resource Recovery Plant
Pope-Douglas (MN) Solid Waste Management
Solid Waste Authority of Palm Beach County (FL)
Spokane (WA) Regional Solid Waste System
Union County (NJ) Utilities Authority
Wasatch (UT) Integrated Waste Management District
York County (PA) Solid Waste Authority

ERC Associate Members

Babcock Power, Inc.
Dvirka & Bartilucci Consulting Engineers
Energy Answers International
Gershman, Brickman, and Bratton, Inc.
Green Conversion Systems, LLC
Jansen Combustion & Boiler Technologies, Inc.
Martin GmbH
Minnesota Resource Recovery Association
Resource Recovery Technologies, Inc.
Resource Recycling, LLC
Rich and Henderson, P.C.
Zar-Tech

ENERGY RECOVERY COUNCIL

Waste-to-Energy Directory: Key Terms

Trash Capacity: The trash capacity is the rated capacity for each unit housed at a facility. The number of units at a facility is provided, followed by the capacity for each unit (i.e. 2x250 represents a facility with two units, each designed to process 250 tons per day, reflective of a 500 ton-per-day facility). The total daily design capacity is also provided.

Energy Capacity: Expressed in gross megawatts (MW) capacity for electric generating facilities (ELE) or pounds of steam per hour for steam generating facilities (STM). Some facilities produce both steam for export and electricity for either internal use or for sale on the electric grid.

Continuous Emissions Monitors (CEMS): All facilities employ continuous emissions monitors (CEMS) and the directory identifies emissions at each plant which are monitored continuously. References to *Link* in the CEMS column means that the facility is connected to the state regulatory agency by way of computer for emissions-monitoring purposes.

Technology: An abbreviated summary of the furnace technology employed at a facility is provided. The following technologies are listed in their abbreviated form:

MBWW: Mass Burn, Water Wall furnace
MBRW: Mass Burn, Refractory Wall furnace
MCU: Modular Combustion Unit
RWW: Rotary Water Wall combustor
RRW: Rotary bed combustion chamber, Refractory Wall
RDF: Refuse-Derived Fuel facility that burns the RDF previously processed from trash
SSWW: Spreader Stoker, Water Wall furnace

Project Startup: Actual year of commercial startup is listed.

APC System: This entry reflects the Air Pollution Control System in use at the facility:

CI: Activated Carbon Injection
CYC: Cyclone Separator
DSI: Duct Sorbent (dry) Injection (downstream of furnace)
ESP: Electrostatic Precipitator
FF: Fabric Filter
FGR: Flue Gas Recirculation
FSI: Furnace Sorbent (dry) Injection
GSA: Gas Suspension Absorber
SDA: Spray Dryer Absorber, or Scrubber
SNCR: Select Non-Catalytic Reduction for NOx Control (e.g. aqueous ammonia)

Owner: The current owner of the facility is listed in this column.

Operator: The current operator of the facility is listed in this column.

The North American Waste-to-Energy Conference (NAWTEC)

Co-sponsored by the Energy Recovery Council (ERC), the American Society of Mechanical Engineers (ASME), the Solid Waste Association of North America (SWANA), and in partnership with the Waste-to-Energy Research and Technology Council (WTERT) at Columbia University, the North American Waste-to-Energy Conference (NAWTEC) is widely recognized as the leading industry technical conference and trade show focusing on municipal waste-to-energy.

NAWTEC has taken place annually for the past 18 years and has showcased the latest research, technology, innovations, and policies affecting the municipalities and companies involved in the waste-to-energy industry. The 19th NAWTEC will take place May 16-18, 2011 in Lancaster, PA.

For more information, please visit http://www.nawtec.org.

ALABAMA

Huntsville Solid Waste-to-Energy Facility
Huntsville, AL

Trash Capacity:	2 units @ 345 tpd = 690 tpd
Energy Capacity:	178,620 Lbs/Hr steam export
Project Startup:	1990
Technology:	MBWW
CEMS:	CO; NOx; Temp; Opacity, SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	City of Huntsville Solid Waste Disposal Authority
Operator:	Covanta Huntsville, Inc.

ALASKA

Eielson Air Force Base
North Pole, AK

Trash Capacity:	5 units @ 2 tpd = 10 tpd
Energy Capacity:	STM: 2,775 Lbs/Hr ELE: 0.2 MW (RDF Attributed-Peak)
Project Startup:	1995
Technology:	RDF (co-fired in Coal Boiler)
CEMS:	Opacity
APC System:	FF
Owner:	Eileson Airforce Base
Operator:	Eileson Airforce Base

CALIFORNIA (3 facilities; combined capacity of 2,540 TPD and 69.5 MW)

Commerce Refuse-to-Energy Facility
Commerce, CA

Trash Capacity:	1 units @ 360 tpd = 360 tpd
Energy Capacity:	ELE: 10 MW
Project Startup:	1987
Technology:	MBWW
CEMS:	CO; NOx; O_2; Temp; Opacity; SO_2
APC System:	SDA; FF; SNCR, CYC; FSI
Owner:	Commerce Refuse-to-Energy Authority
Operator:	Sanitation Districts of Los Angeles County

Southeast Resource Recovery Facility (SERRF)
Long Beach, CA

Trash Capacity:	3 units @ 460 tpd = 1,380 tpd
Energy Capacity:	ELE: 37.5 MW
Project Startup:	1988
Technology:	MBWW
CEMS:	CO; CO_2; NOx; O_2; Opacity; Temp; Moisture; SO_2
APC System:	SDA; FF; SNCR
Owner:	City of Long Beach
Operator:	Covanta Energy Renewable Energy Corp.

Stanislaus County Resource Recovery Facility
Crow's Landing, CA

Trash Capacity:	2 units @ 400 tpd = 800 tpd
Energy Capacity:	22 MW
Project Startup:	1989
Technology:	MBWW
CEMS:	CO; O_2; NOx; Temp; Opacity; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	Covanta Stanislaus, Inc.
Operator:	Covanta Stanislaus, Inc.

"Discarded MSW is a viable energy source for electricity generation in a carbon-constrained world. [...] Waste-to-energy appears to be a better option than landfill gas-to-energy. If the goal is greenhouse gas reduction, then WTE should be considered as an option under U.S. renewable energy policies."

—"Is It Better to Burn or Bury Waste for Clean Electricity Generation?, *(Environ. Sci. Technol.* 2009, 43, 1711–1717), Kaplan (EPA), DeCarolis (NC State Univ), Thorneloe (EPA)

CONNECTICUT (6 facilities; combined capacity of 6,537 TPD and 194 MW)

Bristol Resource Recovery Facility
Bristol, CT

Trash Capacity: 2 units @ 325 tpd = 650 tpd
Energy Capacity: 16 MW
Project Startup: 1988
Technology: MBWW
CEMS: CO; O_2; Link; NOx; Opacity; SO_2; Temp
APC System: SDA; FF; SNCR; CI
Owner: Covanta Bristol, Inc.
Operator: Covanta Bristol, Inc.

Mid-Connecticut Resource Recovery Facility
Hartford, CT

Trash Capacity: 3 units @ 676 tpd = 2,028 tpd
Energy Capacity: 68 MW
Project Startup: 1987
Technology: RDF—SSWW
CEMS: CO; CO_2; NOx; O_2; Opacity; SO_2
APC System: SDA; FF; SNCR
Owner: Connecticut Resource Recovery Authority
Operator: Covanta Mid-Conn, Inc.

Riley Energy Systems of Lisbon Connecticut Corp.
Lisbon, CT

Trash Capacity: 2 units @ 250 tpd = 500 tpd
Energy Capacity: 15 MW
Project Startup: 1995
Technology: MBWW
CEMS: CO; NOx; O_2; Opacity; Temp; Moisture; CO_2; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Eastern Connecticut Resource Recovery Authority
Operator: Riley Energy Systems of Lisbon Corp

Southeastern Connecticut Resource Recovery Facility
Preston, CT

Trash Capacity: 2 units @ 344.5 tpd = 689 tpd
Energy Capacity: 17 MW
Project Startup: 1991
Technology: MBWW
CEMS: CO; NOx; O_2; Opacity; Temp; CO_2; SO_2
APC System: SDA; FF; CI; SNCR
Owner: Covanta Company of Southeastern Connecticut
Operator: Covanta Company of Southeastern CT

Wallingford Resource Recovery Facility
Wallingford, CT

Trash Capacity: 3 units @ 140 tpd = 420 tpd
Energy Capacity: 11 MW
Project Startup: 1989
Technology: MBRW
CEMS: CO; O_2; NOx; Opacity; Temp; SO_2
APC System: SDA; FF; CI; CYC; FGR
Owner: Covanta Energy Corporation
Operator: Covanta Projects of Wallingford, L.P.

Wheelabrator Bridgeport Company, L.P.
Bridgeport, CT

Trash Capacity: 3 units @ 750 tpd = 2,250 tpd
Energy Capacity: 67 MW
Project Startup: 1988
Technology: MBWW
CEMS: CO; O_2; NOx; Temp; Opacity; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Wheelabrator Technologies Inc.
Operator: Wheelabrator Technologies Inc.

FLORIDA (11 facilities; combined capacity of 18,756 TPD and 530.4.4 MW)

Bay County Resource Recovery Center
Panama City, FL

Trash Capacity: 2 units @ 250 tpd = 500 tpd
Energy Capacity: ELE: 10 MW
Project Startup: 1987
Technology: RWW
CEMS: O_2; CO; NOx; SO_2; Opacity; Temp
APC System: SDA; FF; CI
Owner: Bay County
Operator: EnGen, LLC

Miami-Dade County Resource Recovery Facility
Miami, FL

Trash Capacity: 4 units @ 648 tpd = 2,592 tpd
Energy Capacity: ELE: 77 MW
Project Startup: 1979
Technology: RDF—SSWW
CEMS: CO; NOx; O_2; Temp; Opacity; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Miami-Dade County
Operator: Covanta Southeastern Florida Renewable Energy

Hillsborough County Resource Recovery Facility
Tampa, FL

Trash Capacity: 3 units @ 600 tpd = 1,800 tpd
Energy Capacity: ELE: 46.5 MW
Project Startup: 1987 (units 1&2); 2009 (unit 3)
Technology: MBWW
CEMS: CO; NOx; Temp; SO_2; O_2; Opacity
APC System: SDA; FF; SNCR; CI
Owner: Hillsborough County
Operator: Covanta Hillsborough, Inc.

Lake County Resource Recovery Facility
Okahumpka, FL

Trash Capacity: 2 units @ 264 tpd = 528 tpd
Energy Capacity: ELE: 14.5 MW
Project Startup: 1991
Technology: MBWW
CEMS: CO; CO_2; NOx; Opacity; SO_2; O_2
APC System: SDA; FF; SNCR; CI
Owner: Covanta Lake, Inc.
Operator: Covanta Lake, Inc.

Lee County Resource Recovery Facility
Fort Myers, FL

Trash Capacity: 2 units @ 600 tpd
1 unit @ 636 tpd
1,836 tpd total
Energy Capacity: ELE: 59 MW
Project Startup: 1994 (units 1&2); 2007 (unit 3)
Technology: MBWW
CEMS: CO; CO_2; NOx; O_2; Opacity; Temp; Moisture; SO_2
APC System: SDA; FF; SNCR; CI; FGR
Owner: Lee County
Operator: Covanta Lee, Inc.

McKay Bay Refuse-to-Energy Facility
Tampa, FL

Trash Capacity: 4 units @ 250 tpd = 1,000 tpd
Energy Capacity: ELE: 22.2 MW
Project Startup: 1985
Technology: MBWW
CEMS: CO; Opacity; SO_2; NOx; Temp; Moisture; O_2
APC System: SDA; FF; SNCR; CI
Owner: City of Tampa
Operator: Wheelabrator McKay Bay Inc.

FLORIDA (continued)

North County Resource Recovery Facility
West Palm Beach, FL

Trash Capacity:	2 units @ 900 tpd = 1,800 tpd
Energy Capacity:	ELE: 62 MW
Project Startup:	1989
Technology:	RDF-SSWW
CEMS:	NOx; CO; SO_2; Opacity; CO_2
APC System:	SDA; ESP
Owner:	Solid Waste Authority of Palm Beach County
Operator:	Palm Beach Resource Recovery Corporation (Bacock & Wilcox)

Pasco County Resource Recovery Facility
Spring Hill, FL

Trash Capacity:	3 units @ 350 tpd = 1,050 tpd
Energy Capacity:	ELE: 31.2 MW
Project Startup:	1991
Technology:	MBWW
CEMS:	CO; NOx; O_2; Opacity; Temp; SO_2; CO_2
APC System:	SDA; FF; SNCR; CI
Owner:	Pasco County
Operator:	Covanta Pasco, Inc.

Pinellas County Resource Recovery Facility
St. Petersburg, FL

Trash Capacity:	3 units @ 1,050 tpd = 3,150 tpd
Energy Capacity:	ELE: 75 MW
Project Startup:	1983 (units 1&2); 1986 (unit 3)
Technology:	MBWW
CEMS:	CO; NOx; O_2; Opacity; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	Pinellas County
Operator:	Veolia ES Waste-to-Energy, Inc.

Wheelabrator North Broward, Inc.
Pompano Beach, FL

Trash Capacity:	3 units @ 750 tpd = 2,250 tpd
Energy Capacity:	ELE: 67 MW
Project Startup:	1991
Technology:	MBWW
CEMS:	CO; NOx; O_2; Opacity; Temp; SO_2; CO_2
APC System:	SDA; FF; SNCR
Owner:	Wheelabrator Technologies Inc.
Operator:	Wheelabrator Technologies Inc.

Wheelabrator South Broward, Inc.
Ft. Lauderdale, FL

Trash Capacity:	3 units @ 750 tpd = 2,250 tpd
Energy Capacity:	ELE: 66 MW
Project Startup:	1991
Technology:	MBWW
CEMS:	CO; NOx; O_2; Opacity; Temp; SO_2; CO_2
APC System:	SDA; FF; SNCR
Owner:	Wheelabrator Technologies Inc.
Operator:	Wheelabrator Technologies Inc.

"Squeezing energy out of garbage puts trash to good use. That's not just green. It's smart. And it's the best plan the county has in the works for dealing with its growing trash pile."

—Editorial from the South Florida Sun-Sentinel on Palm Beach County's proposed new waste-to-energy facility. (2/27/10)

HAWAII

Honolulu Resource Recovery Venture (HPOWER)
Honolulu, HI

Trash Capacity:	2 units @ 925.5 tpd = 1,851 tpd
Energy Capacity:	ELE: 58.6 MW
Project Startup:	1990
Technology:	RDF-SSWW
CEMS:	CO; NOx; Opacity; Temp; SO_2; O_2
APC System:	SDA; ESP
Owner:	City & County of Honolulu
Operator:	Covanta Honolulu Resource Recovery Venture (HPOWER)

The City of Honolulu broke ground in December, 2009 on an expansion of Honolulu's H-Power plant. The $302 million project will expand the waste-to-energy plant's capacity by 50 percent to handle an added 300,000 tons of garbage per year.

When it is complete, the 900,000 tons processed by the facility each year will be able to generate 84 megawatts of power, which represents about 6 percent of Oahu's electricity needs.

INDIANA

Indianapolis Resource Recovery Facility
Indianapolis, IN

Trash Capacity:	3 units @ 725 tpd = 2,175 tpd
Energy Capacity:	STM: 587,400 Lbs/Hr
Project Startup:	1988
Technology:	MBWW
CEMS:	CO; NOx; Opacity; SO_2; Temp; O_2
APC System:	SDA; FF; SNCR; CI
Owner:	Marion County
Operator:	Covanta Indianapolis, Inc.

IOWA

Ames Municipal Electric Utility
Ames, IA

Trash Capacity:	1 units @ 175 tpd = 175 tpd
Energy Capacity:	ELE: 10 MW (RDF Attributed)
Project Startup:	1975
Technology:	RDF-Pulverized Coal WW
CEMS:	CO_2; NOx; O_2; Opacity; SO_2
APC System:	ESP
Owner:	City of Ames
Operator:	Ames Municipal Electric System

Air Emissions of Waste-To-Energy and Fossil Fuel Power Plants
(Pounds per Megawatt Hour)

Facility Type	Direct CO_2[1]	Life Cycle CO_2E[2]
Coal	2,138	2,196
Oil	1,496	1,501
Natural Gas	1,176	1,276
Waste-To-Energy[3]	1,294	**-3,636**

[1]Based on 2007 EPA eGRID data except WTE which is a nationwide average using 34% anthropogenic CO_2.
[2]Life Cycle CO2E for fossil fuels limited to indirect methane emissions using EPA GHG inventory and EIA power generation data. Life Cycle value would be larger if indirect CO_2 was included.
[3]Life Cycle CO_2E for WTE based on nominal nationwide avoidance ratio of 1 ton CO_2E per ton of MSW using the Municipal Solid Waste Decision Support Tool, which includes avoided methane and avoided CO_2.

MAINE (4 facilities; combined capacity of 2,800 TPD and 65.3 MW)

Maine Energy Recovery Company
Biddeford, ME

Trash Capacity: 2 units @ 300 tpd = 600 tpd
Energy Capacity: ELE: 22 MW
Project Startup: 1987
Technology: RDF-SSWW
CEMS: CO; Link; NOx; O_2; Opacity; SO_2; Temperature
APC System: SDA; FF
Owner: Casella Waste Systems
Operator: KTI Operations

Mid-Maine Waste Action Corporation
Auburn, ME

Trash Capacity: 2 units @ 100 tpd = 200 tpd
Energy Capacity: ELE: 3.6 MW
Project Startup: 1992
Technology: RWW
CEMS: CO; CO_2; NOx; Opacity; SO_2; Temperature
APC System: SDA; FF; CI
Owner: Mid-Maine Waste Action Corp.
Operator: Mid-Maine Waste Action Corp.

Penobscot Energy Recovery Corp.
Orrington, ME

Trash Capacity: 2 units @ 750 tpd = 1,500 tpd
Energy Capacity: ELE: 25 MW
Project Startup: 1988
Technology: RDF
CEMS: CO; CO_2; O_2; NOx; Opacity; SO_2
APC System: SDA; FF
Owner: USA Energy Group LLC; PERC Holdings LLC; Communities
Operator: ESOCO Orrington LLC

Greater Portland Resource Recovery Facility
Portland, ME

Trash Capacity: 2 units @ 250 tpd = 500 tpd
Energy Capacity: ELE: 14.7 MW
Project Startup: 1988
Technology: MBWW
CEMS: NOx; SO_2; CO; Opacity; Link; Temp; O_2
APC System: SDA; SNCR; CI; CYC; ESP
Owner: ecomaine
Operator: ecomaine

Waste-to-Energy & Steam Exports

Waste-to-energy produces more than just electricity. Many facilities also generate steam that is exported directly to customers located in close proximity to the plant, eliminating the need for those customers to burn fossil fuels to meet their demand for steam.

Many businesses are served by downtown steam loops to which waste-to-energy facilities in Baltimore, Indianapolis, Detroit, and Grand Rapids provide steam. Waste-to-energy facilities in Minnesota serve a local industries, including those as diverse as 3M, Tuffy's Dogfood, Bongard's Cheese, and the S.B. Foot Tannery. The Pittsfield Resource Recovery Facility in Massachusetts exports its steam to a Crane & Company paper mill where currency paper stock for the U.S. Treasury and several other nations is manufactured.

Several waste-to-energy facilities have partnered with the federal government to provide steam. The Huntsville (AL) facility serves the Army's Redstone Arsenal; the Harford (MD) facility serves the Aberdeen Proving Grounds; the Davis (UT) facility serves Hill Air Force Base; the Hampton (VA) facility serves NASA.

MARYLAND (3 facilities; combined capacity of 4,410 TPD, 123 MW, 100,000 lbs/hr)

Harford Waste-to-Energy Facility
Joppa, MD

Trash Capacity:	4 units @ 90 tpd = 360 tpd
Energy Capacity:	STM: 100,000 Lbs/Hr
Project Startup:	1988
Technology:	MCU
CEMS:	SO_2; CO; CO_2; Temp; Opacity; NOx; O_2
APC System:	SDA; FF; CI; DSI
Owner:	Northeast Maryland Waste Disposal Authority
Operator:	Energy Recovery Operations, Inc.

Baltimore Refuse Energy Systems Company (BRESCO)
Baltimore, MD

Trash Capacity:	3 units @ 750 tpd = 2,250 tpd
Energy Capacity:	ELE: 60 MW
Project Startup:	1985
Technology:	MBWW
CEMS:	CO; NOx; O_2; Opacity; Temp; Moisture; CO_2; SO_2
APC System:	SDA; ESP; SNCR; CI
Owner:	John Hancock Life Insurance Company
Operator:	Wheelabrator Baltimore, L.P.

Montgomery County Resource Recovery Facility
Dickerson, MD

Trash Capacity:	3 units @ 600 tpd = 1,800 tpd
Energy Capacity:	ELE: 63 MW
Project Startup:	1995
Technology:	MBWW
CEMS:	CO; CO_2; HCl; Link, NOx; O_2; Opacity; Temp; Moisture; SO_2
APC System:	FSI; SDA; FF; SNCR; CI
Owner:	Northeast Maryland Waste Disposal Authority
Operator:	Covanta Montgomery, Inc.

"EPA strongly supports the use of waste-to-energy facilities. With fewer and fewer new landfills being opened and capacity controls being imposed on many existing landfills, our communities greatly benefit from the dependable, sustainable capacity of municipal waste-to-energy plants."

—USEPA letter from Acting Assistant Administrator William Wehrum, Office of Air and Radiation to Rep. Joe Barton, 9/29/06

MASSACHUSETTS (7 facilities; combined capacity of 9,450 TPD, 265.9 MW, 164,000 lbs/hr)

Haverhill Resource Recovery Facility
Haverhill, MA

Trash Capacity:	2 units @ 825 tpd = 1,650 tpd
Energy Capacity:	ELE: 46.9 MW
Project Startup:	1989
Technology:	MBWW
CEMS:	CO; NOx; Opacity; Temp; SO_2; O_2
APC System:	SDA; FF; SNCR; CI
Owner:	City of Haverhill
Operator:	Covanta Haverhill, Inc.

Pioneer Valley Resource Recovery Facility
Agawam, MA

Trash Capacity:	3x136=408 (design); 3x120=360 (permit)
Energy Capacity:	STM: 96,000 Lbs/Hr ELE: 9.4 MW
Project Startup:	1988
Technology:	MBRW
CEMS:	CO; NOx; Opacity; SO_2
APC System:	FGR; DSI; FF; CI, CYC
Owner:	Covanta Springfield, LLC
Operator:	Covanta Springfield, LLC

MASSACHUSETTS (continued)

Pittsfield Resource Recovery Facility
Pittsfield, MA

Trash Capacity:	3x120=360 (design); 3x80=240 (actual practice)
Energy Capacity:	STM: 68,000 Lbs/Hr ELE: 0.8 MW
Project Startup:	1981
Technology:	MBRW
CEMS:	CO; NOx; O_2; Opacity; SO_2
APC System:	FGR; ESP; CI; Packed Tower Scrubber
Owner:	Covanta Pittsfield, LLC
Operator:	Covanta Pittsfield, LLC

SEMASS Resource Recovery Facility
West Wareham, MA

Trash Capacity:	3 units @ 900 tpd = 2,700 tpd
Energy Capacity:	ELE: 84.8 MW
Project Startup:	1989
Technology:	RDF-SSWW
CEMS:	CO; NOx; Temp; Opacity; SO_2; O_2; CO_2
APC System:	SDA; ESP; COHPAC (Units 1&2) SDA; FF; SNCR (Unit 3)
Owner:	Covanta SEMASS, L.P.
Operator:	Covanta SEMASS, L.P.

Wheelabrator Millbury Inc.
Millbury, MA

Trash Capacity:	2 units @ 750 tpd = 1,500 tpd
Energy Capacity:	ELE: 46 MW
Project Startup:	1987
Technology:	MBWW
CEMS:	CO; NOx; O_2; Opacity; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	CIT
Operator:	Wheelabrator Millbury Inc.

Wheelabrator North Andover Inc.
North Andover, MA

Trash Capacity:	2 units @ 750 tpd = 1,500 tpd
Energy Capacity:	ELE: 40 MW
Project Startup:	1985
Technology:	MBWW
CEMS:	CO; NOx; O_2; $C0_2$; Temp; Opacity; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	Wheelabrator North Andover Inc.
Operator:	Wheelabrator North Andover Inc.

Wheelabrator Saugus, J.V.
Saugus, MA

Trash Capacity:	2 units @ 750 tpd = 1,500 tpd
Energy Capacity:	ELE: 38 MW
Project Startup:	1975
Technology:	MBWW
CEMS:	CO; NOx; O_2; Temp; Opacity; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	Wheelabrator Saugus, J.V.
Operator:	Wheelabrator Saugus, J.V.

"[Waste-to-energy] can add in-state capacity so that we can end the practice of burying our waste in someone else's backyard. They can help advance recycling by diverting recyclable wastes from their facilities to recycling centers. And because every ton of trash that we turn into energy is the equivalent of using one less barrel of oil or one-quarter ton less coal, generating energy from waste can contribute to addressing the global challenge of climate change."

—John DeVillars, former environmental secretary of Massachusetts from 1988 to 1991 and New England administrator of the US Environmental Protection Agency from 1994 to 2000, in an op-ed in the *Boston Globe* on 12/2/09.

MICHIGAN (3 facilities; combined capacity of 4,125 TPD, 89.7 MW, 774,800 lbs/hr)

Greater Detroit Resource Recovery Facility
Detroit, MI

Trash Capacity:	3 units @ 1,100 tpd = 3,300 tpd
Energy Capacity:	STM: 725,600 Lbs/Hr; ELE: 68 MW
Project Startup:	1991
Technology:	RDF-SSWW
CEMS:	CO; NOx; Temp; Opacity; SO_2; Link; O_2
APC System:	SDA; FF
Owner:	City of Detroit, MI (GDRRA)
Operator:	Covanta Energy Corporation

Jackson County Resource Recovery Facility
Jackson, MI

Trash Capacity:	2 units @ 100 tpd = 200 tpd
Energy Capacity:	STM: 49,200 Lbs/Hr ELE: 3.7 MW
Project Startup:	1987
Technology:	MBWW
CEMS:	CO; CO_2; NOx; O_2; Opacity; SO_2; Temperature
APC System:	SDA; FF; CI
Owner:	Jackson County
Operator:	U.S. Filter, Inc.

Kent County Waste-to-Energy Facility
Grand Rapids, MI

Trash Capacity:	2 units @ 312.5 tpd = 625 tpd
Energy Capacity:	ELE: 18 MW
Project Startup:	1990
Technology:	MBWW
CEMS:	CO; O_2; NOx; Temp; Opacity; SO_2; Link
APC System:	SDA; FF; SNCR; CI
Owner:	Kent County
Operator:	Covanta Kent, Inc.

"Waste-to-energy provides double benefits: it diminishes waste reserves and produces clean energy while offsetting greenhouse gas emissions. As our nation's energy needs grown and we continue to discern how best to meet them, we think it is important to take an inclusive view of the ways in which already-existing technologies can be used to reduce our dependence on fossil fuels."

—15 United States Senators (in a letter dated March 4, 2009)

MINNESOTA 9 facilities; combined capacity of 4,418 TPD, 132.4 MW, and 114,000 lbs/hr)

Great River Energy - Elk River Station
Elk River, MN

Trash Capacity:	2 units @ 250 tpd; 1 unit @ 500 tpd =1,000 tpd
Energy Capacity:	ELE: 35 MW
Project Startup:	1989
Technology:	RDF-SSWW
CEMS:	CO; NOx; O_2; SO_2; Opacity
APC System:	SDA; FF
Owner:	Great River Energy (Rural Electric Gen/Trans Coop)
Operator:	Great River Energy

Hennepin Energy Resource Co.
Minneapolis, MN

Trash Capacity:	2 units @ 606 tpd = 1,212 tpd
Energy Capacity:	ELE: 39.6 MW
Project Startup:	1989
Technology:	MBWW
CEMS:	CO; CO_2; NOx; Temp; Opacity; SO_2
APC System:	SDA; FF; CI
Owner:	Hennepin County
Operator:	Covanta Hennepin Energy Resource, Inc.

MINNESOTA (continued)

Olmsted Waste-to-Energy Facility
Rochester, MN

Trash Capacity: 2 units @ 100 tpd
1 unit @ 200 tpd =
400 tpd total
Energy Capacity: ELE: 9.8 MW
Project Startup: 1987 (units 1&2); 2010 (unit 3)
Technology: MBWW
CEMS: CO; CO_2; SO_2; O_2; NOx; Opacity
APC System: SDA; FF; CI
Unit 3 only: FGR; NH_3 Injection
Owner: Olmsted County
Operator: Olmsted County

Perham Resource Recovery Facility
Perham, MN

Trash Capacity: 2 units @ 58 tpd = 116 tpd
Energy Capacity: STM: 37,000 Lbs/Hr
ELE: 4.5 MW
Project Startup: 1986; 2002 (upgrade)
Technology: MCU
CEMS: SO_2; CO; O_2; Opacity; Temp
APC System: SDA; DSI; FF; CI; FGR
Owner: City of Perham
Operator: City of Perham

Polk County Solid Waste Resource Recovery Plant
Fosston, MN

Trash Capacity: 2 units @ 40 tpd = 80 tpd
Energy Capacity: STM: 25,000 Lbs/Hr
Project Startup: 1988
Technology: MCU
CEMS: CO; SO_2; O_2
APC System: CI; DSI; ESP
Owner: Polk County
Operator: Polk County

Pope/Douglas Solid Waste Management
Alexandria, MN

Trash Capacity: 2 units @ 40 tpd = 80 tpd
Energy Capacity: STM: 36,000 Lbs/Hr
ELE: 0.5 MW
Project Startup: 1987
Technology: MCU
CEMS: CO; NOx; SO_2; CO_2; O_2; Opacity
APC System: DSI; FF; CI
Owner: Pope/Douglas Solid Waste Management Board
Operator: Pope/Douglas Solid Waste Management Board

Red Wing Resource Recovery Facility
Red Wing, MN

Trash Capacity: 2 units @ 45 tpd = 90 tpd
Energy Capacity: STM: 16,000 Lbs/Hr
Project Startup: 1983
Technology: MCU
CEMS: CO; SO_2; O_2; Opacity
APC System: GSA; ESP
Owner: City of Red Wing
Operator: City of Red Wing

Xcel Energy - Red Wing Steam Plant
Red Wing, MN

Trash Capacity: 2 units @ 360 tpd = 720 tpd
Energy Capacity: ELE: 21 MW
Project Startup: 1988
Technology: RDF-SSWW
CEMS: SO_2; O_2; NOx; CO
APC System: CI; ESP; GSA
Owner: Xcel Energy
Operator: Xcel Energy

MINNESOTA (continued)

Xcel Energy-Wilmarth Plant
Mankato, MN

Trash Capacity: 2 units @ 360 tpd = 720 tpd
Energy Capacity: ELE: 22 MW
Project Startup: 1987
Technology: RDF-SSWW
CEMS: CO; NOx; O_2; Opacity; SO_2
APC System: SDA; FF
Owner: Xcel Energy
Operator: Xcel Energy

"Waste-to-energy is turning a problem into an energy solution."

—Rick Brandes, Chief, Waste Minimization Branch, Office of Solid Waste and Emergency Response, US Environmental Protection Agency as reported in *The Examiner*, 7/16/07

NEW HAMPSHIRE (2 facilities; combined capacity of 700 TPD and 18.5 MW)

Wheelabrator Claremont Co, L.P.
Claremont, NH

Trash Capacity: 2 units @ 100 tpd = 200 tpd
Energy Capacity: ELE: 4.5 MW
Project Startup: 1987
Technology: MBWW
CEMS: CO; O_2; Opacity; Temp; SO_2
APC System: SDA; FF; CI
Owner: Wheelabrator Claremont Co, L.P.
Operator: Wheelabrator Claremont Co, L.P.

Wheelabrator Concord Company, L.P.
Penacock, NH

Trash Capacity: 2 units @ 250 tpd = 500 tpd
Energy Capacity: ELE: 14 MW
Project Startup: 1989
Technology: MBWW
CEMS: CO; NOx; O_2; Opacity; Temp; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Wheelabrator Concord, L.P.
Operator: Wheelabrator Concord, L.P.

NEW JERSEY (5 facilities; combined capacity of 6,372 TPD and 176.5 MW)

Camden Resource Recovery Facility
Camden, NJ

Trash Capacity: 3 units @ 350 tpd = 1,050 tpd
Energy Capacity: ELE: 34 MW
Project Startup: 1991
Technology: MBWW
CEMS: Opacity; NOx; HCl; SO_2; non-methane hydrocarbons
APC System: SDA; ESP; CI
Owner: Camden County Energy Recovery Associates
Operator: Camden County Energy Recovery Corp

Essex County Resource Recovery Facility
Newark, NJ

Trash Capacity: 3 units @ 933 tpd = 2,800 tpd
Energy Capacity: ELE: 70 MW
Project Startup: 1990
Technology: MBWW
CEMS: CO; NOx, O_2; Opacity, SO_2; Moisture
APC System: SDA; ESP; SNCR; CI; CYC
Owner: Covanta Energy Corporation
Operator: Covanta Energy Corporation

NEW JERSEY (continued)

Union County Resource Recovery Facility
Rahway, NJ

Trash Capacity: 3 units @ 500 tpd = 1,500 tpd
Energy Capacity: ELE: 45 MW
Project Startup: 1994
Technology: MBWW
CEMS: CO; NOx; Opacity; SO_2; Link; O_2; NH_3; HCl; Temp
APC System: SDA; FF; SNCR; CI
Owner: Union County Utility Authority
Operator: Covanta Union, Inc.

Warren Energy Resource Company
Oxford Township, NJ

Trash Capacity: 2 units @ 224 tpd = 448 tpd
Energy Capacity: ELE: 13.5 MW
Project Startup: 1988
Technology: MBWW
CEMS: CO; NOx; Opacity; SO_2; Link; O_2; Temp
APC System: SDA; FF; SNCR; CI
Owner: Covanta Warren Energy Resource Co, L.P.
Operator: Covanta Warren Energy Resource Co, L.P.

Wheelabrator Gloucester Company, L.P.
Westville, NJ

Trash Capacity: 2 units @ 287 tpd = 574 tpd
Energy Capacity: ELE: 14 MW
Project Startup: 1990
Technology: MBWW
CEMS: CO; O_2; SO_2; Opacity; Temp; NOx
APC System: SDA; FF; SNCR; CI
Owner: Wheelabrator Gloucester Inc.
Operator: Wheelabrator Gloucester Inc.

Waste-to-energy is "probably one of the greatest stories never told. We take regular household garbage and use it as a fuel, burning it in a boiler to create electricity."

—Sunil Garg, Executive Director, Union County (NJ) Utilities Authority

NEW YORK (10 facilities; combined capacity of 12,319 TPD, 332.45 MW, and 460,000 lbs/hr)

Babylon Resource Recovery Facility
Babylon, NY

Trash Capacity: 2 units @ 375 tpd = 750 tpd
Energy Capacity: ELE: 17 MW
Project Startup: 1989
Technology: MBWW
CEMS: CO; CO_2; NOx; Opacity; Temp; Moisture; O_2; SO_2
APC System: SDA; FF; CI; CYC
Owner: Covanta Babylon, Inc.
Operator: Covanta Babylon, Inc.

Dutchess County Resource Recovery Facility
Poughkeepsie, NY

Trash Capacity: 2 units @ 225 tpd = 450 tpd
Energy Capacity: STM: 50,000 Lbs/Hr
ELE: 9.25 MW
Project Startup: 1988
Technology: RWW
CEMS: CO; NOx; SO_2; Temperature; Opacity; O_2; CO_2
APC System: SDA; FF; CI
Owner: Dutchess County Resource Recovery Agency
Operator: Covanta Hudson Valley Renewable Energy LLC

NEW YORK (continued)

Hempstead Resource Recovery Facility
Westbury, NY

Trash Capacity: 2 units @ 890.3 tpd = 2,671 tpd
Energy Capacity: ELE: 75 MW
Project Startup: 1989
Technology: MBWW
CEMS: CO; CO_2; NOx; Opacity; Temp; SO_2
APC System: SDA; FF; SNCR; CYC
Owner: Town of Hempstead
Operator: Covanta Hempstead Co.

Huntington Resource Recovery Facility
East Northport, NY

Trash Capacity: 3 units @ 250 tpd = 750 tpd
Energy Capacity: ELE: 25 MW
Project Startup: 1991
Technology: MBWW
CEMS: CO; O_2; NOx; Temp; Opacity; SO_2; NH_3
APC System: SDA; FF; SNCR; CI
Owner: Covanta Huntington, Inc.
Operator: Covanta Huntington, Inc.

MacArthur Waste-to-Energy Facility
Ronkonkoma, NY

Trash Capacity: 2 units @ 243 tpd = 486 tpd
Energy Capacity: ELE: 12 MW
Project Startup: 1989
Technology: RWW
CEMS: CO; NOx; O_2; Opacity; SO_2; Temp; Moisture
APC System: SDA; FF
Owner: Islip Resource Recovery Agency
Operator: Covanta MacArthur Renewable Energy, Inc.

Niagara Falls Resource Recovery Facility
Niagra Falls, NY

Trash Capacity: 2 units @ 1,125 tpd = 2,250 tpd
Energy Capacity: STM: 350,000 Lbs/Hr
ELE: 50MW
Project Startup: 1996
Technology: MBWW
CEMS: CO; NOx; O_2; Opacity; Temp; CO_2; SO_2
APC System: SDA; FF; SNCR; CI; ESP
Owner: Covanta Energy Corporation
Operator: Covanta Energy Corporation

Onondaga County Resource Recovery Facility
Jamesville, NY

Trash Capacity: 3 units @ 330 tpd = 990 tpd
Energy Capacity: ELE: 39.2MW
Project Startup: 1995
Technology: MBWW
CEMS: CO; CO_2; NOx; O_2; Opacity; SO_2; NH_3
APC System: SDA; FF; SNCR; CI
Owner: Onondaga County Resource Recovery Agency
Operator: Covanta Onondaga, L.P.

Oswego County Energy Recovery Facility
Fulton, NY

Trash Capacity: 4 units @ 50 tpd = 200 tpd
Energy Capacity: STM: 60,000 Lbs/Hr
ELE: 4 MW
Project Startup: 1985
Technology: MCU
CEMS: Steam flow; CO; O_2; SO_2; Opacity; Temp; Moisture
APC System: SDA; FF: CI; FGR
Owner: Oswego County
Operator: Oswego County

NEW YORK (continued)

Wheelabrator Hudson Falls Inc.
Hudson Falls, NY

Trash Capacity: 2 units @ 236 tpd = 472 tpd
Energy Capacity: ELE: 14.4 MW
Project Startup: 1991
Technology: MBWW
CEMS: CO; NOx; O_2; Opacity; Temp; SO_2
APC System: SDA; ESP; CI; CYC
Owner: Warren & Washington Counties Industrial Development Agency
Operator: Wheelabrator Hudson Falls Inc.

Wheelabrator Westchester Company, L.P.
Peekskill, NY

Trash Capacity: 3 units @ 750 tpd = 2,250 tpd
Energy Capacity: ELE: 63 MW
Project Startup: 1984
Technology: MBWW
CEMS: Opacity; CO; O_2; SO_2; Temp; NOx
APC System: SDA; FF; SNCR; CI
Owner: Wheelabrator Technologies, Inc.
Operator: Wheelabrator Technologies, Inc.

NORTH CAROLINA

New Hanover County—Wastec
Wilmington, NC

Trash Capacity: 2 units @ 100 tpd
1 unit @ 300 tpd
500 tpd total
Energy Capacity: ELE: 10.5 MW
Project Startup: 1984 (units 1&2); 1991 (unit 3)
Technology: MBWW
CEMS: CO; CO_2; NOx; O_2; Opacity; SO_2
APC System: SDA; FF; CI
Owner: New Hanover County
Operator: New Hanover County

OREGON

Marion County Solid Waste-to-Energy Facility
Brooks, OR

Trash Capacity: 2 units @ 275 tpd = 550 tpd
Energy Capacity: ELE: 13.1 MW
Project Startup: 1986
Technology: MBWW
CEMS: O_2; CO; SO_2; Temp; Opacity; NOx
APC System: SDA; FF; SNCR; CI; CYC; DSI
Owner: Covanta Marion, Inc.
Operator: Covanta Marion, Inc.

As of September 30, 2010, the U.S. waste-to-energy industry has 51 facilities that have earned STAR status under the OSHA Voluntary Protection Program. While less than 0.02% of all worksites are enrolled in VPP, more than 59% of all U.S. waste-to-energy facilities are enrolled in VPP.

MSW Management in the U.S.



Source: BioCycle/Columbia University, 2010 State of the Garbage.
Percentages based on 389 million tons of MSW generated in 2008.

OKLAHOMA

Warren B. Hall Resource Recovery Facility
Tulsa, OK

Trash Capacity:	3 units @ 375 tpd = 1,125 tpd
Energy Capacity:	ELE: 16.8 MW; or STM: 240,000 Lbs/Hr
Project Startup:	1986 (2 units); 1987 (1 unit)
Technology:	MBWW
CEMS:	CO; CO_2; NOx; O_2; Temp; Opacity; SO_2
APC System:	CI; CYC; FF; SNCR; SDA
Owner:	Covanta WBH, LLC
Operator:	Covanta WBH, LLC

The Walter B. Hall Resource Recovery Facility began commercial operation in October 1986 with two units. A third unit was added in October 1987 to meet growing demands of the residents and businesses in the Tulsa area. The facility generates up to 240,000 pounds per hour of steam, which can be used to power a turbine generator to produce 16.8 megawatts of clean, renewable energy that is sold to Public Service Company of Oklahoma. However, on a more regular basis, the steam is sold to the adjacent Sunoco refinery, so it does not have to use fossil fuels to generate their own steam.

PENNSYLVANIA (6 facilities; combined capacity of 9,408 TPD and 276.5 MW)

Delaware Valley Resource Recovery Facility
Chester, PA

Trash Capacity:	6 units @ 558 tpd = 3,348 tpd
Energy Capacity:	ELE: 90 MW
Project Startup:	1992
Technology:	RWW
CEMS:	CO; HCl; Link; NOx; O_2; CO_2; Opacity; Temp; Moisture; SO_2
APC System:	SDA; FF
Owner:	Covanta Delaware Valley, L.P.
Operator:	Covanta Delaware Valley, L.P.

Harrisburg Resource Recovery Facility
Harrisburg, PA

Trash Capacity:	3 units @ 266 tpd = 800 tpd
Energy Capacity:	ELE: 24.2 MW
Project Startup:	2006 (retrofit completed)
Technology:	MBWW
CEMS:	CO; O_2; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	City of Harrisburg
Operator:	Covanta Harrisburg, Inc.

"Waste-to-energy plants are a "clean, reliable, renewable source of energy" that 'produce 2,800 megawatts of electricity with less environmental impact than almost any other source of electricity." Communities "greatly benefit from the dependable, sustainable [solid waste disposal] capacity of municipal waste-to-energy plants."

—USEPA letter from Assistant Administrators Marianne Horinko, Office of Solid Waste and Emergency Response, and Jeffery Holmstead, Office of Air and Radiation to IWSA, 2/14/03

Lancaster County Resource Recovery Facility
Bainbridge, PA

Trash Capacity:	3 units @ 400 tpd = 1,200 tpd
Energy Capacity:	ELE: 36 MW
Project Startup:	1991
Technology:	MBWW
CEMS:	CO; CO_2; NOx; Opacity; SO_2; Link; O_2; HCl; Temp; Moisture
APC System:	SDA; FF; SNCR; CI; FSI
Owner:	Lancaster County Solid Waste Management Authority
Operator:	Covanta Lancaster, Inc.

PENNSYLVANIA (continued)

Covanta Plymouth Renewable Energy
Conshohocken, PA

Trash Capacity: 2 units @ 608 tpd = 1,216 tpd
Energy Capacity: ELE: 32 MW
Project Startup: 1992
Technology: MBWW
CEMS: CO; HCl; NOx; O_2; Opacity; Temp; Moisture; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Covanta Plymouth Renewable Energy
Operator: Covanta Plymouth Renewable Energy

Wheelabrator Falls Inc.
Morrisville, PA

Trash Capacity: 2 units @ 750 tpd = 1,500 tpd
Energy Capacity: ELE: 53 MW
Project Startup: 1994
Technology: MBWW
CEMS: CO; HCl; NOx; O_2; Opacity; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Wheelabrator Falls, Inc.
Operator: Wheelabrator Falls, Inc.

The Waste-to-Energy Research and Technology Council (WTERT) started at Columbia University has grown internationally. Universities abroad set up WTERT organizations in their countries as a way to identify and advance the best available waste-to-energy technologies for the recovery of energy or fuels from waste. WTERTs have now been established in: Brazil, Canada, China, Germany, Greece, Japan, and the United Kingdom.

York Resource Recovery Center
York, PA

Trash Capacity: 3 units @ 448 tpd = 1,344 tpd
Energy Capacity: ELE: 41 MW
Project Startup: 1989
Technology: MBWW
CEMS: CO; CO_2; HCl; Link; NOx; O_2; Opacity; SO_2; Temp
APC System: SDA; FF; CI
Owner: York County Solid Waste Authority
Operator: Covanta York Renewable Energy, LLC

UTAH

Wasatch Integrated Waste Management District
Layton, UT

Trash Capacity: 2 units @ 210 tpd = 420 tpd
Energy Capacity: STM: 105,000 Lbs/Hr
ELE: 1.6 MW
Project Startup: 1986
Technology: MBRW
CEMS: CO; NOx; O_2; Temp; CO_2; Opacity; SO_2
APC System: GSA; ESP
Owner: Wasatch Integrated Waste Management District
Operator: Wasatch Integrated Waste Management District

"Generation of energy from municipal solid waste disposed in a waste-to-energy facility not only offers significant environmental and renewable benefits, but also provides greater energy diversity and increased energy security for our nation."

—The United States Conference of Mayors, Adopted Resolution on Comprehensive Solid Waste Disposal Management (2005)

VIRGINIA (5 facilities; combined capacity of 6,415 TPD, 212.5 MW, and 134,000 lbs/hr)

Alexandria/Arlington Resource Recovery Facility
Alexandria, VA

Trash Capacity: 3 units @ 325 tpd = 975 tpd
Energy Capacity: ELE: 24 MW
Project Startup: 1988
Technology: MBWW
CEMS: CO; NOx; O_2; Temp; Opacity; SO_2
APC System: SDA; FF; SNCR; CI
Owner: Covanta Arlington/Alexandria, Inc.
Operator: Covanta Arlington/ Alexandria, Inc.

Hampton-NASA Steam Plant
Hampton, VA

Trash Capacity: 2 units @ 120 tpd = 240 tpd
Energy Capacity: STM: 66,000 Lbs/Hr
Project Startup: 1980
Technology: MBWW
CEMS: CO; O_2; Opacity
APC System: DSI; FF
Owner: NASA and City of Hampton
Operator: City of Hampton

Harrisonburg Resource Recovery Facility
Harrisonburg, VA

Trash Capacity: 2 units @ 100 tpd = 200 tpd
Energy Capacity: STM: 43,000 Lbs/Hr
ELE: 2.5 MW
Project Startup: 1982
Technology: MBRW
CEMS: CO; CO_2; O_2; Opacity; SO_2; Temperature
APC System: DSI; FF; CI
Owner: City of Harrisonburg
Operator: City of Harrisonburg

I-95 Energy-Resource Recovery Facility (Fairfax)
Lorton, VA

Trash Capacity: 4 units @ 750 tpd = 3,000 tpd
Energy Capacity: ELE: 126 MW
Project Startup: 1990
Technology: MBWW
CEMS: CO; O_2; NOx; Temp; Opacity; SO_2; Link
APC System: SDA; FF; SNCR; CI
Owner: Covanta Fairfax, Inc
Operator: Covanta Fairfax,

Wheelabrator Portsmouth, Inc.
Portsmouth, VA

Trash Capacity: 4 units @ 500 tpd = 2,000 tpd
Energy Capacity: STM: 25,000 Lbs/Hr
ELE: 60 MW
Project Startup: 1988
Technology: RDF-SSWW
CEMS: CO; HCl; NOx; O_2; Opacity; Temp; SO_2
APC System: SDA; FF
Owner: Wheelabrator Portsmouth, Inc.
Operator: Wheelabrator Portsmouth, Inc.

Full-time Employees at Waste-to-Energy Facilities
(based on survey of 63 facilities)

Total FTE's	Mean	25th Percentile	Median	75th Percentile
2006	58.4	37.0	46.0	66.0
2007	57.6	37.0	46.0	63.0
2008	57.9	37.5	46.0	65.5

Source: Study conducted by Veris Consulting, 2010.

WASHINGTON

Spokane Regional Solid Waste Disposal Facility
Spokane, WA

Trash Capacity:	2 units @ 400 tpd = 800 tpd
Energy Capacity:	ELE: 26 MW
Project Startup:	1991
Technology:	MBWW
CEMS:	CO_2; NOx; O_2; Opacity; SO_2
APC System:	SDA; FF; SNCR; CI
Owner:	City of Spokane
Operator:	Wheelabrator Spokane, Inc.

"Green energy is a growing field. It is exciting to have a state-of-the-art, renewable power plant created right here in Curtis Bay. It will create 180 'green collar' jobs and is expected to pump millions of dollars into the local economy through salaries and spin-off businesses. This is great news in this struggling economy."

—Congressman C.A. "Dutch" Ruppersberger, Maryland, regarding the development of an Energy Answers International waste-to-energy facility in Baltimore, MD.

WISCONSIN (2 facilities; combined capacity of 500 TPD, 32.3 MW, and 19,000 lbs/hr)

Barron County Waste-to-Energy & Recycling Facility
Almena, WI

Trash Capacity:	2 units @ 50 tpd = 100 tpd
Energy Capacity:	STM: 19,000 Lbs/Hr ELE: 0.265 MW
Project Startup:	1986
Technology:	MCU
CEMS:	Opacity; Temperature
APC System:	SDA; ESP; CI; FF
Owner:	Barron County
Operator:	ZAC, Inc.

Xcel Energy French Island Generating Plant
LaCrosse, WI

Trash Capacity:	2 units @ 200 tpd = 400 tpd
Energy Capacity:	ELE: 32 MW
Project Startup:	1987
Technology:	RDF-SSWW
CEMS:	SO_2; NOx; Opacity; CO
APC System:	DSI; FF; SNCR
Owner:	Xcel Energy
Operator:	Xcel Energy



Green Investing

Towards a Clean Energy Infrastructure

In this report released in Davos, Switzerland in January 2009, the World Economic Forum highlighted eight renewable energy technologies which look particularly promising.

1. Onshore Wind
2. Offshore Wind
3. Solar Photovoltaic Power
4. Solar Thermal Electricity Generation
5. **Municipal Solid Waste-to-Energy (MSW)**
6. Sugar Based Ethanol
7. Cellulosic and Next Generation Biofuels
8. Geothermal

NOTES



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Energy Recovery Council
December, 2010

The Energy Recovery Council is a national trade group located in Washington, D.C. For more information about waste-to-energy and integrated waste management, please visit http://www.eneryrecoverycouncil.org or call ERC at (202) 467-6240.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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AUG 1 0 2007

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Emissions from Large and Small MWC Units at MACT Compliance

FROM: Walt Stevenson
OAQPS/SPPD/ESG (D243-01)

TO: Large MWC Docket (EPA-HQ-OAR-2005-0117)

This memorandum presents information on the overall emissions reductions achieved by large and small municipal waste combustion (MWC) units following retrofit of Maximum Achievable Control Technology (MACT). This memorandum is a companion to the memorandum titled "Emissions from Large MWC Units at MACT Compliance (note a). Consistent with Clean Air Act (CAA) section 129, large and small MWC units completed MACT retrofits by December 2000 and December 2005, respectively. The performance of the MACT retrofits has been outstanding. Emission reductions achieved for all CAA section 129 pollutants are shown below. Of particular interest are dioxin/furan and mercury emissions. Since 1990 (pre-MACT conditions), dioxin/furan emissions from large and small MWCs have been reduced by more than 99 percent, and mercury emissions have been reduced by more than 96 percent. Dioxin/furan emissions have been reduced to 15 grams per year* and mercury emissions reduced to 2.3 tons/year.

Emissions From Large and Small MWC Units

Pollutant	*1990 Emissions (tpy)*	*2005 Emissions (tpy)*	*Percent Reduction*
CDD/CDF, TEQ basis*	4400	15	99+ %
Mercury	57	2.3	96 %
Cadmium	9.6	0.4	96 %
Lead	170	5.5	97 %
Particulate Matter	18,600	780	96 %
HCl	57,400	3,200	94 %
SO_2	38,300	4,600	88 %
NO_x	64,900	49,500	24 %

(*) dioxin/furan emissions are in units of grams per year toxic equivalent quantity (TEQ), using 1989 NATO toxicity factors; all other pollutant emissions are in units of tons per year.

The MACT performance data presented above is from the initial MACT compliance tests from all large and small MWC units. The inventory of large MWC units at MACT compliance identifies 167 large MWC units located at 66 MWC plants (note b). The inventory of small MWC units at MACT compliance identifies 60 small MWC units located at 22 MWC plants (note c). The baseline 1990 emissions data are from the large and small MWC emissions trend memo (note d and e). In combination, the above information defines the 1990 and 2005 emissions for large and small MWC units.

notes

(a) see docket A-90-45, item VIII-B-11.
(b) see docket A-90-45, item VIII-B-6
(c) see docket OAR-2004-0312, "National Inventory of Small Municipal Waste Combustor (MWC) Units at MACT Compliance (Year 2005)", dated November 1, 2006.
(d) see docket A-90-45, item VIII-B-7
(e) see docket OAR-2004-0312, "National Emissions Trends for Small Municipal Waste Combustion Units [year 1990 – 2005]", dated June 12, 2002.

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Waste-to-Energy:
A Renewable Energy Source from Municipal Solid Waste

EXECUTIVE SUMMARY

ASME SWPD Supports WTE - The Solid Waste Processing Division (SWPD) of the American Society of Mechanical Engineers (ASME) supports national policies that encourage the recovery of energy from the controlled combustion of municipal solid waste (MSW), also called Waste to Energy (WTE).

Proven Technology - WTE is a proven, environmentally sound process that provides reliable electricity generation and sustainable disposal of post-recycling MSW. WTE technology is used extensively in Europe and other developed nations in Asia such as Russia, Japan, Singapore, and Taiwan.

WTE Reduces Greenhouse Gases - New policies to encourage WTE can have a sizable effect on reducing the nation's greenhouse gas emissions.[1] In fact, nation-wide use of the WTE technology can become one of the big contributors to America's planned reduction in greenhouse gas emissions.

WTE Reduces Dependence on Fossil Fuel - New policies to encourage WTE can also have a meaningful impact in reducing dependence on fossil fuels and increasing production of renewable energy. MSW is currently comprised of 56% biogenic and 44% non-biogenic materials [2]. Combusting the biogenic fraction of WTE is considered renewable by the DOE [1]. Currently, there are 86 WTE facilities in the U.S. that process 29 million tons of MSW per year [1]. The nation currently landfills about 248 million tons of waste per year so there is significant potential to increase energy production from WTE. Every ton of MSW processed in a WTE facility avoids the mining of one third ton of coal or the importation of one barrel of oil. If all waste were processed in modern WTE facilities it could satisfy 3 to 4 percent of the country's electricity demand.

Additional Environmental Benefits of WTE -

- Complements recycling and reduces landfilling
- Reduces truck traffic and associated emissions
- Recovers and recycles metals thus reducing mining operations

WTE Provides Clean Energy – WTE technology has significantly advanced with the implementation of the Clean Air Act [3], dramatically reducing all emissions. The EPA concluded WTE now produces electricity with less environmental impact than almost any other source (Letter of EPA Administration to Integrated Waste Services Association, Feb. 14. 2003).

Reliable Electricity – WTE operates 24/7 to reduce base load fossil fuel generation and is desirably located in proximity to urban areas where the power is needed the most.

ASME SWPD Recommendations to Congress and the Administration:

- Include WTE in the federal Renewable Portfolio Standard.
- Consider the reduction in greenhouse gases benefits of WTE in climate change policy.
- Direct the EPA to consider "life cycle analysis" of waste disposal options and also to consider Maximum Achievable Control Technology (MACT) type regulations on all emission sources, as have been applied to WTE facilities.

Introduction

ASME represents 127,000 engineers who are engaged in every aspect of energy generation and utilization. The Solid Waste Processing Division (SWPD) of ASME is dedicated to the recovery of energy and materials from the solids discarded by society and the environmental quality of technologies used in all aspects of waste management.

Municipal solid waste (MSW) is an unavoidable by product of human activities. Waste management is a particularly serious issue in the US because we consume an estimated 20 to 25 percent of the world's energy and materials and generate twice as much MSW per capita as developed nations in the European Union and Japan. Therefore, there exists a great need for waste reduction and recycling of materials. However, international and US experience has shown that after recycling there remains a large fraction of MSW to be disposed of.

The two proven means for disposal are burying MSW in landfills or combusting it in specially designed chambers at high temperatures, thereby reducing it to one tenth of its original volume. The heat generated by combustion is transferred to steam that can flow through a turbine to generate electricity. This process is called waste-to-energy (WTE). It converts the energy from combustion of MSW to electricity and recovers and recycles the metals contained in the MSW while the remaining ash is either used in landfills for daily cover and landfill roads or cleaned up and used off site for other construction purposes (as is done now in the EU and Japan).

The US WTE industry has existed for over thirty years and its technology has continuously been improved. For example, MSW combustion facilities of all types were once considered a significant source of mercury and dioxin emissions. However, during the 1990's, the WTE industry implemented new EPA regulations on Maximum Achievable Control Technology (MACT) and WTE power plants have become one of the cleanest sources of electricity and heat energy.

Currently there are 86 WTE facilities in the U.S. processing 29 million tons of MSW annually and generating 2.3 GW of electricity. Every ton of MSW processed in a WTE facility avoids the mining of one third ton of coal (9.6 million tons per year) or the importation of one barrel of oil (29 million barrels per year). As our nation begins to focus on conservation and renewables, WTE has already proved to be a reliable technology.

Unfortunately, there have been some setbacks. For instance, the Supreme Court Carbone ruling on "Flow Control" in 1994 (C & A Carbone v. Town of Clarkstown, New York, 511 U.S. 383 (1994)[4] forced many major urban areas in the U.S. to opt for long distance transport of their solid wastes to newly built giant landfills and stopped the growth of this useful energy producing technology in the US. Consequently, from 1995 through 2006, there were no new WTE plants built in the nation. A more recent Supreme Court decision on Flow Control has restored the ability of communities to control the flow of wastes to WTE facilities.

In contrast to what was happening in the U.S., from 1995 through 2006, hundreds of new WTE facilities were built in the European Union, Japan, China, and over thirty other nations where landfilling is regarded as environmentally undesirable and energy- and land-wasteful. In fact, in the years 2000-2007, the global WTE capacity grew at the rate of about four million tons each year. The growth of WTE in the European Union is partly due to a directive of the European Community that mandates that wastes containing over 2 percent combustible material shall not be landfilled in order to reduce landfill emissions of methane, the second most important greenhouse gas, and preserve land for future generations.[5]

In the U.S., as major urban areas have run out of nearby landfill space, post-recycled MSW is increasingly being transported long distances to other states for burial.[6] This has substantially increased the cost to landfill this MSW, and has also increased the associated environmental impacts because of the emissions from transport vehicles to and from the landfills. It has also increased the environmental advantages of WTE versus landfilling. As a result, some WTE facilities have recently begun to expand their capacity by adding new processing lines to their existing operations. These facilities are basing their requests for financing and permitting on their successful records of operation and environmental compliance.

The Conventional WTE Process

The conventional WTE combustion process is similar to the stoker burners in many coal- and wood-fired boilers. Waste is continuously fed onto a moving grate in a furnace where high temperatures are maintained. Air is added to the combustion chamber to ensure turbulence and the complete combustion of the components to their stable and natural molecular forms of carbon dioxide and water vapor.

The hot combustion gases released during the WTE process are directed through boilers to generate superheated steam that can drive turbine generators that produce electricity. Exhausted steam can also be used efficiently for district heating and for industrial processing if those choices are available.

It is interesting to note that, according to the EPA and IPCC protocols, combusting the biogenic fraction of MSW (about 56 percent of the carbon in MSW) results in a GHG reduction because these waste materials decompose into nearly equal portions of carbon dioxide and methane gas if they are landfilled. Methane is 21 times more potent as a GHG than carbon dioxide.

Energy Benefits of WTE

MSW, depending upon the moisture and energy content of the waste materials, is a good fuel source. The thermal treatment of MSW results in the generation of 500-600 kWh of electricity per ton of MSW combusted. European WTE facilities often recover another 600 kWh in the form of steam or hot water that is used for district heating. This additional energy recovery is not generally achieved in the US due to the absence of district heating systems. The corresponding savings in fossil fuel use range from one to two barrels of oil per ton of MSW.

Renewable Energy Source

WTE is designated as renewable by the 2005 Energy Policy Act, by the US Department of Energy (DOE), and by twenty-three state governments. Excluding hydroelectric power, only 2 percent of the US electricity is generated from renewable energy sources. A third of this renewable energy is due to WTE which at this time processes about 8 percent of the US MSW, while nearly 64 percent is landfilled (2004 BioCycle/Columbia national survey; www.wtert.org/sofos/SOG2006.pdf). As of July, 2008, energy recovered from WTE plants in the US is greater than all wind and solar energy combined.

Environmental Benefits

In addition to its energy benefits, WTE avoids the conversion of greenfields to landfills. The 2,500-acre Freshkills landfill of New York City filled up in about 50 years. Under current regulations (daily cover, etc.), it would have filled in 20-25 years. Although the US is blessed with abundant land, the continuous use of land for landfilling is not sustainable, especially in the coastal areas that are experiencing the highest population growth.

Since WTE facilities are a point source of emissions, they have been subjected to very stringent environmental regulations. This is not possible for landfills which are dispersed sources extending over hundreds of acres. For example, EPA assumes that 75 percent of the landfill gas (LFG) is captured in landfills that are equipped for such capture. Other studies estimate the actual LFG capture to be much lower since, under current EPA regulations, landfills are not required to capture LFG during the first five years of operation of a cell.

Landfill gas contains about 50 percent methane which is 21 times more potent as a greenhouse gas than carbon dioxide.[7] Comparative studies of WTE and landfilling have shown that for each ton of MSW combusted, rather than landfilled, the overall carbon dioxide reduction can be as high as 1.3 tons of CO2 per ton of MSW when both the avoided landfill emissions and the avoided use of fossil fuel are taken into account.

WTE processing of MSW has the additional benefit of reducing the transport of MSW to distant landfills and the attendant emissions and fuel consumption. It also reduces interstate truck traffic. According to U.S. Department of Transportation traffic statistics, an average of 7 deaths and over 40 serious injuries occur per year, based on the number of trucks required to transport New Jersey's two million tons per year of excess MSW to landfills in Pennsylvania, Virginia, and Ohio.[6]

Diesel fuel consumption of trucking to and from landfills and by equipment used in the burial of MSW in landfills generates air emissions and has other negative environmental impacts. All this energy consumption and diesel exhaust can be avoided by WTE facilities that use MSW as the fuel for generating electricity and steam energy at plants located near urban centers.

Material Recovery

Another beneficial effect of modern MSW combustion with energy recovery is material recovery. Using magnetic separators, the U.S. WTE industry recovers and recycles over 770,000 tons of ferrous scrap metal annually from the combustion ash residue.[8] At some facilities, non-ferrous metals are also removed through the use of "eddy current separators" that cause these materials to literally jump out of the remaining ash and into a recovery area. Metal processors sort this mixed metal into brass, aluminum, copper and other base metals.[9] The remaining ash can be used in the construction and maintenance of landfills and as an aggregate in construction.[10, 11]

Existing Obstacles for WTE Technology

The progress of WTE in the US has thus far been stifled by three factors that can be addressed through federal legislation and collective local efforts:

- Inconsistent environmental regulations for various energy sources.
- Failure to consider all environmental factors when local community environmental decisions are made.

- Uneven support by local officials and federal agencies.

Flow Control

Flow control is the authority needed by a municipality to direct the "flow" of its generated solid wastes into a disposal process chosen by the community, e.g., the local WTE facility. Normally, a community must issue bonds for construction of a large WTE facility and employ flow control to have firm waste delivery contracts in place during the term of the bond issue.[12]

When the US Supreme Court appeared to rule in the 1994 "Carbone" case that all existing attempts at such control were illegal under the Constitution because they restrained "commerce", they eliminated the ability of a community to finance WTE facilities. However, in the 2007 "United Haulers" decision, the Supreme Court has clarified the ability of local communities to finance long term revenue bond issues and control the flow of waste to these facilities. Moreover, the court recognized that Congress has, in RCRA, carved out a vital role for local government in the management of the nation's solid waste.

Implementation of Regulations

Environmental impact statements for any waste management facility (recycling, composting, WTE, waste hauling, and landfilling) should include a life-cycle analysis of all associated environmental and energy impacts that will result from each option. Even recycling, though laudatory, has negative, as well as positive, environmental effects. The impacts of the failure to make any community "improvement" should also be weighed in the evaluation of choices.

U.S. WTE facilities have complied with very stringent EPA regulations, known as Maximum Achievable Control Technology (MACT), at an estimated cost of over one billion dollars. By law, the Clean Air Act requires that every five years a review of these stringent emissions limits is conducted in order to determine whether lower limits are achievable.[13] Air quality regulations for all forms of combustion processes should have consistent health-based emissions limits for all facilities. If an emission is dangerous from one type of facility, then it is likely to be equally dangerous from another.

Disposal of solid waste from major urban areas in landfills frequently involves long haul trucking resulting in diesel exhaust pollution and the need for multiple waste transfer stations. Additionally, the landfilling process also results in diesel exhaust emissions and the long term generation of gaseous pollutants from the decomposition of trash in a landfill.

Public decision makers should carefully consider all environmental factors before adopting a solution to an environmental problem such as disposal of MSW. In addition, the public should be educated to know the benefits and burdens associated with each potential solution before making a final decision.

Recommended Actions by US Environmental Protection Agency

The US Environmental Protection Agency needs to fulfill its obligation to the public by advocating for the best solutions to environmental problems, including the disposal of MSW. Sound science should be the basis for decision-making. EPA must lead by educating the public as to the pros and cons that go with any solution and, thus, help overcome misconceptions about proven technological solutions. By means of public education, USEPA must lead in the application of the best environmental solutions.

In recent years, the EPA has taken a more active role in educating the public, by distinguishing in its annual reports between tonnages of MSW going to WTE and to landfilling, instead of lumping them

together as "disposal". Also, some EPA regions have taken a pro-active role in educating the public in the benefits of WTE. For example, EPA Region 2 organized a one-day seminar in Puerto Rico at which they educated the general public on the benefits of WTE vs. landfilling, especially for an island where land is very scarce and precious. EPA has also re-instituted the hierarchy of integrated solid waste management, which places waste-to-energy above landfill disposal. We applaud these efforts undertaken by the EPA and feel that now is the time to build upon them.

It is given that no one wants a new public facility of any sort near their homes, whether it is an airport, highway, water treatment plant or a waste disposal facility. We feel that it is paramount that environmental regulators coordinate with local officials to hold public hearings where new facilities and technologies and the "do-nothing" consequences can be discussed. Additionally, we feel that the EPA should actively promote WTE as a mutually beneficial endeavor for both local communities and the nation.

Recommended Actions by Congress

The following actions are recommended by the ASME Solid Waste Processing Division to advance the use of WTE technology in the US and reap the energy benefits of a homegrown, renewable energy source and of reduced local, regional, and global emissions:

- Congress should re-examine and reconsider the level of regulatory limits required for all new sources of energy. MACT regulations have worked well for waste-to-energy facilities and they are equally able to control emissions from all other sources of combustion based energy production.

- Congress, in an effort to expand WTE, should consider enacting legislation that would make renewable energy credits available for WTE under the definitions of green or renewable energy.

- Congress should direct EPA to study and post notice regarding the effects of the "whole picture" for all available waste management options.

The ASME Solid Waste Processing Division believes that these policy recommendations, if fully adopted, could successfully take advantage of a unique opportunity to develop a renewable, clean energy source at a critical time for our nation. The country will also be well served by recovery of reusable materials, reduced truck traffic and highway congestion, less dependence on landfill for solid waste disposal, and less dependence on foreign sources of energy.

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(1) "National Energy Strategy," USDOE, 1991/1992, pages 181, 182.

(2) LaRiviere, Marie, April 2007, Energy Information Administration (EIA), Trends in Municipal Solid Waste (MSW) Composition, Department of Energy

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(7) H. Taylor, Jan. 1990: "Municipal Waste to Energy Facilities Reduce Greenhouse Gas Emissions", Proceeds of the 4th Annual Symposium on Municipal Solid Waste Disposal and Energy Production.

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This position statement represents the views of the Solid Waste Processing Division and Energy Committee of ASME's Technical Communities of Knowledge and Community and is not necessarily a position of ASME as a whole.

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Suomi

Waste-to-energy

From Wikipedia, the free encyclopedia

Waste-to-energy (WtE) or **energy-from-waste** (EfW) is the process of creating energy in the form of electricity or heat from the incineration of waste source. WtE is a form of energy recovery. Most WtE processes produce electricity directly through combustion, or produce a combustible fuel commodity, such as methane, methanol, ethanol or synthetic fuels.[1]

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1 Incineration
2 WtE technologies other than incineration
3 Global WTE developments
4 Carbon dioxide emissions
4.1 Determination of the biomass fraction
5 Examples of waste-to-energy plants
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Spittelau incineration plant is one of several plants that provides district heating in Vienna.

Incineration [edit]

Main article: Incineration

Incineration, the combustion of organic material such as waste with energy recovery is the most common WtE implementation. Incineration may also be implemented without energy and materials recovery; however, this is increasingly being banned in OECD (Organisation for Economic Co-operation and Development) countries.[*citation needed*] Furthermore, all new WtE plants in OECD countries must meet strict emission standards.[*citation needed*] Hence, modern incineration plants are vastly different from the old types, some of which neither recovered energy nor materials. Modern incinerators reduce the volume of the original waste by 95-96 %, depending upon composition and degree of recovery of materials such as metals from the ash for recycling.[2]

Concerns regarding the operation of incinerators include fine particulate, heavy metals, trace dioxin and acid gas emissions, even though these emissions are relatively low[3] from modern incinerators. Other concerns include toxic fly ash and incinerator bottom ash (IBA) management.[*citation needed*] Discussions regarding waste resource ethics include the opinion that incinerators destroy valuable resources and the fear that they may reduce the incentives for recycling and waste minimization activities.[*citation needed*] Incinerators have electric efficiencies on the order of 14-28%.[*citation needed*] The rest of the energy can be utilized for e.g. district heating, but is otherwise lost as waste heat.

The method of using incineration to convert municipal solid waste (MSW) to energy is a relatively old method of waste-to-energy production. Incineration generally entails burning garbage to boil water which powers steam generators that make electric energy to be used in our homes and businesses. One serious problem associated with incinerating MSW to make electrical energy, is the pollutants that are put into the atmosphere when burning the garbage that power the generators. These pollutants are extremely acidic and have been reported to cause serious environmental damage by turning rain into acid rain. One way that this problem has been significantly reduced is through the use of lime scrubbers on smokestacks. The limestone mineral used in these scrubbers has a pH of approximately

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8 which means it is a base. By passing the smoke through the lime scrubbers, any acids that may be in the smoke are neutralized which prevents the acid from reaching the atmosphere and hurting our environment. (Field) According to the New York Times, modern incineration plants are so clean that "many times more dioxin is now released from home fireplaces and backyard barbecues than from incineration."[4]

WtE technologies other than incineration [edit]

There are a number of other new and emerging technologies that are able to produce energy from waste and other fuels without direct combustion. Many of these technologies have the potential to produce more electric power from the same amount of fuel than would be possible by direct combustion. This is mainly due to the separation of corrosive components (ash) from the converted fuel, thereby allowing higher combustion temperatures in e.g. boilers, gas turbines, internal combustion engines, fuel cells. Some are able to efficiently convert the energy into liquid or gaseous fuels:

Thermal technologies:

- Gasification (produces combustible gas, hydrogen, synthetic fuels)
- Thermal depolymerization (produces synthetic crude oil, which can be further refined)
- Pyrolysis (produces combustible tar/biooil and chars)
- Plasma arc gasification PGP or plasma gasification process (produces rich syngas including hydrogen and carbon monoxide usable for fuel cells or generating electricity to drive the plasma arch, usable vitrified silicate and metal ingots, salt and sulphur)

Non-thermal technologies:

- Anaerobic digestion (Biogas rich in methane)
- Fermentation production (examples are ethanol, lactic acid, hydrogen)
- Mechanical biological treatment (MBT)
  - MBT + Anaerobic digestion
  - MBT to Refuse derived fuel

Global WTE developments [edit]

During the 2001-2007 period, the WTE capacity increased by about four million metric tons per annum. Japan and China built several plants that were based on direct smelting or on fluid bed combustion of solid waste. In China there are about 50 WTE plants. Japan is the largest user in thermal treatment of MSW in the world with 40 million tons. Some of the newest plants use stoker technology and others use the advanced oxygen enrichment technology. There are also over one hundred thermal treatment plants using relatively novel processes such as direct smelting, the Ebara fluidization process and the Thermo- select -JFE gasification and melting technology process.[5] In Patras, Greece, a Greek company just finished testing a system that shows potential. It generates 25kwatts of electricity and 25kwatts of heat from waste water.[6] In India its first energy bio-science center was developed to reduce the country's green house gases and its dependency on fossil fuel.[7]

Biofuel Energy Corporation of Denver, CO, opened two new biofuel plants in Wood River, NE, and Fairmont, MN, in July 2008. These plants use distillation to make ethanol for use in motor vehicles and other engines. Both plants are currently reported to be working at over 90% capacity. Fulcrum BioEnergy incorporated located in Pleasanton, CA, is currently building a WTE plant near Reno, NV. The plant is scheduled to open in early 2010 under the name of Sierra BioFuels plant. BioEnergy incorporated predicts that the plant will produce approximately 10.5 million gallons per year of ethanol from nearly 90,000 tons per year of MSW.(Biofuels News)

Waste to energy technology includes fermentation, which can take biomass and create ethanol, using waste cellulosic or organic material. In the fermentation process, the sugar in the waste is changed to carbon dioxide and alcohol, in the same general process that is used to make wine. Normally fermentation occurs with no air present. Esterification can also be done using waste to energy technologies, and the result of this process is biodiesel. The cost effectiveness of esterification will depend on the feedstock being used, and all the other relevant factors such as transportation distance, amount of oil present in the feedstock, and others.[8] Gasification and pyrolysis by now can reach thermal conversion efficiencies from of up to 75%, however a complete combustion is superior in terms of fuel conversion efficiency.[9] Some pyrolysis processes need an outside heat source which may be

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supplied by the gasification process, making the combined process self sustaining.

Carbon dioxide emissions [edit]

In thermal WtE technologies, nearly all of the carbon content in the waste is emitted as carbon dioxide (CO_2) to the atmosphere (when including final combustion of the products from pyrolysis and gasification). Municipal solid waste (MSW) contain approximately the same mass fraction of carbon as CO_2 itself (27%), so treatment of 1 metric ton (1.1 short tons) of MSW produce approximately 1 metric ton (1.1 short tons) of CO_2.

In the event that the waste was landfilled, 1 metric ton (1.1 short tons) of MSW would produce approximately 62 cubic metres (2,200 cu ft) methane via the anaerobic decomposition of the biodegradable part of the waste. This amount of methane has more than twice the global warming potential than the 1 metric ton (1.1 short tons) of CO_2, which would have been produced by combustion. In some countries, large amounts of landfill gas are collected, but still the global warming potential of the landfill gas emitted to atmosphere in e.g. the US in 1999 was approximately 32 % higher than the amount of CO_2 that would have been emitted by combustion.[10]

In addition, nearly all biodegradable waste is biomass. That is, it has biological origin. This material has been formed by plants using atmospheric CO_2 typically within the last growing season. If these plants are regrown the CO_2 emitted from their combustion will be taken out from the atmosphere once more.

Such considerations are the main reason why several countries administrate WtE of the biomass part of waste as renewable energy.[11] The rest - mainly plastics and other oil and gas derived products - is generally treated as non-renewables.

Determination of the biomass fraction [edit]

Several methods have been developed by the European CEN 343 working group to determine the biomass fraction of waste fuels, such as Refuse Derived Fuel/Solid Recovered Fuel. The initial two methods developed (CEN/TS 15440) were the **manual sorting method** and the **selective dissolution method**. A detailed systematic comparison of these two methods has been recently published.[12] Since each method suffered from limitations in properly characterizing the biomass fraction, two alternative methods have been developed.

The first method uses the principles of radiocarbon dating. A technical review (CEN/TR 15591:2007) outlining the carbon 14 method was published in 2007. A technical standard of the carbon dating method (CEN/TS 15747:2008) will be published in 2008. In the United States, there is already an equivalent carbon 14 method under the standard method ASTM D6866.

The second method (so called **balance method**) employs existing data on materials composition and operating conditions of the WtE plant and calculates the most probable result based on a mathematical-statistical model.[13] Currently the balance method is installed at three Austrian incinerators.

A comparison between both methods carried out at three full-scale incinerators in Switzerland showed that both methods came to the same results.[14]

Although carbon 14 dating can determine with some precision the biomass fraction of waste, it cannot determine directly the biomass calorific value. Determining the calorific value is important for green certificate programs such as the Renewable Obligation Certificate program in the United Kingdom. These programs award certificates based on the energy produced from biomass. Several research papers, including the one commissioned by the Renewable Energy Association in the UK, have been published that demonstrate how the carbon 14 result can be used to calculate the biomass calorific value. By contrast the balance method delivers all required information, namely, the ratio between biogenic and fossil energy production, as well as relative and total biogenic and fossil mass and carbon fractions. Moreover it requires no additional measurements and is therefore easy to install at low costs.

Examples of waste-to-energy plants [edit]

According to ISWA there are 431 WtE plants in Europe (2005) and 89 in the United States (2004).[15] Below is a list of a few examples of WtE plants.

- Edmonton Municipal Waste-to-Ethanol gasification Plant fueled by Alter NRG plasma torch

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construction by the end of 2009[16]

The following are examples of waste incineration WtE plants:

- Montgomery County Resource Recovery Facility in Dickerson, Maryland, USA (1995)
- Spittelau (1971), and Flötzersteig (1963), Vienna, Austria (Wien Energie)
- SYSAV in Malmö (2003 and 2008), Sweden (Flash presentation)
- Algonquin Power, Brampton, Ontario, Canada [17]
- Teesside EfW plant near Middlesbrough, North East England (1998)
- Edmonton Incinerator in Greater London, England (1974)

See also [edit]



- Biohydrogen production
- Biomass
- Cogeneration
- Energy recycling
- List of solid waste treatment technologies
- Manure-derived synthetic crude oil
- Refuse-derived fuel
- Relative cost of electricity generated by different sources
- Waste management

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4. ^ http://www.nytimes.com/2010/04/13/science/earth/13trash.html?scp=1&sq=trash&st=cse
5. ^ columbia university
6. ^ clean-tech-Greece
7. ^ clean-tech- India
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11. ^ [1], from the homepage of the UK Renewable Energy Association
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17. ^ Algonquin Power Energy from Waste Facility from the homepage of Algonquin Power

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External links [edit]

- Waste-to-Energy Research and Technology Council
- WtERT Germany
- LowCarbonEconomy.com
- Gasification Technologies Council

v·d·e	Topics related to waste management
	Anaerobic digestion · Composting · Downcycling · Eco-industrial park · Incineration · Landfill · Materials recovery facility · Mechanical biological treatment · Radioactive waste · High-level radioactive waste management · Recycling · Regift · Reuse · Septic tank · Sewerage · Upcycling · Waste · Waste collection · Waste hierarchy · Waste legislation · Waste management · Waste management concepts · Waste sorting · Waste treatment

Categories: Bioenergy | Waste management | Waste treatment technology

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WWW.ENERGYRECOVERYCOUNCIL.ORG

ENERGY RECOVERY COUNCIL

March 22, 2011

Representative Pete Petersen
Alaska House of Representatives
State Capitol, Room 422
Juneau, AK 99801-1182

Dear Representative Petersen:

On behalf of the Energy Recovery Council (ERC), I would like to take this opportunity to commend you for introducing House Concurrent Resolution 10 (HCR 10) and to offer our support for the resolution. The waste-to-energy sector generates clean, renewable energy across the United States while providing communities with and responsible and sustainable waste management alternative.

ERC is a national trade group representing companies and communities engaged in the waste-to-energy sector. Waste-to-energy facilities generate renewable electricity using modern combustion technology equipped with state-of-the-art emissions control systems. ERC members include: Covanta Energy Corporation, Wheelabrator Technologies Inc., Babcock & Wilcox, several dozen businesses and organizations in the municipal solid waste (MSW) management and energy fields, and 28 municipalities that are served by waste-to-energy plants.

ERC supports your resolution which would encourage the State of Alaska, its municipalities, and private organizations to consider waste-to-energy to help meet your energy and waste management needs. Waste-to-energy facilities across the country—and, in fact, the world—have helped communities manage their trash in a sustainable manner that complements recycling and reduces the demand for landfilling. In fact, the U.S. Environmental Protection Agency's solid waste hierarchy stipulates that waste-to-energy is preferable to landfills. In addition, EPA has stated that waste-to-energy facilities produce electricity "with less environmental impact than almost any other source of electricity." Alaska would benefit greatly from generating energy from waste.

In conclusion, ERC supports HCR 10 and urges the Alaska legislature to adopt it quickly. If I can be of any assistance, please do not hesitate to contact me at (202) 467-6240 or tmichaels@energyrecoverycouncil.org.

Sincerely,

Ted Michaels
President

HJR

20

<TARGET><BILL>HJR 20</BILL><SUBJECT>HJR
20</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska State Legislature

Interim:
50 Front Street, Suite 203
Ketchikan, AK 99901
Phone: (907) 247-4672
Fax: (907) 225-7157

Session:
State Capitol, Room 114
Juneau, AK 99801-1182
Phone: (907) 465-3424
Fax: (907) 465-3793

Representative Kyle Johansen

House District 1

HJR 20 – "Urging the President of the United States, the United States Congress, and the Secretary of the United States Department of Agriculture not to implement protection of inventoried roadless areas under the "roadless rule" or otherwise restrict the development of necessary hydroelectric projects in the Tongass National Forest and the Chugach National Forest."

The current version of the Roadless Area Conservation Rule, "Roadless Rule", will have an adverse impact on potential hydro-power and renewable energy projects in Southeast Alaska. Construction of access and maintenance roads or transmission tower placement would become exceedingly difficult with the continuation of this policy.

The Obama administration has set a goal of having 25% of the energy generated in the United States come from renewable, "green", resources by 2025. Alaska, through the Energy Policy passed by the legislature in 2010, has a goal of 50% by 2025. The implementation of the Roadless Rule in the Tongass National Forest will create additional hurdles for the permitting and construction of hydro-power projects and their connectivity to electrified grids through interties and will not help the State or Federal Governments towards their goals.

This resolution will send a message to Washington, stating that Alaska is committed to both responsible conservation of our forests and developing renewable energy projects.

Alaska State Legislature

Interim:
50 Front Street, Suite 203
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HJR 20 – "Urging the President of the United States, the United States Congress, and the Secretary of the United States Department of Agriculture not to implement protection of inventoried roadless areas under the "roadless rule" or otherwise restrict the development of necessary hydroelectric projects in the Tongass National Forest and the Chugach National Forest."

The current version of the Roadless Area Conservation Rule, "Roadless Rule", will have an adverse impact on both hydro-power and renewable energy projects, as well as the development of potential mines in Southeast Alaska. These industries are essential to the continued well-being and economic success of residents in our region.

The Obama administration set a goal of having 25% of the energy generated in the United States come from renewable, "green", resources by 2025. Alaska, through the Energy Policy passed by the legislature in 2010, set a goal of 50% by 2025. The implementation of the Roadless Rule in the Tongass National Forest will create additional hurdles for the permitting and construction of hydro-power projects and their connectivity to electrified grids through interties and will not help the State or Federal Governments towards their goals.

Over 3,500 people are directly employed by mines is Alaska and the direct and indirect payroll from mining was over $350M last year. With an average wage of $80K per year, some of the state's highest paying jobs are in the mining industry and keeping these jobs and professionals in Alaska should be a priority for the governing body.

This resolution will send a message to Washington, stating that Alaska is committed to responsible conservation of our forests while developing renewable energy and mining projects.

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version: **HJR 20**
() Publish Date

Identifier (file name): HJR20-LEG-COU-3-21-2011
Title: "Roadless Rule & Chugach and Tongass Hydro"
Sponsor: Representative Johansen
Requester: House Special Committee on Energy, Resources

Dept. Affected: Legislature
Appropriation: Legislative Council
Allocation: Session Expenses
OMB Component Number: 782

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual							
Supplies							
Equipment							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost _____

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Initial Version

Prepared by: Shane Miller, Finance Manager — Phone 465-6626
Division: Legislative Affairs Agency — Date/Time 3/21/11 10:02 AM
Approved by: Pamela Varni, Executive Director — Date 3/21/2011
Legislative Affairs Agency

(Revised 12/29/2010 OMB)

Analysis

This fiscal note has zero impact on the Legislative Affairs Agency.

JUNEAU CHAMBER OF COMMERCE

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Goldbelt, Inc.
Huna Totem
Shattuck & Grummett
Taku Oil
True North FCU
UAS
Wells Fargo Bank of Alaska
Wostmann and Associates

A RESOLUTION OF THE JUNEAU CHAMBER OF COMMERCE URGING THE PRESIDENT OF THE UNITED STATES, THE UNITED STATES CONGRESS, AND THE SECRETARY OF THE UNITED STATES DEPARTMENT OF AGRICULTURE NOT TO IMPLEMENT PROTECTION OF INVENTORIED ROADLESS AREAS UNDER THE "ROADLESS RULE" OR OTHERWISE RESTRICT THE DEVELOPMENT OF NECESSARY HYDROELECTRIC PROJECTS IN THE TONGASS NATIONAL FOREST AND THE CHUGACH NATIONAL FOREST

06-11

WHEREAS, inventoried roadless areas, as defined in 36 C.F.R. 294.11, constitute approximately 57 percent of the acreage in the Tongass National Forest, and

WHEREAS, the United States Congress has designated an additional 35 percent of the acreage in the Tongass National Forest as wilderness, and

WHEREAS, there is an extensive system of federally protected areas in the state, and

WHEREAS, on May 28, 2010, the Secretary of the United States Department of Agriculture issued Secretary's Memorandum 1042-155 that reserves to the Secretary the authority to approve or disapprove road construction or reconstruction and the cutting, sale, or removal of timber in areas identified in the ser of inventoried roadless area maps contained in volume 2 of the Forest Service Roadless Area Conservation Final Environmental Impact Statement, dated November 2000, and

WHEREAS, the Secretary of the United States Department of Agriculture has approved only seven projects under the authority reserved in Secretary's Memorandum 1042-155, and

WHEREAS, 14 of the 15 hydroelectric projects in the Tongass National Forest and Chugach National Forest are subject to the protection of inventoried roadless areas under 36 C.F.R. 294.10 – 294.18 ("roadless rule") and will require approval by the Secretary of the United States Department of Agriculture, and

WHEREAS, failure of the Secretary of the United States Department of Agriculture to approve the hydroelectric projects in the Tongass National Forest and the Chugach National Forest would jeopardize the approval of necessary preliminary permits by the Federal Energy Regulatory Commission because, without the Secretary of Agriculture's approval, the hydroelectric projects would not be able to proceed with the field studies and planning that are required for a Federal Energy Regulatory Commission preliminary permit, and

WHEREAS, the inability to develop hydroelectric projects and construct power lines to bring electricity to communities in the state will result in continued diesel power generation that emits pollutants into the environment, and

WHEREAS, the protection of inventoried roadless areas under the "roadless rule" in 36 C.F.R. 294.10 – 294.18 and the inability to produce and distribute hydro-generated electricity will adversely affect communities in the Tongass National Forest and the Chugach National Forest and will thwart the Governor's goal of generating 50 percent if the energy in the state from renewable sources, and **WHEREAS,** the President of the United States has pledged to embrace and encourage the development of renewable energy sources, and

BE IT RESOLVED, that the Juneau Chamber of Commerce urges the President of the United States, the United States Congress, and the Secretary of the United States Department of Agriculture not to implement protection of inventoried roadless areas under 36 C.F.R. 294.10 – 294.18 or otherwise restrict the development of necessary hydroelectric projects in the Tongass National Forest and the Chugach National Forest.

COPIES, of this resolution shall be sent to the Honorable Barack Obama, President of the United States; the Honorable Joseph R. Biden, Jr., Vice-President of the United States and President of the U.S. Senate; the Honorable Tom Vilsack, United States Secretary of Agriculture; the Honorable John Boehner, Speaker of the U.S. House of Representatives; the Honorable Nancy Pelosi, Minority Leader of the U.S. House of Representatives; the Honorable Harry Reid, Majority Leader of the U.S. Senate; the Honorable Mitch McConnell, Minority Leader of the U.S. Senate; the Honorable Jeff Bingaman, Chair of the Energy and Natural Resources Committee of the U.S. Senate; and the Honorable Lisa Murkowski and the Honorable Mark Begich, U.S. Senators, and the Honorable Don Young; U.S. Representative, members of the Alaska delegation in Congress.

PASSED AND APPROVED by the Juneau Chamber of Commerce Board of Directors on the date: March 15, 2011

Cathie Roemmich
CEO, Juneau Chamber of Commerce Representing nearly 400 Business Members

CITY OF PETERSBURG
P.O. BOX 329 • PETERSBURG, ALASKA 99833
TELEPHONE (907) 772-4519
FAX (907) 772-3759

March 17, 2011

To: Honorable Kyle Johansen, Alaska State Representative
Honorable Bill Stoltz, Alaska State Representative
Honorable Bill Thomas, Alaska State Representative
Honorable Peggy Wilson, Alaska State Representative

The City of Petersburg, Alaska, wholeheartedly supports the Alaska State Legislature's House Joint Resolution No. 20, "Urging the President of the United States, the United States Congress, and the Secretary of the United States Department of Agriculture not to implement protection of inventoried roadless areas under the "roadless rule" or otherwise restrict the development of necessary hydroelectric projects in the Tongass National Forest and the Chugach National Forest."

Petersburg's City Council strongly believes implementation of the Roadless Rule in Alaska's National Forests will adversely impact the permitting and construction of hydropower projects and interties, and has therefore drafted Resolution #1964, "A resolution urging Alaska Governor Parnell and Alaska's Federal Delegation to take whatever action is necessary to stop the implementation of the Roadless Rule on Alaska's National Forests." Please see the enclosed draft copy.

With the Obama administration's goal of having 25% of the energy generated in the United States come from renewable, "green", resources by 2025, and President Obama's pledge to encourage the development of renewable energy sources, implementation of the Roadless Rule on Alaska's National Forests does not make sense.

Sincerely,
Debra K. Thompson, Deputy City Clerk for Mayor Al Dwyer
Al Dwyer, Mayor

CITY OF PETERSBURG, ALASKA

RESOLUTION # 1964

A RESOLUTION URGING ALASKA GOVERNOR PARNELL AND ALASKA'S FEDERAL DELEGATION TO TAKE WHATEVER ACTION IS NECESSARY TO STOP THE IMPLEMENTATION OF THE ROADLESS RULE ON ALASKA'S NATIONAL FORESTS

WHEREAS, the 2010 Alaska Legislature passed an Energy Policy that set a goal of having 50% of the energy generated in Alaska come from renewable, "green", resources by 2025; and

WHEREAS, the Chugach and Tongass National Forests are, once again, being subjected to the implementation of the Roadless Rule; and

WHEREAS, US Secretary of Agriculture Tom Vilsack anounced that he alone has the sole authority to approve or disapprove permits for projects within the inventoried roadless areas of the Chugach and Tongass National Forests; and

WHEREAS, the inventoried roadless areas within the Chugach and Tongass National Forests make up the majority of remaining Forest Service lands outside of Wilderness or other areas already off limits to development; and

WHEREAS, a vast majority of potential hydroelectric projects that could be developed to supply renewable energy to Alaska's communities are located within inventoried roadless areas; and

WHEREAS, the inability to develop hydroelectric projects or the transmission lines necessary to transmit this power to Alaska's communities will result in continued diesel generation and resultant pollutants emitted into the environment; and

WHEREAS, the current version of the Roadless Rule will adversely impact the communities that reside within Alaska's National Forests and potential hydro-power and renewable energy projects in Southeast Alaska.

THEREFORE BE IT RESOLVED the City Council for the City of Petersburg, Alaska, strongly urges Alaska Governor Parnell and Alaska's Federal Delegation to take whatever action is necessary to stop the implementation of the Roadless Rule on Alaska's National Forests.

PASSED and **APPROVED** by the City Council of the City of Petersburg, Alaska on March 21, 2011.

_____
Al Dwyer, Mayor

ATTEST:

_____
Kathy O'Rear, City Clerk

SEDA
SITKA ECONOMIC DEVELOPMENT ASSOCIATION
329 Harbor Drive, Suite 212 Sitka, Alaska 99835 (907) 747-2660 fax (907) 747-7688 www.sitka.net

March 16, 2011

The Honorable Peggy Wilson
Alaska House of Representatives
State Capitol Room 408
Juneau, Alaska 99801

Dear Representative Wilson:

The Sitka Economic Development Association is writing to express support for House Joint Resolution 20 regarding the affects of the Roadless Rule on hydro-electric projects located within the Tongass and Chugach National Forests.

Development of additional hydro-electric capacity in Southeast Alaska is vital to the region's economy and to the long-term health of the National Forests in question.

The financial, national security and environmental costs associated with the use of fossil fuels make development of hydro-electricity in Southeast Alaska the obvious course of action. Unlike the large hydro-electric dams of the lower-48 states, the hydro-electric dams of Southeast Alaska are based on alpine lake systems that are renewed by abundant annual rainfall and are relatively environmentally friendly, especially when compared with the continued burning of diesel for generating electricity.

It is ironic and extremely frustrating that at the same time the Federal Government is supporting and pushing for the development of renewable energy projects it is also creating obstacles and barriers that prevent such development. Placing the Tongass and Chugach National Forests under the constraints of the Roadless Rule will effectively make hydro-electric development in these areas impossible due to increased costs and regulatory burden.

The expansion of Sitka's Blue Lake dam has been in the planning stages for a number of years and construction is scheduled to begin early in 2012. The implementation of the Roadless Rule has already created problems for this project by prohibiting the removal of a stand of trees that would be underwater when the level of Blue Lake is raised, creating a turbidity issue that will costs millions of additional dollars to resolve.

SEDA's top strategic priority is to support the development of renewable energy resources in Sitka and Southeast Alaska. Without increased hydro-electric capacity, sustaining our current level of economic activity will be challenging at best and new economic development will be virtually impossible.

SEDA, therefore, strongly supports HJR 20.

Sincerely,

Garry A. White, Executive Director

Alaska Power Association
703 West Tudor Road, Suite 200
Anchorage, Alaska 99503-6650
907-561-6103
Fax: 907-561-5547
www.alaskapower.org

March 16, 2011

Representative Kyle Johansen
Finance Committee Co-chair Bill Thomas
Finance Committee Co-chair Bill Stoltze

Dear Representatives Johansen, Thomas, and Stoltze:

Alaska Power Association (APA) strongly supports House Joint Resolution 20 and appreciates your efforts to put the Alaska State Legislature on record as opposing the federal administration's unreasonable efforts regarding implementation of roadless rule regulation for the Tongass and Chugach National Forests.

Alaska Power Association is the statewide trade association for the electric utilities that supply power to more than a half-million Alaskans from Barrow to Adak, through the Interior and Southcentral, and down the Inside Passage.

As your resolution articulates, the requirement for the U.S. Secretary of Agriculture to personally sign permits for hydroelectric projects within roadless designated areas of the Tongass and Chugach will severely impact or outright kill hydro efforts at the same time the White House is advocating for the development of renewable resources.

Preliminary permits issued by the Federal Energy Regulatory Commission are for a three-year period. Considerable field study is required to perfect such permits but, without roadless access permission, project applicants cannot get into the field and their preliminary permits could well expire. Hydro projects will not get built, resulting in continued dependence on diesel generation that exceeds 50 cents per kilowatt hour in many rural communities.

The current roadless rule impediments present an illogical, Catch 22 situation for Alaska utilities and the residents they serve.

APA and its members urge the legislature to pass HJR 20 expeditiously to send a clear message to the federal government that its roadless rule position is misguided and costly to our State. Washington, D.C. cannot have it both ways on renewable energy development.

Sincerely,

Marilyn Leland
Executive Director

ALASKA POWER ASSOCIATION

R E S O L U T I O N

A Resolution Recommending the Elimination of Impediments to the Development of Hydroelectric Power Projects within National Forests (11-15)

Government at all levels, electric utilities, and our consumers are embracing development of renewable energy sources for the production of electricity. Renewable energy sources have environmental, economic and social benefits that are well documented. Hydroelectric energy is among the cleanest of all renewable resources and the most cost effective during the long, low-maintenance lives of the projects.

Alaska is blessed with an abundance of hydro resources from its lakes and streams that can be built with minimal environmental impact. Most new hydro development in Alaska replaces costly, finite and less environmentally benign fossil generation fuels, specifically diesel, coal and natural gas.

Special use permits necessary for federal approval of hydro projects within Roadless Rule designated areas of national forests must be individually signed by the Secretary of the United States Department of Agriculture (USDA). In addition to Roadless Rule designation permits, national forest land use plans must be amended to accommodate hydro projects located in designated "back country" areas of a national forest.

Prior rights-of-way, easements and other authorizations issued or managed by the United States Forest Service may need to be modified to not impede the development of otherwise acceptable projects. The foregoing cumbersome federal actions add a year or more to the hydro project approval process at the Federal Energy Regulatory Commission (FERC), seriously jeopardizing the three-year timeframe within which applicants are bound to perfect their FERC permits.

Alaska Power Association urges Alaska's Congressional delegation and their fellow members of Congress, the Governor's Office, the Obama Administration and federal agencies such as USDA and FERC to work collaboratively and expeditiously to eliminate the burdensome and, in some cases, fatal impediments to hydro development caused by the need for the Secretary of Agriculture's personal signature on Roadless Rule designation special use permits and mandatory forest plan amendments, where national forest lands are involved.

APA further urges the highest level of support from the above-mentioned lawmakers and agencies for ensuring that the US Forest Service works cooperatively with project proponents and others to eliminate unnecessary impediments to project development created by prior use authorizations.

(Adopted Dec. 2010)

Association Members
Alaska Electric and Energy Co-op
Alaska Electric Light & Power
Alaska Power & Telephone
Alaska Railbelt Energy Authority JAA
Alaska Village Electric Cooperative
Anchorage Municipal Light & Power
Aurora Energy
Barrow Utilities & Electric Co-op
Chugach Electric Association
Copper Valley Electric Association
Copper Valley Telephone Co-op
Cordova Electric Cooperative
Doyon Utilities
City of Galena
Golden Valley Electric Association
Homer Electric Association
INN Electric Cooperative
Inside Passage Electric Co-op
Kodiak Electric Association
Kotzebue Electric Association
Kwaan Electric Transmission Intertie Cooperative
Matanuska Electric Association
McGrath Light and Power
Metlakatla Power & Light
Middle Kuskokwim Electric Co-op
Naknek Electric Association
Nome Joint Utility System
North Slope Borough
Nushagak Cooperative
OTZ Telephone Cooperative
City of Seward
Southeast Alaska Power Agency
Tanalian Electric Cooperative
Tanana Power Company
TDX Power
Unalakleet Valley Electric Co-op
Yakutat Power

Anchorage office
703 W. Tudor Road,
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Anchorage, Alaska
99503
907-771-5700
1-877-992-7322
Juneau office
302C Assembly
Building
211 Fourth Street
Juneau, Alaska 99801
907-463-3636

alaskapower.org

Southeast Conference

March 16, 2010

Representative Kyle Johansen
State of Alaska
Capitol Building Room 114
Juneau, Alaska 99811

RE: Support for HJR 20-"Urging the President of the United States, the United States Congress, and the Secretary of the United States Department of Agriculture not to implement protection of the inventoried roadless areas under the "roadless rule" or otherwise restrict the development of necessary hydroelectric projects in the Tongass National Forest and the Chugach National Forest."

Dear Representative Johansen;

Southeast Alaska is an archipelago with more than a thousand rugged, forested islands harboring isolated villages which are scattered across its 500 mile length and are accessible only by boat or small plane. More than 90% of that land is owned and governed by the Federal Government. The people of Southeast Alaska are a hearty bunch of folks and are able to overcome many obstacles; however they must have access to land to survive.

Southeast Conference is a regional, nonprofit corporation that advances the collective interest of the people, communities and businesses in Southeast Alaska. Members include municipalities, native corporations and village councils, regional and local businesses, civic organizations and individuals throughout the region. Our goal is to support policies that promote strong economies, healthy communities, and a quality environment. We are the State-designated Alaska Regional Development Organization (ARDOR), the federally-designated Economic Development District (EDD), and the Governing Board for the Resource Conservation and Development Council (RC&D) for Southeast Alaska. Each of these designations requires Southeast Conference to take an active role in regional resource management and economic development planning. Our relationship with our members gives us the advantage of speaking with a unified voice in support of legislation or policy that will be for the betterment of our region.

In the past 10 years Southeast Conference in partnership with many other agencies and organizations have put an extensive amount of effort into the development of affordable, self sustaining, renewable "green" energy projects in our region. And it is fairly obvious that with the federal government controlling such vast amounts of the region and the energy resources within, that land access is a critical issue. And it is equally obvious that during these past few years, the forest was adequately protected during development of energy resources without the roadless enforcement. We have managed to develop several major hydro projects that are providing affordable renewable "green" energy to a portion of our people. Unfortunately we still have entire communities paying up to ninety cents a kilowatt hour for electricity. Our small businesses are the hardest hit and as you know, that has quite a ripple effect in these communities.

Lack of access to land and the paralyzing permitting process of the federal government are killing our communities. People are not able to heat their homes and turn on their lights much less start or

P.O. Box 21989 612 W. Willoughby Avenue, Suite B, Juneau Alaska 99802
(907) 523-2310 (907) 463-5670 Fax info@seconference.org
www.seconference.org

maintain a business. The financial obligation to heat schools or community buildings is crippling in these communities. Jobs are at a premium and there is no good news in sight.

As the government in Washington DC, environmental groups, and the courts continue to lock us out of our national forest our people in Southeast Alaska are being forced to leave the place they have called home for hundreds of years in order to survive.

The Obama administration has set a goal of having 25% of the energy generated in the US come from renewal, "green", resources by 2025. Alaska, through our Energy Policy passed by the legislature in 2010, has a goal of 50% by 2025. As it stands now 14 out of 15 hydroelectric projects in the Tongass National Forest and Chugach National Forest are subject to the protection of inventoried roadless areas under 36 C.F.R. 294.10-294.18 ("roadless rule") and will require approval by the Secretary of the US Department of Agriculture. Any attempt to develop a biomass infrastructure would be impossible with the current restrictions on the Tongass, thus road blocking any efforts made toward those goals.

The Obama administration has, on many occasions, promised jobs for the people of our country. It is time for this administration to set aside the zealous opinions of outside environmental groups and fulfill that promise. Exempt the Tongass and Chugach National Forest from the roadless rule and open these public lands for responsible resource development and allow the people that live here the opportunity to have affordable, "green" energy and a thriving economy.

Sincerely,

Shelly Wright

Shelly Wright
Executive Director

CC: Senator Lisa Murkowski
Senator Mark Begich
Congressman Don Young

P.O. Box 21989 612 W. Willoughby Avenue, Suite B, Juneau Alaska 99802
(907) 523-2310 (907) 463-5670 Fax info@seconference.org
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SEAPA
Southeast Alaska Power Agency

1900 1st Avenue, Suite 318
Ketchikan, Alaska 99901
Ph: (907) 228-2281 • Fax: (907) 225-2287
www.seapahydro.org

March 15, 2011

To: The Alaska State Legislature

Re: House Joint Resolution No. 20

On behalf of The Southeast Alaska Power Agency (SEAPA), I am writing to inform you of our support for House Joint Resolution No. 20. SEAPA is the owner of the Swan Lake and Tyee Lake hydro projects in southern Southeast Alaska. We deliver renewable hydropower to our member communities of Ketchikan, Wrangell and Petersburg. In addition, we own and maintain 175 miles of transmission lines between these communities. Ketchikan and Petersburg also own several small hydropower plants and, when combined with our facilities, we are able to meet almost all of the current power demands with renewable hydropower. However, loads continue to increase and more hydropower facilities will have to be built. We are fortunate that the geography in the region, coupled with high precipitation, lends itself nicely for the development of hydropower. There are numerous potential projects that can be developed to assure the majority of our power and energy is delivered by hydropower.

Unfortunately, most of these project reside in the Tongass National Forest and are classified as 'roadless'. The implementation of the 'roadless rule' would be not only devastating to our local economies but also devastating to our ability to develop new hydro projects.

We urge passage of HJR20 and also urge the Governor and Legislature to take whatever actions are necessary to stop the implementation of protection of inventoried roadless areas under the "roadless rule" in the Tongass and Chugach National Forests.

Sincerely,

Dave Carlson, CEO
The Southeast Alaska Power Agency

cc: Governor Sean Parnell
Congressman Don Young
U.S. Senator Lisa Murkowski
U.S. Senator Mark Begich
Senator Bert Stedman
Representative Peggy Wilson
Representative Kyle Johansen
Lew Williams, III, Mayor, City of Ketchikan
Jeremy Maxand, Mayor, City of Wrangell
Al Dwyer, Mayor, City of Petersburg
SEAPA Board of Directors

JUNEAU
CHAMBER OF COMMERCE

3100 Channel Drive, Suite 300 • Juneau AK 99801• (907) 463-3488 • Fax (907) 463-3489
E-mail: juneauchamber@gci.net • jcc@alaska.com • Web site: http://www.juneauchamber.com

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Goldbelt, Inc
Huna Totem
Shattuck & Grummett
Taku Oil
True North FCU
UAS
Wells Fargo Bank of Alaska
Westmann and Associates

A RESOLUTION OF THE JUNEAU CHAMBER OF COMMERCE IN OPPOSITION OF "the Obama Administration's new approach to forest management on the Tongass National Forest"

07-10

WHEREAS, the State of Alaska and U.S. Senator Lisa Murkowski oppose "the Obama Administration's new approach to forest management on the Tongass National Forest" as described in USDA Secretary Thomas Vilsack's September 3, 2010 letter to Senator Lisa Murkowski and

WHEREAS, the U.S. Forest Service Alaska Region (USFS) presented an Integrated 5-year Plan for the Tongass National Forest essentially applying a de facto roadless rule on the Tongass NF in contradiction to the USDA Settlement Agreement with the State of Alaska on the roadless rule and

WHEREAS, the new 5-year schedule is not consistent with the 2008 Tongass Land Management Plan (TLMP) and is prematurely transitioning commercial timber harvests to young growth forests generally sixty years of age or less and

WHEREAS, implementation of the new 5-year schedule and de facto application of the roadless rule on the Tongass will reduce future access to the Tongass NF discouraging private investments for mining, timber, hydro-electric inter-ties and other activities which would help improve the economy and quality of life in Southeast Alaska's forest dependent communities.

THEREFORE, BE IT RESOLVED, that the Juneau Chamber of Commerce join the State of Alaska and U.S. Senator Lisa Murkowski's opposition to the Obama Administration and USDA Secretary's new approach to forest management on the Tongass and U.S. Forest Service five year schedule of activities and

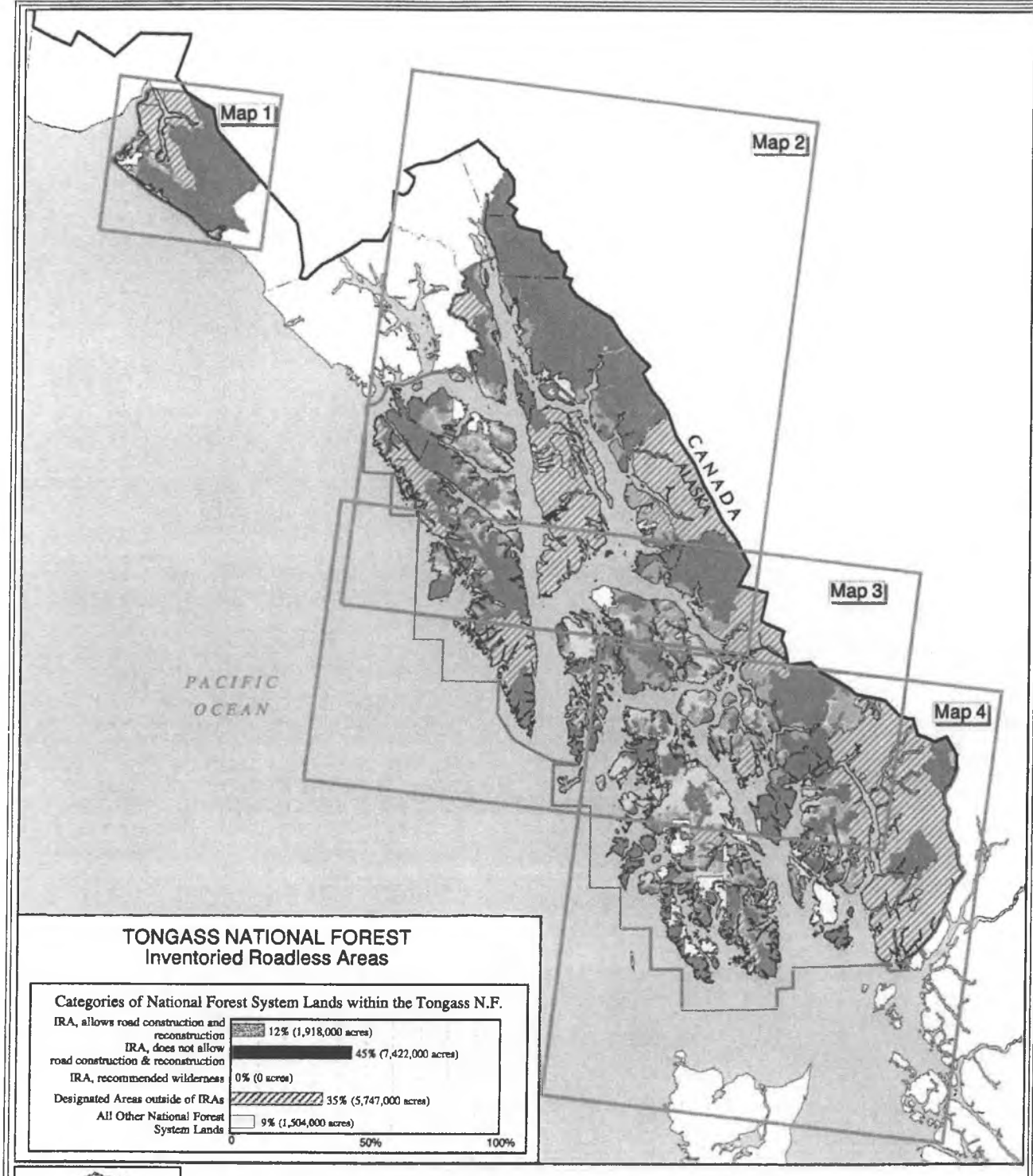
BE IT FURTHER RESOLVED, that the Juneau Chamber of Commerce supports the implementation of the 2008 Tongass Land Management Plan and

BE IT FURTHER RESOLVED, to transmit this Resolution to the Alaska Governor, Alaska Congressional Delegation, Southeast Alaska Legislators, The Southeast Conference, and Juneau Mayor and Assembly.

Record of December 28, 2010 Juneau Chamber Board meeting action:

PASSED AND APPROVED by the Juneau Chamber of Commerce Board of Directors on this date: December 28, 2010

Cathie Roemmich, CEO
Juneau Chamber of Commerce
At the direction of the Board of Directors and
Representing nearly 400 Business Members



TONGASS NATIONAL FOREST
Inventoried Roadless Areas

Categories of National Forest System Lands within the Tongass N.F.



The USDA Forest Service uses the most current and complete data available. GIS data and product accuracy may vary. Using GIS products for purposes other than those for which they were intended may yield inaccurate or misleading results. The USDA Forest Service reserves the right to correct, update, modify, or replace GIS products without notification.

September 15, 2000
Data Supplied by Tongass National Forest
Contact: Tongass N.F.
Federal Building
648 Mission Street
Ketchikan, AK 99901
(907) 228-6202

SCALE in MILES
40 0 40

- Inventoried Roadless Area where road construction or reconstruction is allowed
- Inventoried Roadless Area where road construction or reconstruction is not allowed
- Inventoried Roadless Area where road construction or reconstruction is not allowed, and the forest plan recommends as wilderness
- Designated Areas outside of Inventoried Roadless Areas
- National Forest System lands outside of Inventoried Roadless Areas - not all private land is shown on the map

Interstate Highway Other Highways County boundaries

ROADLESS RULE
Talking Points/Bullets

- Inventoried roadless areas in the Tongass National Forest amount to 9.5 million acres or 57% of existing acreage.
- Inventoried roadless areas in the Chugach National Forest amount to 5.4 million acres or 99% of existing acreage.
- In addition, congressionally designated wilderness makes up 5.9 million acres (35%) of the Tongass.
- Within the State of Alaska, there is an extensive network of federally protected acres. Federal lands comprise 59% of the State and 40% of Federal lands in Alaska are in conservation system units.
- On May 28, 2010, the Secretary of Agriculture issued a second memorandum (1045-155), continuing to reserve to the Secretary the authority to approve or disapprove construction and reconstruction of roads and the cutting, sale or removal of timber in those areas identified in the set of inventoried roadless area maps contained in the 11/2000 EIS for Roadless Area Conservation Rule.
- Since the issuance of memorandum 1045-155, the Secretary has only approved 7 projects. Two of these related to the Swan – Tyee Intertie: the first approved the easement for the already permitted and constructed line and the second approved the necessary helipads for transmission line access.
- There are approximately 15 hydro projects on the Chugach & Tongass National Forests that have at least a preliminary permit from FERC.
- 14 of these 15 projects are subject to the Roadless Rule and will require the Secretary of Agriculture's approval.
- It appears that the Secretary is not 'disapproving' permits but is not approving them either. This places these projects in jeopardy of losing their FERC preliminary permit because they are unable to proceed with the field studies and planning as required by FERC.
- The Integrated Resource Planning process is beginning in Southeast Alaska which is intended to identify the most feasible and economic transmission line and hydroelectric projects. The majority of these projects will be on or will cross the Tongass National Forest and most will be located within the inventoried Roadless areas. The re-implementation of the Roadless Rule will seriously jeopardize the development of hydro and the displacement of diesel generation.
- In addition to the barriers the Roadless Rule has placed upon future hydro and transmission line development, the Roadless Rule essentially terminates or substantially delays any type of economic development on Alaska's National Forests including commercial timber harvest, road building, mining and other activities that promote economic growth.

Tongass National Forest Energy Program – 2010 -2014 March 2, 2011

Proposed and Unconstructed Projects

Name - District – Applicant - Power destination	Comments	Forest Plan LUD, Roadless	2010	2011	2012	2013	2014
1. Schubee Lake -- JRD, Alaska Power &Tel, Upper Lynn Canal	FERC issued prelim permit 11/30/2010. AP&T seeking funding from AEA.	Semi-Remote Recreation, **Roadless #302**	FS inv permit, studies	Studies	Studies	Draft LA	Final LA FERC EA
2. Lace River -- JRD, Green Power Development, LLC Kensington Mine	FERC issued prelim permit 09/15/2010	**LUD II Roadless #301**	----	FS inv permit, Studies	Draft LA	Final LA	FERC EA
3. Gastineau Channel Tidal --JRD, Natural Currents Energy Serv, Juneau – SE Intertie	FERC prelim permit 04/30/2010. Will probably not affect NFS lands/resources.	N/A	Studies	Studies	?	?	?
4. Sweetheart Lake -- JRD, Juneau Hydropower Inc. Juneau – SE Intertie	Applicant is developing study plans and Scoping Doc 1.	Semi-Remote Recreation **Roadless #302**	FS inv permit, studies	Studies	Draft LA	Final LA	FERC EA
5. Angoon Hydro/Thayer --ANM, Kootznoowoo Angoon	NEPA completed. (Non-FERC project)	**Wilderness**	Development plans, permits?	Plans, permits?	?	?	?
6. Killisnoo/Angoon Tidal -- ANM, Natural Currents Energy Serv, Angoon	FERC prelim permit app 08/2010. Will probably not affect NFS lands/resources.	N/A	Studies	Studies	?	?	?
7. Icy Passage Tidal -- HRD, Natural Currents Energy Serv, Hoonah	FERC prelim permit 04/30/2010. Will probably not affect NFS lands/resources.	N/A	Studies	Studies	?	?	?
8. Gartina Creek – HRD, Inside Passage Electrical Cooperative, Hoonah	FERC ruled that licensing is required. Project improvements on Sealaska land. Upper reaches of watershed on NFS lands.	N/A	?	?	?	?	?

Name - District – Applicant - Power destination	Comments	Forest Plan LUD, Roadless	2010	2011	2012	2013	2014
9. Port Frederick Tidal – --HRD Alaska Power & Tel Hoonah	Is a hydroelectric project, rather than hydrokinetic. FERC prelim permit 11/18/2009.	**Old-Growth Habitat, Roadless #343**	FS inv permit, studies ?	Studies ?	Studies ?	Draft LA ?	Final LA ?
10. Neka Geothermal – HRD Tongass Energy Company Unknown	Site nomination rec'd 8/30/2010. FS working with BLM. TNF minerals group has the lead. (Non-FERC)	Timber production	?	?	?	?	?
11. Upper Tenakee Geothermal – SRD, Tlingit Haida CC Unknown	No recent activity. TNF minerals group has the lead. (Non-FERC)	Semi-Remote Recreation, **Roadless #311**	?	?	?	?	?
12. Tenakee Sp/Indian River – SRD City of Tenakee Springs Tenakee Springs	Project is on State/City but will impact FS fishpass. Upper reaches of watershed on NFS lands. FERC determined licensing not needed 5/26/2010. (Non-FERC)	N/A	Feasibility, DI to FERC	Studies, Design, Coordination	Construct ?	Construct ?	On-line ?
13. Blue Lake Modification -- SRD City & Borough of Sitka Sitka	Sitka applied to FERC to amend existing license and increase capacity. Would raise dam by 83 feet and inundate additional 362 ac of NFS lands. **FERC expected to request 4(e)s very soon.**	**Municipal Watershed, Roadless #331**	Draft LA Final LA	FERC EA, License	Construct.	Construction	On-line
14. Takatz Lake -- SRD City & Borough of Sitka Sitka and SE Intertie	FERC prelim permit on 09/19/2008.	Semi-Remote Recreation and **Remote Recreation, Roadless #330, 331**	Studies	Draft LA	Final LA	FERC EA	License

Name - District – Applicant - Power destination	Comments	Forest Plan LUD, Roadless	2010	2011	2012	2013	2014
15. Baranof Chinook – SRD Hawken LLC Proposed salmon research facility	ADF&G and NSRAA not involved in salmon facility; appears to be private project. FERC determined licensing is required 6/2010.	**Remote Recreation, Roadless #330**	----	?	?	?	?
16. Little Port Walter/Osprey Lake -- SRD NOAA – NMFS Little Port Walter Marine Station	Federally-owned project. Non-FERC.	**Remote Recreation, Roadless # 334**	NEPA	NEPA, FS permit,	Construct.		
17. Cascade Creek -- PRD Cascade Creek LLC SE Intertie, BC, Lower 48	2nd FERC prelim permit expired 1/31/2011. Applicant applied for new prelim permit on 2/1/2011. No decision yet by FERC. Draft license application and draft EA filed and **comments, prelim 4(e)s must be to FERC by May 19, 2011.**	Semi-Remote Recreation, Old Growth Habitat, Scenic Viewshed, Modified Landscape **Roadless #202**	Studies	Studies ? Draft EA	Final EA/LA ?	FERC EA ?	License ?
18. Ruth Lake -- PRD City of Angoon SE Intertie, BC, Lower 48	FERC prelim permit on 11/05/2009.	**Old Growth Habitat, Roadless #202**	Studies ?	FS inv permit ? Studies ?	?	?	?
19. Scenery Lake -- PRD City of Angoon SE Intertie, BC, Lower 48	FERC prelim permit on 10/01/2009	Semi- Remote Recreation, **Roadless #202**	Studies ?	FS inv permit ? Studies ?	?	?	?
20. Sunrise Lake – WRD City of Wrangell Unknown	Project is inactive. No FERC correspondence since 2008. City wishes to keep FS inv permit in effect.	Scenic Viewshed, **Roadless #231**	--	--	--	--	--

Name - District – Applicant - Power destination	Comments	Forest Plan LUD, Roadless	2010	2011	2012	2013	2014
21. Neck Lake – TBRD Alaska Power & Tel Whale Pass	Project is on State land with FS road reservation. FERC determined licensing is required11/04/2010.	N/A	Paperwork	?	?	?	?
22. Reynolds Creek – CRD Haida Corp. and AP&T Prince of Wales Island	Project is on private land and is not expected to affect NFS resources.	N/A	Financing, Plans	Plans, Construction	Construct		
23. Lake Shelokum – KMRD Alaska Power & Tel SE Intertie	FERC prelim permit 05/01/2009.	**Special Interest Area, Roadless #529**	----	FS inv permit, Studies	Studies	Draft LA	Final LA
24. Bell Island Geothermal – KMRD, Starkey Wilson Swan-Tyee Intertie	NEPA in progress. TNF minerals group has lead. (Non-FERC)	Semi-Remote Recreation, **Roadless # 529**	FS consent to BLM lease ?	NEPA to consider roadless.	?	?	?
25. Whitman Lake – KMRD Ketchikan Public Utilities Ketchikan, Swan-Tyee Intertie	Project was licensed in May 2009. Construction funding still pending.	**Old-Growth Habitat, Roadless #524**	Post-licensing required plans	Post-licensing plans, FS sp use permit	Construct	Construction	
26. Mahoney Lake – KMRD Cape Fox Corp. and AP&T Swan-Tyee Intertie	Licensed, unconstructed. Stay of license since 2004. Project is on private land but planned access road might be on NF.	N/A	?	?	?	?	?
27. Soule River – KMRD Alaska Power & Telephone BC and Lower 48	2nd FERC prelim permit 09/22/2009. Draft license application and draft EA filed; **comments, prelim 4(e)s must be to FERC by May 2, 2011.**	**Remote Recreation, Roadless #530**	Studies	Draft LA Final LA ?	?	FERC EA?	License ?

Typical project activities and timeline:

Year 1: Applicant submits application to FERC and is issued a Preliminary Permit. This gives applicant exclusive right to study feasibility of a site and file a license application within 3 years. FS files as intervenor and submits comments. Applicant applies to FS for investigative studies permit. FS issues special use authorization for investigative studies.

Year 1-2: Pre-application document (PAD) is submitted by applicant to initiate public process and describe project thought to be feasible. FS provides comments. Study plans are developed in consultation with stakeholders. Field studies are conducted. FS provides comments.

Year 2-3: More studies. Applicant prepares Scoping Documents 1 and 2. Applicant prepares Draft License Application and submits to FERC. Includes detailed description of project and environmental analysis. FS comments and submits preliminary 4(e) terms and conditions.

Year 3-4: Applicant prepares/submits Final License Application to FERC, including responses and revisions based on DLA comments. FERC issues EA as final step. Applicant may submit application to FS for permit for the licensed project.

Year 4-5: FERC issues license. Applicant completes required plans for construction, monitoring, etc. FS comments. Applicant submits application to FS for permit for the licensed project—if has not already done so. FS issues decision and authorizes project to occupy NFS lands.

Year 5- ??: Construction of project. FS reviews, monitors, inspects.

HJR

23

<TARGET><BILL>HJR 23</BILL><SUBJECT>HJR 23</SUBJECT><COMM>HENE27</COMM></TARGET>

Alaska House of Representatives

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House Special Committee on Energy

Sponsor Statement

HJR 23
Hydroelectric Power; Renewable Energy

House Joint Resolution 23 urges the United States Congress to classify hydroelectric power as a renewable and alternative energy source.

The U.S. has long used targeted tax credit programs to incentivize investment and innovation in the energy sector. This is true for fossil and renewable projects resources alike — and the Investment and Production Tax Credits for renewable energy have been highly successful. According to the National Hydropower Association, tens of thousands of jobs and billions of dollars in private investment across industries — not to mention gigawatts of affordable, reliable, and renewable power — have been driven by smart tax policies.

Hydroelectric has extraordinary potential in Alaska, and the ability to displace diesel generated power with little to no environmental impact. However, hydropower receives only one half the credit available to other renewable energy sources. Equalizing the tax credit for hydropower will help Alaskans in their efforts to displace costly non-renewable generation of power.

HJR 23 sends a strong message urging Congress to develop a working definition of renewable and alternative which includes our hardest working renewable resource, hydropower. Please join me and sending this unified resolution to our elected Representatives in Washington D.C.

27-LS0660\M.2
Kane
3/24/11

AMENDMENT #1

OFFERED IN THE HOUSE BY REPRESENTATIVE TUCK

TO: HJR 23

Page 2, line 17, following "source":

Insert ", as long as there is no other economic competition for the water resource,"

FISCAL NOTE

STATE OF ALASKA
2011 LEGISLATIVE SESSION

Fiscal Note Number
Bill Version: **HJR 23**
() Publish Date

Identifier (file name): HJR23-LEG-COU-3-21-2011
Title: "Hydroelectric Power; Renewable Energy"
Sponsor: House Special Committee on Energy
Requester: House Special Committee on Energy

Dept. Affected: Legislature
Appropriation: Legislative Council
Allocation: Session Expenses
OMB Component Number: 782

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2012**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**FY 2017**
Personal Services							
Travel							
Contractual							
Supplies							
Equipment							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF							
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2011) cost _____

POSITIONS

Full-time							
Part-time							
Temporary							

Why this fiscal note differs from previous version

Initial Version

Prepared by: Shane Miller, Finance Manager — Phone 465-6626
Division: Legislative Affairs Agency — Date/Time 3/21/11 10:19 AM
Approved by: Pamela Varni, Executive Director — Date 3/21/2011
Legislative Affairs Agency

(Revised 12/29/2010 OMB)

Analysis

This fiscal note has zero impact on the Legislative Affairs Agency.

112TH CONGRESS
1ST SESSION

S. _____

To extend certain Federal benefits and income tax provisions to energy generated by hydropower resources.

IN THE SENATE OF THE UNITED STATES

Ms. MURKOWSKI (for herself and Mr. BEGICH) introduced the following bill; which was read twice and referred to the Committee on _____

A BILL

To extend certain Federal benefits and income tax provisions to energy generated by hydropower resources.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Hydropower Renewable Energy Development Act of 2011".

SEC. 2. HYDROELECTRIC ENERGY TREATED AS RENEWABLE ENERGY.

Notwithstanding any other provision of law or regulation, for purposes of any Federal program or standard, the term "renewable energy" shall include hydroelectric

energy generated in the United States by a hydroelectric facility, including electric power produced by efficiency improvements and capacity additions, generation added to nonpower dams, conduits, marine and hydrokinetic resources, lake taps, pumped storage facilities, and conventional hydropower.

SEC. 3. PRODUCTION TAX CREDIT FOR HYDROPOWER RESOURCES.

(a) IN GENERAL.—Subparagraph (A) of section 45(c)(8) of the Internal Revenue Code of 1986 is amended—

(1) by striking "and" at the end of clause (i),

(2) by striking the period at the end of clause (ii) and inserting ", and", and

(3) by adding at the end the following new clause:

"(iii) in the case of any hydropower facility described in subparagraph (D), the hydropower production from the facility for the taxable year.".

(b) PRODUCTION.—Paragraph (8) of section 45(c) of the Internal Revenue Code of 1986 is amended by adding at the end the following new subparagraph:

"(D) OTHER HYDROPOWER PRODUCTION FACILITIES.—For purposes of subparagraph

(A), a facility is described in this subparagraph if such facility—

"(i) is a hydroelectric dam or non-hydroelectric dam—

"(I) which is placed in service after the date of the enactment of the Hydropower Renewable Energy Development Act of 2011, and

"(II) which would be described in subparagraph (A)(i) or (C) but for the placed in service date,

"(ii) is a hydroelectric facility not described in clause (i) which has a nameplate capacity rating of less than 50 megawatts, or

"(iii) is not described in clause (i) or (ii) and generates energy through the use of a lake tap or pumped storage.".

(c) QUALIFIED FACILITIES.—Paragraph (9) of section 45(d) of the Internal Revenue Code of 1986 is amended to read as follows:

"(9) QUALIFIED HYDROPOWER FACILITY.—

"(A) INCREMENTAL HYDROPOWER PRODUCTION.—In the case of a facility described in subsection (c)(8), without regard to subpara-

graph (C) or (D) thereof, which produces incremental hydropower production, the term 'qualified facility' means such facility but only to the extent of such incremental hydropower production attributable to efficiency improvements or additions to capacity described in subsection (c)(8)(B) placed in service after August 8, 2005, and before January 1, 2014.

"(B) PRODUCTION FROM CERTAIN NON-HYDROELECTRIC DAMS.—In the case of a facility described in subsection (c)(8)(C) which produces qualified hydropower production, the term 'qualified facility' means any such facility placed in service after August 8, 2005, and before January 1, 2014.

"(C) PRODUCTION FROM OTHER HYDROPOWER FACILITIES.—In the case of qualified hydropower production at a facility after the date of the enactment of the Hydropower Renewable Energy Development Act of 2011, the term 'qualified facility' includes any such facility which is described in subsection (c)(8)(D).

"(D) CREDIT PERIOD.—In the case of a qualified facility described in subparagraph (A), the 10-year period referred to in subsection (a)

shall be treated as beginning on the date the efficiency improvements or additions to capacity are placed in service.".

(d) INCREASE IN CREDIT RATE.—Subparagraph (A) of section 45(b)(4) of the Internal Revenue Code of 1986 is amended by striking "(7), (9), or (11)" and inserting "or (7)".

(e) EFFECTIVE DATE.—The amendments made by this section shall apply to electricity produced after the date of the enactment of this Act.

SEC. 4. 5-YEAR ACCELERATED DEPRECIATION PERIOD FOR EQUIPMENT WHICH PRODUCES ELECTRICITY FROM MARINE RENEWABLES AND HYDROPOWER.

(a) IN GENERAL.—Subclause (III) of section 168(e)(3)(B)(vi) of the Internal Revenue Code of 1986 is amended to read as follows:

"(III) is described in section 45(d)(11) (without regard to any placed in service date) and converts marine and hydrokinetic renewable energy (as defined in section 45(c)(10)) into useable energy,".

(b) CONVENTIONAL HYDROPOWER.—Clause (vi) of section 168(e)(3)(B) of the Internal Revenue Code of

1986 is amended by adding at the end the following new subclause:

"(IV) is described in section 45(d)(9) (without regard to any placed in service date) and has qualified hydropower production (as defined in section 45(c)(8)), and".

(c) EFFECTIVE DATE.—The amendments made by this section shall apply to property placed in service after the date of the enactment of this Act.

HYDRO WORKS FOR AMERICA

NHA Study Highlights

Job Creation Opportunities in Hydropower

Key Highlights

Capacity by 2025

- **60,000MW** of new capacity
- **160,000MW** installed
- **400,000MW** potential capacity

Jobs by 2025

- **300,000** jobs now
- **1.4 million** jobs created by U.S. hydro industry

Approach

The study examined hydropower's growth under a "business as usual" scenario and under a national policy of 25% renewable generation.

Both cases: **Big gains for American consumers and workers.**

Background

In early 2009, the National Hydropower Association commissioned Navigant Consulting, Inc., to conduct a study examining the hydropower industry's job-creation and capacity-growth potential.

Navigant's assessment confirmed what Energy Secretary Stephen Chu recently described as an "incredible opportunity" to develop America's "lowest-cost energy option."

The results demonstrate the industry's extraordinary potential to expand its contribution to the country's energy, environmental, and economic goals: Hydropower can create 1.4 million cumulative jobs and add 60,000 megawatts of affordable, domestic, renewable energy by 2025.

Findings

The study examined the industry's potential under two different scenarios:

- "Business as usual" where national policies mandate 10% renewable generation
- "Accelerated case" with a 25% renewable generation requirement

Both scenarios also assume existing federal and state incentives for renewable energy development, such as tax incentives and state RES programs, remain in place.

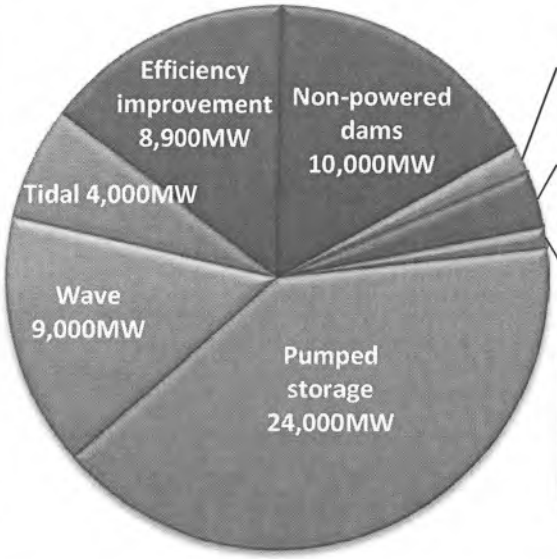
Under both scenarios, the U.S. hydropower industry has the potential for developing significant new clean energy resources and creating hundreds of thousands of good-paying, family-supporting new jobs:

U.S. hydro growth	*New hydro capacity*	*New direct, indirect, and induced jobs*
"Business as usual"	23,300 MW	**480,000**
Accelerated case	60,000 MW	**1,400,000**

Technologies

America's largest renewable resource, hydropower is a proven technology. Leading the growth in the industry are new innovations at existing hydro sites, new applications at non-powered dams and pumped storage- often without large new dams.

Capacity Growth by Technology



Growth by 2025 under accelerated scenario, all technologies

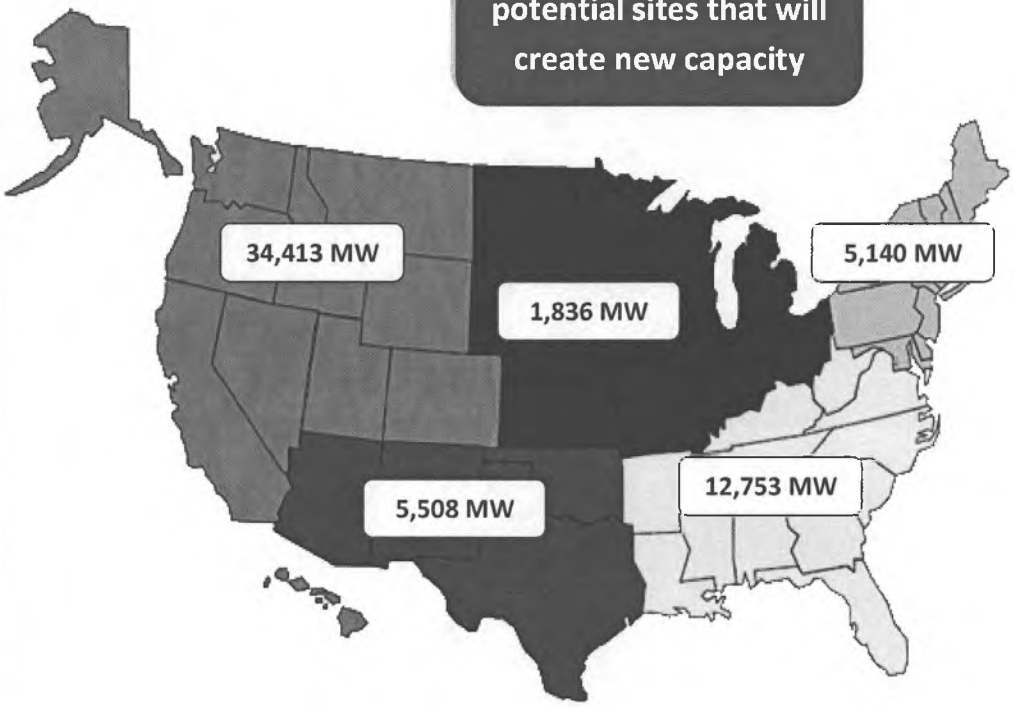
All Regions Benefit

New technologies are unlocking the waterpower potential of every region of the country.

As new technologies become available, the U.S. hydropower industry will consider development at additional environmentally and economically feasible sites.

Capacity Growth by Region

Every state has potential sites that will create new capacity



Nationwide job growth

The U.S. hydropower industry will create new, family-supporting jobs in every region of the country.

More than 1.4 million domestic jobs will be created by 2025.

Job Growth by Region

