

4/22/04

OVERVIEW:

ENERGY

POLICY

TASK

FORCE

ALASKA STATE HOUSE OF REPRESENTATIVES

Representative Carl Morgan, Chair
Representative Kelly Wolf, Vice Chair
Representative Tom Anderson
Representative Ralph Samuels
Representative Pete Kott
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HOUSE COMMITTEE ON COMMUNITY AND REGIONAL AFFAIRS Representative Carl Morgan, Chair

AGENDA

State Capital 124
April 22, 2004
8:00 am – 10:00 am

- Call to Order
- NonRailbelt Report Findings and Recommendations of the Alaska Energy Policy Task Force
 - Tom Boutin – Deputy Commissioner, Alaska Department of Revenue
 - Overview
 - Robert Wilkinson – Chief Executive Officer, Copper Valley Electric Association
 - Southcentral and coastal communities (via teleconference)
 - Meera Kohler - President/Chief Executive Office, Alaska Village Electric Cooperative
 - PCE Communities
 - Dave Carlson – Southeast Conference Intertie Coordinator
 - Southeast and 4 dam pool communities
- Next meeting **Tuesday April 27th at 8:00a**
- Adjourn

COMMITTEE TAPE LOG

COMMITTEE: COMMUNITY & REGIONAL AFFAIRS **DATE:** April 22, 2004 **TIME:** 8: am

SUBJECT: Overview: AK Energy Policy Task Force Non-Railbelt Report: Findings and Recommendations

MEMBERS: Morgan Wolf Kott Anderson Samuels Cissna Kookesh
 (CM) (JW) PK (TA) RS (SC) AK
 IF

SPEAKER	TAPE #	SIGNIFICANT INFORMATION
	04-13	SIDE A <i>Speakers P</i>
<i>673</i>	0001	call to order @ 8: am
		<i>Tom Borden - Policy task force members attend see</i>
		<i>meetings</i>
		<i>task force has been completed their work</i>
		<i>Commons and regional agencies</i>
		<i>still a PC need to coordinate</i>
		<i>and several issues need resolution</i>
		<i>long term sustainability of PCE is a con</i>
<i>82</i>		
<i>R. W. Winkler</i>		<i>CEO Cooper Valley Elect Assoc:</i>
		<i>educated group on energy issues of Omed</i>
		<i>community SC Coastal Region</i>
		<i>Reel into connected jobk Anch Kencu -</i>
		<i>Kenneth Seward</i>
		<i>PCE 187 Communities</i>
		<i>SE 4 dam pool Communities -</i>
		<i>Another community group - Cadenia - Cooper Valley</i>
		<i>Kodak Electric - Stand alone</i>
		<i>Generate Transmits their own power</i>
		<i>assess limited responsibility -</i>
		<i>in Cadenia</i>
		<i>Run an partners w ADEN or Denate</i>
		<i>Commission</i>

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
		Required to comply w/ DOME Reg as Chagale Chc of states trust
453		SE Region 780 mi distrib line 118 km w/ off-take line 11,000 meters in DOME 220,000,000 KW from: 96 migh w/ll generation capacity 13 transmission dist. systems
		Next address challenges of electric distribution
MC	-	Asked if there are any guests
Backin		Introduced Carlson - & mentioned Beck SA
Dave Carlson	-	Petersburg SET Interface Coordn appendix H linear climate & topography lends to hydro generation Other regions have differing fuel options SE don't have access to N gas & coal. Have tremendous potential for hydro 90% to hydro - all maintain 100% diesel back - some have mix hydro - Kok Moorat - approx 100% diesel Some are ACE Communities Y dan (not own Y Lake by S. W. S.
		Terra Lake Kodu Solomon Gulch - Valdez

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
		Order of dams & order draw created PCE
		endowment
		Differs // lack of infrastructure
		especially power lines
		most Stroms western power lines
		80% - 1997 until connecting to Strom
		hydro zone
		secured fed. authorization funds for
		SE utilities have done study
		& total projects 3 working on
		57 miles type to permit way clearing
		utility Ketchikan & Petersburg - use
		displaces power to some Ketchikan
		displace their diesel
		And named to Koonok now administratively
		at goal to pick up greens creek book
		on 100% diesel
		Bid Petersburg -> take 100% diesel
		50 miles along existing lines Pds
		lines design to expand west to
		Sitka & back to J.
		4. Other projects added as they become
		economically viable
		analysis of all the costs. Will take
		decides to complete

APP-en H

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
		Diesel should not be
		All new Trans lines will include Juku rope - as work will get Broad band
		Transmission issues Generator cooperative established for most of up country W
		Concern - Permitting process for hydro different P. King 2 megawatt plant - releasing project 400,000 in consulting fee & just as usual
		4 mega watts need for capital cost to optimize capital
		State house off F&F to DMK issues as helpful State P&A taking over responsibility
		SE Plan ambitious - by renewable hydro power
		Broadfield Canal Rd would allow connection to BC grid. Could perhaps export power to SE
		Please honor & learning experience looking in this project

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
		Not Recognizes lack of infra structure in Transmissum hills so you behind rest of state
		SBT know communities & letters to state Policy task force did same thing Bursart believes together to find common DOT.
		Personal comment need to keep utilities working together. Elect affects everyone is underpinning of economic develop
WJ		Kenia has heard Bruce Cooper talk - oldest - is political issues. Cooper back ^{with} unadvised temp. where are we being able to get wrapping not just shears.
Bob		Today any def. to permit. User then consequences to fish shears Mitig. would be required. Comments font. SE projects are like projects - one has tunnel under lake w/ no impact on stream licensing is scrutinizing P. bers cost were studies that were mandated

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
WJ		Use tunnel under lake - Hpts Unigra
		Upper Creek State concern - ties into Kenai River.
		We need to learn if our mistakes - more P/ habitat to DNR good in been around diesel genes & realize need to find another way
	1802	Meera Kohler -
		Pres CEO, AK Village Coop.
		Wanted to be here - got stuck in heavy mess
		Received lots of test. on energy concerns H Rural AK
		diff. PCE communities: 90 utilities serve 487 com 70,000 13% pop.
		PCE 1984 - reduced end cost available
		small remote - pop less 400. 20.¢ kWhour.
		Alternative power & grids are prohibitive. No value built
		Need to continue to support wind power.
		H. Resided in PCE communities
		General mem. line sketch of PCE
		through and

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
		Sent played role in providing affordable power.
		Regional affordable power
		AK has provided millions of \$ for ST & SC.
		However, rural AK still has diesel.
		diesel not cost effective.
		direct rate reduction PTE
		there may be site specific areas that could successfully do coal coal bed methane
		fund managed by Perence
		Most of P&T revenues would fund PTE & most of
		23 million would additionally need to be provided
		18.4 P403
		currently as
		as oil prices are high burdens budget seen in prospect of AK.
		PTE if adequately funded
		Recom
2/35		encourage formation of new or encourage region planning state should fully fund PTE and maximize fed funds for energy development

no kshd
at wind power

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
		Wind generators - final cost much higher because of changes to initial systems
		Pumps are expensive high penetration
		Lesson is don't work well if diesel generation for full penetration so when done it's all done
		Selma - a smaller system - working - may be viable on coastal communities
		Kob still less than 10% of wind 10-15% not able to displace diesel 5-8 MW to install of Kelso watt
		Energy Policy is very refreshing.
		PCE endowment 15.7 million. Need 3 million generated per here addition needed 45 million.
		Morgan Question what would it take to fully fund PCE Once has been doing persuade feds to make a federal deposit cuz they need infrastructure for fed funded schools clinics sewage Wastewater for 30 million of states.

SPEAKER	COUNTER	SIGNIFICANT INFORMATION
Boedler		Overall 5% Return is Reasonable has copies of Chart
Morgan		Besides sun & wind any other projects over out there that are 100% viable
Becky Jay		Lots of other topics hydrogen powered wind hydrogens fuel cell technology Nothing in the 20yr time frame that seems to viable as wind diesel. Solar & Tidal are still green
Mura		Fuel cells = UAF 5kW fuel cell w/ good resolution test up. 5kW fuel cell \$383,000 76,000/kw. 10x's cost wind 100x's cost of diesel. can't impede particularly w/ installation can't see it happening in 5-10 yrs fuel source is either natural gas & propane - but not diesel. can still heat homes efficiently w/ minutes 40% efficiency of some diesel generators She's still very skeptical.
		Becky Founded The Commercial committee & its been very useful

AEA RPSU PRIORITY RANKINGS

Community	Rank
Chilina w/hydro	PH 1 1
Karluk	PH 1 2
Hughes	PH 3 164
Stony River	PH 2 3
Platinum	PH 2 4
Newtok	PH 2 5
Koyukuk, Pwrhs.	PH 3 6
Buckland	PH 3 7
Telds	PH 3 8
Golovin	PH 3 121
Tolon	PH 3 122
Crooked Creek	PH 2 9
Manoklak	PH 3 11
Aika w/hydro	PH 3 12
Sleetmute	PH 2 13
Napaklak	PH 1 14
Arctic Village	PH 3 163
Pedro Bay	PH 2 15
Kwigillingok	PH 3 160
Nikolski	PH 3 17
Yakutat	PH 1 18
Tcnakee Springs	PH 1 19
Diomedea	PH 1 19
Kangilanak	PH 3 164
Klukwan	UNAS 21
Iglugig	PH 1 23
Port Holden	PH 1 23
Chignik Bay	PH 1 23
Ivanof Bay	UNAS 23
Kwelhluk	UNAS 23
Akiachak	PH 1 28
Nikolai	PH 1 31
Central	UNAS 32
Almautluak, Dist.	PH 3 118
Lake Minchumina	UNAS 34
Larsen Bay w/hyd	PH 2 35
Chofornak	PH 2 35
False Pass	UNAS 36
Twin Hills	UNAS 41
Akiak	UNAS 44
Takotna	PH 2 45
Fort Yukon	UNAS 45
Beaver	UNAS 45
Ouzinkie, w/hydro	PH 1 46
Pilot Point w/BFU	PH 1 50
Napaskiak	UNAS 60
Ruby	UNAS 60
Polican	UNAS 54
Akhiok	UNAS 54
Tatituk	UNAS 61
Elfin Cove	UNAS 62
Kobuk	UNAS 62
Allakaket	PH 2 65
Chuathbaluk	UNAS 68
Clarks Point	UNAS 69
Ekwok #2	UNAS 69
Ilamna	UNAS 69
Napaskiak	UNAS 74
Gustlavus	UNAS 77
Rampart	UNAS 77
Salnt George	UNAS 82
Venotie	UNAS 82
Angoon	UNAS 85
Cold Bay	UNAS 85
Kipnuk	UNAS 85
Mellakalla	UNAS 85
Kako	UNAS 95

Phase 1 (PH 1)	CDR	13
Phase 2 (PH 2)	Design	0
Phase 3 (PH 3)	Const	11

Community	Rank
Unalakleet	UNAS 95
Whale Pass	UNAS 95
White Mtn., Pwrh.	UNAS 98
Chignik Lake	UNAS 101
Port Alsworth	UNAS 101
Birch Creek	UNAS 109
Deering, Dist.	UNAS 109
Kasaan	UNAS 109
Perryville	UNAS 109
Red Devil	UNAS 109
Ekwok	UNAS 116
Koulik, Dist.	UNAS 116
Nelson Lagoon	UNAS 116
Chalkyitsik	UNAS 125
McGrath	UNAS 125
Saint Paut	UNAS 125
Sand Point	UNAS 125
Egegik	UNAS 132
King Cove	UNAS 132
Limo Village	UNAS 132
Tuntutullak, Dist.	UNAS 138
Chignik Lagoon	UNAS 138
Galona	UNAS 130
Akutan	UNAS 143
Tanana	UNAS 145
Levelock	UNAS 150
Aniak	UNAS 155
Almautluak, Pwrh.	UNAS 156
Kollpanek	UNAS 159
Chenega Bay	UNAS 160
Manley Hot Spr.	UNAS 162

Mentasta Lake	AP&T	33
Healy Lake	AP&T	38
Eagle	AP&T	40
Northway	AP&T	58
Christochina	AP&T	65
Tok	AP&T	81
Coffman Cove	AP&T	82
Haines	AP&T	100
Hcilis	AP&T	101
Hydaburg	AP&T	101
Tatlin	AP&T	116
Point Baker	AP&T	117
Port Protection	AP&T	118
Naukaul	AP&T	132
Bettles	AP&T	137
Hoonah	AP&T	155

Nunam Iqua	DONE	69
Tuluksak	DONE	126
Kokhanok	DONE	161
Stevens Village	DONE	164
Koyukuk Distr.	DONE	165
Deering	DONE	166
White Mtn., Pwr.	DONE	167
Tuntutullak	DO/E	168
Koulik	DONE	169
White Mtn., Dist.	DONE	170

Done by AEA (DONE)	10
Unassigned (UNAS)	61
AP&T	16
Hold/HOLD	1

Community	Rank	
Minchumina	AVEC	1
Old Harbor	AVEC	2
Bliss Point	AVEC	3
Upper Kalsag	AVEC	4
Shishmarek	AVEC	5
Michikma	AVEC	6
Arctic	AVEC	7
Goodnews Bay	AVEC	8
Wentzell	AVEC	9
Bravo Messing	AVEC	10
Quinhagak	AVEC	11
Est	AVEC	12
Lower Kalsag	AVEC	13
Makonuk	AVEC	14
Tokook Bay	AVEC	15
Totunak	AVEC	16
Woodgate Village	AVEC	17
Wales	AVEC	18
Seaman Bay	AVEC	19
Pish Station	AVEC	20
Gambell	AVEC	21
Kaitag	AVEC	22
Kivallik	AVEC	23
Arctic	AVEC	24
Golawit	AVEC	25
Shaktoolik	AVEC	26
Saint Marys	AVEC	27
Stabillik	AVEC	28
Chisik	AVEC	29
Spesia	AVEC	30
Nikolai	AVEC	31
Barrow	AVEC	32
Yonik	AVEC	33
Gona	AVEC	34
Arctic	AVEC	35
Arctic	AVEC	36
Loop Bay	AVEC	37
Sigsbee Station	AVEC	38
Arctic	AVEC	39
Elim	AVEC	40
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Arctic	AVEC	149
Arctic	AVEC	150

Naknek	IT	119
Nanwalek	IT	120
Newhalen	IT	121
Nonparc	IT	122
Carcerville	IT	123
Port Lions	IT	124
Seldovia	IT	125
South Naknek	IT	126
Thomas Bay	IT	127

North Slope (N.S.)	1
Inter-Tribal Village (ITV)	1

REV. 04/04

**NonRailbelt Report
Findings and Recommendations
of the Alaska Energy Policy Task Force**

Task Force Members

Mike Barry, Chair
AIDEA/Alaska Energy Authority
Chairman of the Board

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Vice Chair
Alaska Wireless Technology
Chugach Electric Association
Board Member

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Alaska Department of Revenue
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Joint Leadership Offices of
Speaker of the House
Representative Pete Kott
Senate President
Senator Gene Therriault

Alaska Energy Policy Task Force



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Created by the 23rd Alaska Legislature
Legislative Resolve No. 24, 2003
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**NonRailbelt Report
Findings and Recommendations
of the Alaska Energy Policy Task Force**



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Letter from the Chair

Mike Barry



Many contributed to the work of this task force. I would like to thank each and every person and organization that presented to us. I would, especially, like to thank the individual members of the task force who set aside the needs of their particular organization to focus on those of the state as a whole. Special credit goes to Becky Gay and Bernie Smith who admirably and capably served as staff.

We have outlined many daunting challenges to meeting the electrical needs of the immense area and small population known as Alaska. It is vital that we become more efficient in our utilization of limited resources such as capital and human expertise in order to successfully meet these challenges.

To become better stewards we recognize that we must operate regionally rather than just one community at a time. We must plan and operate in the context of a model of sustainability, adhering to cost-effective principles of conservation and best practices. We need improved coordination between State and Federal efforts in funding infrastructure. We need to invest capital funding to achieve solutions that work as opposed to merely providing work.

We recognize that cost-effective electricity is crucial to quality of life and essential to economic health. Priority should be given to funding those projects which are regional in focus and management and which will support growth and diversification of our economy. Working together under a common set of principles and guidelines will allow Alaskans to meet the challenges ahead. We hope that the attached principles and guidelines will be helpful.

Legislative Directive

In the first session of the 23rd Alaska State Legislature, the Energy Policy Task Force (EPTF) was established by concurrent resolution to address the energy needs of Alaska. This was to be done in two reports, categorized for "Railbelt" and "NonRailbelt" areas. The Railbelt report was completed by December 31, 2003. This is the NonRailbelt report and it presents the Findings and Recommendations of the Task Force for those areas that comprise the largest geographic portion of the state.

For purposes of this energy report, NonRailbelt Alaska was defined as three distinct energy areas:

**Four Dam Pool and Southeast Alaska,
Power Cost Equalization (PCE) communities, and
Southcentral Coastal communities.**

The following mandates were met with the NonRailbelt report:

1. **Develop a long-term energy plan to efficiently enhance Alaska's economic future.**
2. **Review and analyze the state's current and long-term energy needs.**
3. **Address elements of Alaska's long-term energy needs that can be solved through action on the part of industry and/or government actions.**

With prior permission from the Joint Leadership of the House and Senate, the deadline for a report of task force findings for NonRailbelt areas was extended from March 31 to April 15, 2004, to coincide with the "sunset" provision of the Task Force.



I. A LONG-TERM ENERGY PLAN TO ENHANCE ALASKA'S ECONOMIC FUTURE

A. Vision Statement

Alaska holds a worldwide leadership role in energy supply, delivery and use solutions and environmental stewardship. Alaska will have reliable, economic, sustainable and secure power supplies for its citizens. Public funds will be invested only in infrastructure that is sustainable.

B. Mission Statement

Electricity is essential to meeting Alaska's economic, environmental, and educational development goals. The State will conduct its activities affecting energy in such a manner as to:

- **Promote reliable and secure electric power systems**
- **Promote the lowest cost for consumers**
- **Stimulate the economy**
- **Provide employment opportunities for Alaskans**
- **Improve the quality of life for all Alaskans**
- **Promote workforce development, including training Alaskans, for Alaska's utility sector.**
- **Enhance the State's social, cultural, economic and environmental assets**

C. Goals (Listed in no particular order)

- Achieve sustainability.
- Develop Alaska's position as a leader in competitively priced and reliably available electricity.
- Develop Alaska's electrical infrastructure while maintaining competitively priced energy.
- Ensure security of physical and cyber energy infrastructure.
- Promote research, development and demonstration of clean and renewable energy technologies.
- Promote conservation and energy efficiency across all of Alaska.
- Develop Alaska as a world leader in using and exporting competitively priced and reliably available fossil fuels.
- Ensure standardized and consistent permitting and regulatory processes.
- Establish Alaska as a national leader in developing energy projects using its natural resources, including its workforce.
- Develop viable local solutions to provide cost-effective electric energy for small, geographically remote Alaskan communities.

D. Recommendations

1. Workforce

Provide proper and focused workforce training to meet the challenges of 21st century energy industries.

Executive:

Perform an assessment of the opportunities for Alaska workers in the resource development and energy sectors and, based upon these opportunities, examine the deployment of a portion of Alaska's resources toward training and retraining of the workforce in these sectors.

Amend Department of Labor/Workforce Development (DOL/WD) regulations to facilitate the ability to develop training and internship programs, with an emphasis on jobs for Alaskans.

Fund education to ensure that Alaska workers have the education and skills required to maintain the vital role energy plays in our economy.

Update certificate of fitness requirements for utility linemen to enhance workforce availability and better track the successful practices of the other 49 states.

Ensure that Alaska workforce regulatory practices conform to national practices.

Private Sector:

Work with the DOL/WD in its assessment of opportunities for the Alaska workforce in the energy and utility sectors.

Maximize internship programs that will allow entry into the Alaskan workforce.

Encourage development of new energy and energy related businesses in Alaska.

2. Energy Generation

Alaska must be active in its pursuit of improving existing technologies and developing new generation technologies to increase efficiencies of present and future energy generation facilities.

Assist the private sector in its efforts to develop energy generation capacity

Executive:

Enhance the ability of public bodies, such as the Denali Commission and the Alaska Energy Authority (AEA), to assist the private sector and communities in efforts to develop adequate energy generation capacity, funded through conduit bonds and grants, to provide cost-effective electricity for all Alaskans.

Explore utilization of Alaska's abundant renewable resources in the production of hydrogen, which is a fuel for the emerging fuel cell technology

Executive:

Convene a workshop to discuss the potential for Alaska's leadership in hydrogen production. Such a workshop could serve as an educational tool and a platform for discussion between public, university research and private sector individuals and organizations.

Direct the University of Alaska and executive agencies to inventory ideal locations for future renewable energy generation sites that could be used as a source of hydrogen for in-state use and export.

3. Energy Infrastructure

The Task Force's goals and strategies focused on matters including, but not limited to: (1) generation infrastructure; (2) transmission and distribution; and (3) economic efficiency. As the electrical system ages, there will be increased concerns about reliability, sustainability and stability. Technology-driven system improvements will be required. There must exist within the State the capacity to deliver resources and energy to end-users.

Stimulate private-sector participation in Alaska's energy infrastructure to allow greater energy export capability to meet state, regional, and national energy demands.

Executive:

Provide tax-exempt bonding to fund projects, with the State retaining only the obligations that cannot be transferred to the participating utilities.
Work with Alaska's Congressional delegation to provide financing or economic incentives to promote energy infrastructure development.
Encourage adequate transmission infrastructure to increase economic development activity.

Conduct an assessment to identify the State's energy infrastructure security needs.

Executive:

The RCA should include in their deliberations the issue of cyber-security.

Private Sector:

Continue in the joint planning process to identify the State's energy infrastructure needs.
Encourage adequate and secure transmission infrastructure to increase economic development activity.
Continue to promote adequate fuel delivery infrastructure.

Assess the potential for the development of a locality into a sustainable energy community that utilizes novel distributed and/or renewable energy systems for residences and commercial enterprises.

Executive:

Examine the potential for the development of an Alaska locality into a sustainable energy community.

Legislative:

Examine opportunities to provide support for the development of such a community.

Alaska regional transmission planners should work to become leaders in energy infrastructure development.

Establish energy infrastructure development projects that will promote the reliable transportation of electricity throughout the entire State that meets the State's energy, environmental and economic needs.

4. Regulatory

Streamline all licensing, permitting, and regulatory processes of energy projects.

Executive:

Review agency practices regarding the licensing, permitting, and regulatory processes of energy projects. These agencies could also review the licensing, permitting, and regulatory processes of energy projects in other states so as to develop a study of best practices regarding these issues.

Establish and maintain regulatory processes that are consistent and have defined processing timelines and encourage utilities to maintain long-term financial health.

Legislative:

Enact appropriate legislation for the implementation of best practices regarding the licensing, permitting and regulatory processes of energy projects.

Private sector:

Provide input to the Executive and Legislative Branches to implement best practices regarding licensing, permitting and regulatory processes of energy projects for small and medium sized utilities.

II. CURRENT AND LONG-TERM ENERGY NEEDS

Findings

NonRailbelt Alaska is diverse, contains both rural and urban customers, and both roadless and road accessible communities. Their most common energy denominator is that none of the areas are connected to the Railbelt energy grid.

For purposes of this report, NonRailbelt Alaska is divided into three distinct energy areas:

- **Four Dam Pool and Southeast Alaska,**
- **Power Cost Equalization (PCE) communities, and**
- **Southcentral Coastal communities.**

A large state geographically with a very small population means in energy terms - huge distances, minimal load. Most of Alaska is not accessible by roads. Access for most rural villages and Southeast Alaska is by air or water, making energy costs extremely high – as much as five times the national average. In Southeast Alaska, there is a lack of transmission interties to export surplus hydroelectric to other communities that need it.

As a comparison, in 2003, the average cost of power in Anchorage-Fairbanks-Juneau for residential customers was 10.6 cents/kWh, whereas in PCE eligible communities, the average residential cost of power prior to the State's rate reduction credit was 27.6 cents/kWh for 2003.

Over 66% of rural Alaska households use fuel oil as their heating source, priced at two to four times the national average. No electrical transmission lines interconnect the majority of Alaska's rural communities. In PCE Alaska, ninety utilities service 187 rural communities. Full funding of the Power Cost Equalization (PCE) program is not being met nor is a sustainable endowment provided.

A. Current Energy Needs NonRailbelt Findings

- Over 50% of powerhouse structures and electrical distribution requires major repairs or replacement.
- Approximately 50% of fuel storage facilities are in poor condition.
- In Southeast Alaska, there is a lack of transmission interties to export surplus hydroelectric energy to other communities that need it.
- Average households in rural Alaska use approximately 425 kWh per month (compared to the average urban household in Alaska at approximately 700 kWh per month.)

**See Appendix F
ISER Status Report**

Southeast and Four Dam Pool

This region includes Juneau, Ketchikan, Sitka, Kodiak, Valdez and others and the following utilities.

See Appendix H

- | | |
|-------------------------------------|-------------------------------------|
| • Ketchikan (KPU) | Municipally Owned |
| • Petersburg (PMP&L) | Municipally Owned |
| • Wrangell (WL&P) | Municipally Owned |
| • Sitka (SMED) | Municipally Owned |
| • Juneau (AEL&P) | Investor Owned |
| • Valdez (CVEA) | Cooperative Owned |
| • Yakutat Electric | Municipally Owned |
| • Other SE communities (AP&T) | Investor Owned |
| • Four Dam Pool Joint Action Agency | Owned by participating cooperatives |

The Four Dam Pool consists of Swan Lake, Lake Tyee, Terror Lake, and Solomon Gulch hydro plants. On January 31, 2002, AEA sold the Four Dam Pool projects to the Four Dam Pool Power Agency, an entity formed by Ketchikan Public Utilities, Wrangell Municipal Light & Power, Petersburg Municipal Light & Power, Copper Valley Electric Association, and Kodiak Electric Association, Inc.

Southeast Alaska has significant hydroelectric potential because of topography and climate. In Southeast, there is a lack of transmission interties to export surplus hydroelectric power to other communities that need it, including

communities that utilize fossil fuel to generate electricity. Approximately 90% of the total annual electricity generated in this region is by hydroelectric generation, with diesel internal combustion engines and oil-fired turbines as expensive additional generation sources.

Power Cost Equalization (PCE) Communities

In PCE Alaska, ninety utilities service 187 rural communities. Approximately 70,000 people, or 13% of the state's population, live in communities whose primary source of electricity is diesel fuel. The PCE program was established in 1984 as a successor to similar programs in effect since 1980 that reduce the end cost of electricity for residential and community facilities. PCE is available on the first 500 kWh used by households and on up to 70 kWh per resident for certain public facilities.

PCE communities are characteristically small, remote and accessible only by air or by seasonal barge service. Most PCE recipients reside in communities with populations of 400 or less. After application of PCE, the average cost of electricity for most rural communities is still more than 20 cents per kWh.

Because of the small size, remoteness and climactic extremes of PCE communities, alternative technologies such as hydropower and transmission grids are prohibitively expensive and impractical and emerging technologies have not yet been proven feasible. The high cost of power has attracted many entrepreneurs over the years who have proposed 'silver bullet' solutions, none of which have borne fruit. Efforts must continue to foster the fledgling supplemental wind power industry as well as other proven technologies to alleviate the burden in these communities of continued dependence on diesel fuel.

Eligibility

An electric utility participating in the PCE must: a) provide electric service to the public for compensation; b) during calendar year 1983, have had less than 7,500 megawatt hours of residential consumption or less than 15,000 megawatt hours if two or more communities were served; and c) during calendar year 1984, the utility must have used diesel-fired generators to produce more than 75% of its electrical consumption. Customer eligibility is based on actual power sold.

Residential customers are eligible for PCE credit on up to 500 kWh/month per customer. Community facilities, as a group, can receive PCE credit for up to 70 kWh/month multiplied by the number of residents in a community. State and federal offices/facilities, commercial accounts and public schools are ineligible for PCE.

See Appendix I for PCE details

FY03 PCE Program Participating Utilities

PCE program statistics comparing FY02 to FY03

PCE historical trends from 1993-2003

Southcentral Coastal: Kodiak, Cordova, Valdez and the Copper River Basin

The Southcentral Coastal utilities consist of Cordova Electric Cooperative (CEC), Copper Valley Electric Association (CVEA) and Kodiak Electric Association (KEA). It contains the Roadbelt area along the Richardson and Glenn Highways that are not connected to any grid. Kodiak is also part of the Four Dam Pool

Generation:

- Hydroelectric generation capacity
- Thermal generation capacity
- Combustion turbines
- Reciprocating engines

B. Long-term Energy Needs NonRailbelt Findings

A long-term plan is needed for coordinated generation and transmission of power, to maximize the use of public funds, and to minimize the cost of power to the consumers.

The Task Force adopted the definition of long-term as 20 years or more. Within the next 20 years, it was determined that NonRailbelt Alaska needs to:

- **Create secure and reliable transmission between load centers**
- **Provide energy infrastructure for economic development**
- **Identify and evaluate long-term fuel sources**
- **Establish regional system operations where feasible**
- **Connect new areas to the Railbelt grid**
- **Replace aging generation**
- **Replace an aging workforce**
- **Lessen dependence on fossil fuel generation where renewable options are available**

C. Needs/Projects NonRailbelt See Appendix G

D. Recommendations

Specific recommendations of how to fulfill future needs were as follows:

- Support increased vocational trade schools, higher education and training of technical and professional utility career staff and management in rural communities. www.aidea.org/AEAdocuments/TrainingDesc2003-2004.pdf
- State grants or financing should give priority to sustainable projects that consolidate operations and expand existing electrical systems.
- Encourage resource sharing among utilities to lower cost of installation, administration, operations and maintenance.
- Increase the proportion of renewables in long-term fuel sources. Renewables

- include hydroelectric generation.
- Advance the physical and cyber security of the critical electrical infrastructure in Alaska.
- Implement alternative technologies as their costs become competitive with existing conventional technology.
- Have separate regulations for communities constrained by size.

III. INDUSTRY AND/OR GOVERNMENT ACTIONS

Findings

Government has played a role in bringing affordable power to Alaska in many ways, most notably through PCE and federal funding of energy programs. Industry, utilities and local governments have formed entities to voluntarily work toward regional energy priorities.

Alaska has contributed hundreds of millions of dollars in grant funding for the construction of hydro projects such as Bradley Lake and the Four Dam Pool and for transmission lines such as the Anchorage-Fairbanks Intertie that allows inexpensive power from natural gas and hydro power to be exported to the Fairbanks area.

Small hydro projects and interties have been built in rural Alaska but most rural communities still rely exclusively on isolated diesel power plants since the prevailing characteristics of rural Alaska, such as low population density and remote village locations, render most alternatives to diesel power infeasible. Recognizing this, another form of providing more affordable power through direct rate reduction (the PCE program) was initiated for rural Alaska.

While diesel has been proven to be the most cost-effective in most parts of Alaska, and the economic potential for wind-driven energy is improving, there may be site-specific opportunities that economically justify hydro, coal, methane, and/or coal-bed methane driven power generation.

The expenditure of \$15.5 million in FY2002 was not sufficient to pay the "full formula" requirement, so PCE benefits were prorated by an amount equivalent to 85.83% over the entire year.

A. Power Cost Equalization (PCE) program

PCE is governed by Alaska Administrative Code 3 AAC 94.305-330 and 3 AAC 52.600-690 and by Alaska Statutes 42.45.110-170.

<http://www.aidea.org/PDF%20files/FY03PCEreport.pdf>

Legislation enacted in 2000 established the PCE Endowment Fund and appropriated \$100 million into the Endowment Fund from the Constitutional Budget Reserve. In addition, AEA executed a Memorandum of Understanding in April 2000 with the Four Dam Pool purchasing utilities that deposited the \$81 million in proceeds from the sale of the Four Dam Pool projects into the

Endowment Fund. The sale was finalized in January 2002. The Endowment Fund is invested and managed by the Alaska Department of Revenue.

When the Endowment Fund was created, it was anticipated that most, but not all of the funding for the PCE program would come from the Endowment Fund. As of 3/31/04, the market value of the fund is approximately \$180 million. However, even with the more optimistic market earning assumptions at that time, the projections showed that approximately \$2.3 million in additional funding would be needed each year from other sources.

The full program demand for FY2003 was approximately \$18.4 million if funded at 100%. If the Legislature appropriates insufficient funds to pay the "full formula" requirement, PCE benefits are reduced to a prorated amount over the entire year.

Government PCE Process

1. The Regulatory Commission of Alaska (RCA) determines the PCE level per kWh for each utility. Two categories of costs are used in determining the PCE level:
 - a) Fuel expenses: the cost of fuel, including transportation; and
 - b) Non-fuel expenses; other costs such as salaries, insurance, taxes, power plant parts and supplies, interest and other reasonable costs.
2. AEA receives eligible utilities' monthly reports to document the eligible power sold. AEA calculates the amount of PCE on a monthly basis and issues payment to the utility to cover PCE credits that the utility has already provided to its eligible customers in the form of a reduced monthly electric bill. AEA determines the prorated payment level required if the appropriation is insufficient to pay PCE at 100%.
3. AEA also determines the eligibility of customers and of community facilities. Costs below 12.0 cents/kWh and above 52.5 cents/kWh are not eligible for PCE. If the eligible costs are 52.5 cents/kWh or more, the maximum PCE level is 38.48 cents/kWh ($52.5 \text{ cents} - 12.0 \text{ cents} = 40.5 \text{ cents} \times 95\% = 38.48 \text{ cents}$). A participating utility must meet generation efficiency and line loss standards, otherwise the PCE level is reduced to reflect those standards.

Formula Used to determine PCE level/kWh for a utility:

95% of the eligible costs per kWh between
12.0 cents/kWh, "the floor, and
52.5 cents/kWh, "the ceiling."

For PCE eligible communities that sell more than 1 million kWh, the average rate prior to PCE credit being applied was 22.6 cents/kWh; however, for communities that sell less than 1 million kWh, the average rate prior to PCE credit being applied was 34.69 cents per kWh.

B. Regional Operators

Southeast Conference www.seconference.org

An organization of industry and local governments consolidating the interests of the region and has been successful in obtaining federal authorizations and funding. In April of 2004, Southeast Conference and its member utilities and communities voted to proceed with the formation of a **Generation & Transmission (G&T) Cooperative** that will serve as the owner and operator of specific Intertie segments within Southeast Alaska.

Four Dam Pool Power Agency (FDPPA)

A regional entity formed in 2002. It is Alaska's first Joint Action Agency (JAA), an entity formed by Ketchikan Public Utilities, Wrangell Municipal Light & Power, Petersburg Municipal Light & Power, Copper Valley Electric Association, and Kodiak Electric Association, Inc.

Alaska Village Electric Cooperative (AVEC)

A non-profit cooperative incorporated in 1967 under guidelines of the Rural Electrification Administration (REA) - now Rural Utilities Service (RUS) - to construct and operate generation and distribution systems in Alaskan villages. AVEC serves one third of Alaska's rural population with power plants and diesel tank farms in 47 villages and distribution systems in 51 communities. Although cost of power in AVEC communities is high at 40 cents per kWh, the village systems are essentially completely self-sufficient and revenues generated (including about 28% from PCE) cover all costs of operation including design and construction of new plant, operation and maintenance of existing plant, administration, insurance, billing and collections, debt service, depreciation and amortization, etc.

C. Federal Funds

Denali Commission www.denali.gov

"The Denali Commission is an innovative federal-state partnership established by Congress in 1998 to provide critical utilities, infrastructure, and economic support throughout Alaska. Our focus encompasses five major categories of improvements: energy, health care facilities, training, intergovernmental coordination, and infrastructure (economic development, telecommunications, washeterias, and multi-use facilities)."

The Denali Commission has an investment policy that must be met and has introduced the concept of sustainability, which is still evolving.

[http://www.denali.gov/Program_Documents/Investment%20Policy%20%20\(02-13-04%20%20-%20public%20rev.%20draft\).pdf](http://www.denali.gov/Program_Documents/Investment%20Policy%20%20(02-13-04%20%20-%20public%20rev.%20draft).pdf)

AEA's Rural Energy Group (AEA-REG) and AVEC Programs

AEA's Rural Energy Group (REG) and AVEC receive the majority of their funding for rural energy programs from the Denali Commission. A plan and funding for long-term operation and maintenance of bulk fuel storage facilities and generation plants are needed. General coordination of all rural utilities is needed (sewer, water, solid waste, power, and fuel). Many upgrades are funded by the Denali Commission.

D. Recommendations

- Provide NonRailbelt utilities the opportunity to obtain grants and tax-exempt financing for electrical infrastructure that provides the lowest cost of power to members and efficient operation.
- All other considerations being equal, projects should in general not be owned, operated or maintained by the State.
- The State should encourage NonRailbelt utilities to accept ownership of state-owned energy assets to reduce bureaucracy, thereby reducing state expenses and offering utilities the benefits of long-term ownership.
- Encourage formation of new owning entities such as the G&T in Southeast and support existing regional operators.
- Encourage regional planning among utilities to lower cost of installation, administration, operations and maintenance.
- The State, when funds are available, should fully fund the PCE endowment to make the program sustainable and self-funding at the level the legislature deems appropriate.
- Maximize federal appropriations for Alaska, by appropriately providing state matching funds for energy projects.
- Any divestiture of state-owned energy assets should be consistent with the above. If there are legislative or regulatory issues, utilities should work cooperatively to determine actions needed.

IV. OTHER TOPICS FOR FUTURE CONSIDERATION**Findings**

The Task Force either touched on these subjects or found it did not have sufficient time to address these and form valid recommendations for the Legislature under the deadline given.

A. Critical Infrastructure Protection (CIP)

Homeland security efforts to list priority infrastructure includes the utility assets. Utility groups and representatives from associated sectors such as telecommunications must continue to cooperate to provide reliable power with due regard for changing demands of security.

B. Energy Efficiency, Conservation and the Environment

Efforts to use energy resources more efficiently can reduce energy costs and benefit the environment. Energy efficiency is broader than simple energy conservation, or eliminating unnecessary energy use. Efficiency involves achieving necessary goals, while minimizing energy requirements. Efficiency should not compromise comfort, performance or productivity, but rather meet those requirements through more proficient means. Environmental benefits are direct; if energy use is avoided, then the environmental impacts are avoided as well. Examples of projects eligible for AEA's programs include:

- Efficiency upgrades to diesel power plants.
- Update energy audit for facility efficiency.
- System Performance Monitoring.
- Residential lighting and hot water retrofits.
- Heat recovery program.

C. Emerging Energy and Environmental Technologies

Examine the establishment of public/private partnerships that benefit Alaska research institutions and commercial enterprises that engage in the commercialization of energy and environmental technologies. Biomass projects such as fish oil/diesel have special application for Alaska. Wind energy monitoring and assessment and other alternative energy projects are already underway across Alaska.

D. Renewable Energy

Renewable power can be competitive. There are a number of technologies considered renewable and these include: hydroelectric, solar, biomass, geothermal, tidal and wind.

Southeast Alaska, Southcentral and the Alaskan Peninsula have significant hydroelectric potential. A number of projects have been studied that could potentially serve the Southeast area. The development of an interconnected transmission system within the region could assist in the development of some of these hydro projects. There is potential for hydroelectric developments in other parts of the state as well, and these should be explored and developed as feasible.

Solar, biomass, geothermal and tidal are in various stages of technological development and do not currently contribute, to a great extent, to the national energy supply. Solar at this time is expensive and because of Alaska's latitude is not considered a likely candidate for large-scale energy production. There are

some geothermal resources in the state. As with other technologies, tidal power is developing and it will be some time before it becomes a significant and competitive generation resource. However it is prudent for energy planners to continue to monitor the development of this technology.

Wind power is being studied as a potential renewable generation resource for many areas. <http://www.aidea.org/PDF%20files/Windmap.pdf> The technology is the beneficiary of more than 20 years of intense research and development. Large-scale wind projects are being installed across the country and around the world. These projects use large turbines and are installed on a scale that allows for the power to be priced competitively. Smaller turbines have been used for rural generation applications in the state and have been shown to be rugged and reliable. See <http://www.aidea.org/Wind.htm> for a preliminary High-Resolution Wind Map. These modern high-resolution maps represent a dramatic improvement over those developed in the 1980s. The improved maps have proven extremely useful when overlaid with GIS data for transmission and land use in prospecting for wind development. Developing a high resolution wind map will increase understanding of Alaska's wind resources, and will focus efforts on where more detailed wind monitoring and construction efforts are most beneficial.

E. Gas Line Projects

There are competing interests for use of Alaska natural gas, both instate and externally. A potential intrastate gas pipeline that would deliver natural gas or propane to Southeast Alaska communities with a piped distribution system is under consideration. A feasibility study is needed to determine if piped natural gas or propane can be delivered at a price that would compare favorably with bottled propane, oil, and electricity for space and water heating requirements. An instate gas line bringing gas to tidewater in Valdez or Cook Inlet, for distribution and/or export is of major consequence to Alaska utilities. Industrial processes, commercial LNG opportunities, heating and generating electricity all compete for the fuel. A competing gas line to mid-America, across Canada, also has received significant study. For the utility future, the questions of supply and cost of alternatives remain. Whether gas is piped to market, or meets the load as electricity, electrical users will be affected.

F. Coal

Data for electricity costs in other States clearly shows that more coal fired power in the generation mix results in lower electricity cost. Relatively high capital cost is often a serious impediment to building coal plants for small utilities. Transmission and access infrastructure to link communities and areas of high natural resource potential will promote growth and diversification of Alaska's economy.

As new industrial activity is developed, such as large mine projects and the Alaska gas pipeline, opportunities will arise to tap heat and/or electricity generating plants needed for these developments. There are many sedimentary basins in Alaska that hold coal resource potential which is largely unexplored, such as in Southwest Alaska and the Yukon Basin.

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Tom Wright

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Harold J. Heinze

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<http://www.iser.uaa.alaska.edu/Publications/akelectricpowerfinal.pdf>

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Frank Bettine

Railbelt Energy Study (RES), Technical Working Group

Mark Fouts, Chair, Ron Moe for R.W. Beck

4/15/2004

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Findings and Recommendations of the Alaska Energy Policy Task Force

Seward Electric
Dave Calvert, Willard Dunham
Sitka
Charlie Walls
Southeast Conference
www.seconference.org
Usibelli Coal Mine
Steve Denton

Also:
West Virginia Energy Plan
Iowa Energy Plan

Glossary

Alaska Energy Authority (AEA) <http://www.aidea.org/aea.htm>

The Alaska Energy Authority is a public corporation of the state of Alaska with separate and independent legal existence. The agency is responsible for the administration of various state power projects and programs. Pursuant to legislation enacted in 1993, the members of the Alaska Industrial Development and Export Authority (AIDEA) Board of Directors also serve as Board of Directors of AEA. Concurrently, the Executive Director of AIDEA also serves as Executive Director of AEA. Pursuant to legislation effective July 1, 1999, the rural energy programs previously administered by the former Department of Community and Regional Affairs, Division of Energy, were transferred to AEA for administration.

Alaska Electric Generation and Transmission Cooperative (AEG&T)

Created in 1984 by Homer Electric Association and Matanuska Electric Association. AEG&T's mission is to assist statewide development of financially viable and environmentally sound energy systems that are safe, reliable, and efficient.

Alaska Industrial Development and Export Authority (AIDEA) <http://www.aidea.org>

The Alaska Industrial Development and Export Authority (AIDEA) is a public corporation of the state of Alaska with separate and independent legal existence. AIDEA is governed by a five member board comprised of the commissioner of revenue, the commissioner of community and economic development, one other person appointed by the governor who serves as the head of a principal department of the executive branch, and two public members appointed by the Governor. AIDEA is a profit-motivated, public corporation of the state created by the Legislature in 1967. AIDEA pays its own operating expenses while continuing to expand its ability to fuel economic development and pay an annual dividend to the state general fund.

Capacity

The maximum amount of power, normally expressed in megawatts, that a given system or subsystem can carry or produce at a particular moment, and is typically used to represent the real production capability rating of a generation or transmission system.

Cogeneration

The simultaneous production of power and thermal energy, such as burning natural gas to produce electricity and using the heat produced to create steam for industrial use.

Combined Cycle (CC)

An electric generating technology in which additional electricity is produced from otherwise lost waste heat resulting from the gas turbines.

Combustion Turbine (CT)

A machine that generates rotary mechanical power from the energy of a stream of fluid.

Cooperative

A group organized to supply electricity to a specific area; a cooperatively owned electric utility. A non-profit utility owned by its members.

Demand

The rate, expressed in megawatts (MW), at which electric energy is delivered to or by a system, part of a system, or piece of equipment at a given instant, or averaged over a designated period of time.

Distributed Generation

This term generally refers to small-scale energy generation spread among several producers, but it can also refer broadly to any type of energy generation that is spread among multiple producers. Distributed generation is most commonly used to insure that sufficient energy is available to meet peak demand. It may also be used as part of a fuels diversity program.

Distribution Line

A power line which delivers electricity throughout urban and rural areas. Typically between 2,300 and 25,000 volts.

Generation

The process of producing electric energy by transforming other forms of energy. It also refers to the amount of electric energy produced, expressed in megawatt-hours (MWh).

Generation and Transmission Company (G&T)

Term for a company that provides both energy production and facilities for transmitting energy to wholesale customers.

Gigawatt (GW)

A unit of measure equal to one billion watts or one thousand megawatts.

Integrated Resource Planning (IRP)

This term refers to a planning method that takes into account all resources available to or required to meet supply needs within an area or region that produce to the lowest possible cost.

Intertie

A tie permitting a flow of energy between the facilities of two electric systems.

Investor-Owned Utility

A utility owned privately (or by stockholders) and operated as a for-profit company.

Kilovolt (kV)

A unit of measurement of electrical force of pressure equal to 1,000 volts.

Kilowatt (kW)

A unit of power equal to 1,000 watts.

Kilowatt-Hour (kWh)

The most commonly used electrical measurement equal to 1,000 watts for one hour.

Load

The moment-to-moment measurement of power requirement in the entire system.

Megawatt (MW)

One thousand kilowatts or one million watts.

Peak Load, Peak Demand

These two terms are used interchangeably to denote the maximum power requirement of a system at a given time, or the amount of power required to supply customers at times when need is greatest. They can refer either to the load at a given moment (e.g. a specific time of day) or to averaged load over a given period of time (e.g. a specific day or hour of the day).

Railbelt

For purposes of this report, the power-sharing area between Interior Alaska, from Fairbanks, and Southcentral, to Homer, connected by roads, generating facilities and transmission lines, which include the Alaska Intertie and the Bradley Lake Hydro Project.

Railbelt Energy Study (RES)

Five utilities commissioned a study on the Railbelt. The purpose of the study is to identify the location and type of generation asset that satisfies future growth within the Railbelt.

Regulatory Commission of Alaska (RCA) <http://www.state.ak.us/rca/>

Formerly known as the Alaska Public Utility Commission. The RCA is the State's regulatory body overseeing utilities.

Roadbelt

That part of Alaska that is road-accessible, but not connected to the Railbelt grid, like Glennallen.

Sustainability

"In its simplest form, a sustainable utility is one where available financial resources, from all sources, are at least equal to the total cost of the utility. Total cost includes management, operation, maintenance, cost of capital renewal and replacement (after the design life has been achieved), necessary to maintain an acceptable level of service now and for future generations." From the November 2001 report of the steering committee of Sustainable Utilities in Rural Alaska

Transmission Line

A set of conductors, insulators, supporting structures, and associated equipment used to move large quantities of power at high voltage.

Volt

The unit of electrical measurement, which is similar to "pressure", that pushes current through a conductor.

Watt

A unit of electrical measurement used to determine the rate of energy delivered at some point.
Watts = Voltage x Amperes

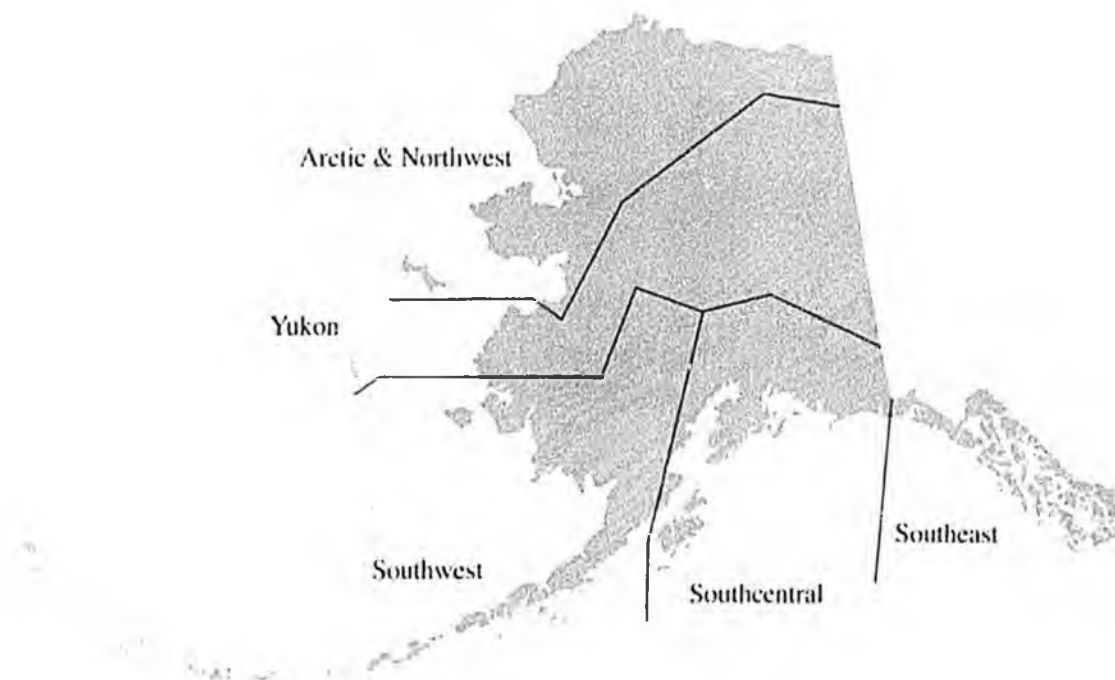
APPENDIX F

ISER Report/Current Needs

A different geographic look at the statewide situation.

<http://www.iser.uaa.alaska.edu/Publications/akelectricpowerfinal.pdf>

ALASKA ELECTRIC POWER STATISTICS REGIONAL MAP



1a. Installed Capacity (KW)

Region	PCE	Non-PCE		Total
		Railbelt	Non-Railbelt	
Arctic Northwest	76,102	0	30,850	106,952
South Central	18,931	1,208,902	124,104	1,351,937
South East	41,844	0	373,902	415,746
South West	69,141	0	0	69,141
Yukon	34,557	277,000	3,572	315,129
Totals:	240,575	1,485,902	532,428	2,258,905

APPENDIX F, cont.

ISER Report/Current Needs

1.b. Net Generation (MWh)

Region	PCE	Non-PCE		Total
		Railbelt	Non-Railbelt	
Arctic Northwest	103,068	0	76,094	179,162
South Central	26,789	3,530,534	203,762	3,761,085
South East	32,046	0	672,422	704,468
South West	167,057	0	0	167,057
Yukon	57,842	774,543	2,134	834,519
Totals:	386,801	4,305,077	954,412	5,646,290

1c. Sales (MWh)

Region	PCE	Non-PCE		Total
		Railbelt	Non-Railbelt	
Arctic Northwest	77,799	0	73,797	151,596
South Central	3,406	3,056,000	223,278	3,282,684
South East	70,158	0	636,044	706,202
South West	153,925	0	0	153,925
Yukon	52,249	1,071,392	1,788	1,125,429
Totals:	357,537	4,127,392	934,907	5,419,836

1c. Revenue (\$000)

Region	PCE	Non-PCE		Total
		Railbelt	Non-Railbelt	
Arctic Northwest	19,925	0	7,616	27,541
South Central	1,114	372,050	38,563	411,727
South East	3,332	0	56,054	59,386
South West	38,367	0	0	38,367
Yukon	12,680	89,816	108	102,604
Totals:	75,418	461,866	102,341	639,625

PCE = Utilities in the Power Cost Equalization Program
Railbelt = Utilities interconnected along the Alaska Railroad

APPENDIX G

Needs/Projects for the NonRailbelt

This list contains projects currently under discussion in various venues, which have not necessarily been investigated or endorsed by the Task Force. The list is not meant to be all-inclusive.

- **Southwest Alaska:** The Calista Corporation has prepared an energy study that proposes a coal-power plant at Bethel, coal supplied by the Quinsam Mine in British Columbia, wind turbines along the coast, and region-wide transmission grid would provide low cost. The transmission line could also supply power to Donlin Creek exploration, if it is developed into a mine. Alaska coal could replace the British Columbia coal if it becomes commercial available at competitive rates.
- **Coalbed Methane Project:** The Holitna Energy Corporation (HEC) was formed in April 2003 for the purpose of developing an energy supply for the Donlin Creek exploration, nearby settlements and, potentially, the region. HEC applied for a state of Alaska Shallow Gas Lease. This lease will allow HEC to do seismic work and drill for any gas accumulations that exist, at least partially, within 3,000 feet of the surface. The Holitna basin is located approximately 50 miles from Donlin Creek. The deepest portion of the Holitna basin has a high potential for oil, natural gas, and coal.
- **Northwest Alaska:** Northwest Alaska has a deposit of arctic coal stranded five miles inland from the Chukchi Sea, known as the Deadfall Syncline coal deposit. This deposit contains resources adequate to support a mining operation of one million tons per year for 20 years. A Northwest Alaska Energy Plan should include a coal power plant to generate power and a transmission line to power the Red Dog Mine. The plan should also include a road to transport the mined arctic coal to tidewater for export. This could open up other resources in the Northwest area with coal-fired power.
- **Donlin Creek Gold Mine:** A potential 125MW-250MW coal fired power plant at the Beluga coal property (West Cook Inlet) would provide the generation of electricity to the Donlin Creek Gold Mine via a new transmission line.
- **Pebble Gold-Copper Mine:** A potential 200MW coal, gas, LNG and or Propane fired power plant to provide the generation of electricity to the Pebble Gold-Copper Mine in Newhalen/Nondalton area (Bristol Bay region)
- **Akutan:** A potential 10MW (maybe larger) geothermal energy power plant in Akutan. This power plant could supply electrical power to the fish processing facility.

APPENDIX G, cont.

Needs/Projects for the NonRailbelt

- **Mt. Makushin:** A potential geothermal project at Mt. Makushin, Unalaska, that would not only supply energy to the City of Unalaska/Dutch Harbor and the fish processing facilities, but also has the possibility of converting this sustainable high temperature and super-critical geothermal fluids/energy into an economic and transportable form of fuel—Hydrogen—perhaps in the form of methanol—plus the metals/minerals potential.
- **Bradfield Road Project:** The State of Alaska and communities of Southern Southeast Alaska have been exploring the potential of extending a road up the Bradfield Road south of Wrangell tying into the existing road system in British Columbia, Canada. The Lake Tyee Hydro project is located at the Bradfield canal. The feasibility of extending a transmission line from Southeast Alaska into Canada interconnecting with the B.C. grid, which is tied into the North American grid, is currently under evaluation.

Southcentral Coastal

Regional projects

- **Extend the distribution systems:** Along the Richardson, Edgerton and Glenn (Tok Road) highways to serve new customers.
- **Transmission line:** To Matanuska Valley (MEA) or Delta (GVEA.)
- **Transmission line:** Interconnect Cordova and Copper Valley Electrical systems.

Copper Valley Electric projects

- **Glennallen:** Diesel Power Plant Upgrade.
- **Valdez:** Diesel Plant Upgrade.
- **Lake Louise:** Distribution line to south shore of Lake Louise and customers along the Lake Louise road.
- **Alyeska Marine Terminal:** Interconnect the Valdez Marine Terminal to CVEA's system

Cordova Electric projects

- **Transmission line:** Line replacement project along the Copper River highway between the city center and the airport.
- **Upgrade:** Aged cable along Copper River Hwy to Airport, FAA, and USCG.
- **Conversion:** Convert aged OH to UG along Whitshed Road.
- **Humpback Creek Hydro:** Upgrade and water storage.
- **Line extension:** To Shepard Point (Cordova Oil Spill Response Facility.)
- **Upgrade:** Aged substation bus to enclosed substation.
- **Sheridan Glacier Road Line Extension:** To developing Native Corp. lots.

APPENDIX G, cont.

Needs/Projects for the NonRailbelt

Kodiak Electric projects

- **Hartman Powerhouse Revitalization Project:** Replaces 30 year old diesel units with more fuel efficient, reliable, cleaner and lower cost units
- **Anton Larson Line Extension:** Extends distribution system by 13 miles to the community of Anton Larson, which currently consists of 15-20 homes.

Rural

- **Bulk Fuel Upgrades (BFU) and Rural Power System Upgrades (RPSU):** Total funds required to upgrade the power plant utilities and the bulk fuel storage in the rural communities (estimated by AEA, AVEC, and the Denali Commission), is \$644,000,000. The majority of the funding is provided by the Denali Commission.
- **RPSU Funding Needs:** A 2000 AEA assessment of power plant facilities in communities (AEA = 128 communities, AVEC = 51 communities.) In terms of facility upgrades, AEA is approximately 10% complete with the initial scope of projects. Based upon current and projected funding, AEA anticipates completing the program of upgrading their respective project communities by 2015.

APPENDIX G, cont.
Needs/Projects for the NonRailbelt

AEA Rural Power Systems Upgrade Priority Rankings

Community	Rank	Community	Rank	Community	Rank			
Nunapituk	AVEC	0	Northway	APAT	58	Amble	AVEC	116
Old Harbor	AVEC	0	Kikoryuk	AVEC	58	Hooper Bay	AVEC	116
RIKA's Point	AVEC	0	Tokeok Bay	AVEC	58	Russian Mission	AVEC	116
Upper Kotikag	AVEC	0	Tattlet	AEA	61	Point Baker	APAT	117
China w/hydro	AEA	1	Ellen Cove	AEA	62	Port Protection	APAT	118
Karluk	AEA	2	Ketuk	AEA	62	Gelovin	AEA	122
Stony River	AEA	3	Tununak	AVEC	62	Chalkyitzik	AEA	122
Platinum	AEA	4	Aiakakel	AEA	65	McGrath	AEA	125
Newick	AEA	5	Chitochina	APAT	65	Saint Paul	AEA	125
Koyukuk Pwrhs	AEA	6	Aktunang Village	AVEC	67	Sand Point	AEA	125
Buckland	AEA	7	Chuohbaluk	AEA	68	Emmonak	AVEC	126
Tulda	AEA	8	Anakluyuk Pass	N.S.	68	Engek	A:CA	132
Crooked Crook	AEA	9	Clarks Point	AEA	68	Runa Cove	AEA	132
Teller	AEA	9	Nunam Inua	DONE	68	Limo Village	AEA	132
Manokotak	AEA	11	Tamma	AEA	68	Naukah	APAT	132
Okja w/hydro	AEA	12	Ekwok #2	AEA	68	Ellen	AVEC	132
Steelmule	AEA	13	Wahyuk	AVEC	68	Bullies	APAT	132
Napakak	AEA	14	Napakak	AEA	74	Tunlulak Dist	AEA	138
Padro Bay	AEA	15	Seamion Bay	AVEC	74	Chugik Lagoon	AEA	138
Shishmaref	AVEC	16	Phol Station	AVEC	74	Galena	AEA	138
Nikolski	AEA	17	Gustavus	AEA	77	Kelmovik	N.S.	138
Yakutat	AEA	18	Rampart	AEA	77	Kasiguk	AVEC	138
Diomedea	AEA	19	Gambell	AVEC	77	Akutan	AEA	143
Tunakee Springs	AEA	19	Kakag	AVEC	77	Avakanuk	AVEC	143
Klukwan	AEA	21	Tok	APAT	81	Tanana	AVEC	145
Nightmute	AVEC	22	Verellie	AEA	82	Chiyak	AVEC	145
Chugik Bay #2	AEA	23	Saint George	AEA	82	Holy Cross	AVEC	145
Iauug	AEA	23	Coffman Cove	APAT	82	New Stuyahok	AVEC	145
Ivanof Bay	AEA	23	Angoon	AEA	82	Shedokuk	AVEC	145
Port Heiden	AEA	23	Gold Bay	AEA	82	Kwadiineok	AEA	150
Kwelhtuk	AEA	23	Malakalla	AEA	82	Levelock	AEA	150
Chugik Bay #1	AEA	28	Kopruk	AEA	82	Saint Michael	AVEC	150
Akiachak	AEA	29	Kwalinga	AVEC	82	Grayling	AVEC	150
Point Lay	N.S.	30	Minto	AVEC	82	Kryuk	AVEC	150
Nikular	AEA	31	Selawik	AVEC	82	Aniak	AEA	155
Central	AEA	32	Shaldoolik	AVEC	82	Hootiah	APAT	155
Montasia Lake	APAT	33	Saint Mary's	AVEC	92	Nuigtul	N.S.	155
Lake Minchumina	AEA	34	Stebbins	AVEC	84	Shungnal	AVEC	155
Larsen Bay w/hvd	AEA	34	Kuko	AEA	92	Almautluak Pwrhs	AEA	155
Chelornak	AEA	35	Unalakleet	AEA	92	Koliganek	AEA	155
False Pass	AEA	36	White Pass	AEA	92	Chenega Bay	AEA	160
Anyk	AVEC	37	White Mtn. Pwrhs	AEA	92	Kokhanok	AEA	161
Algasuk	N.S.	38	Noatak	AVEC	92	Manley Hot Spr	AEA	162
Hauly Lake	APAT	38	Haines	APAT	100	Arctic Village	AEA	162
Eagle	APAT	43	Chugik Lake	AEA	101	Hughes	AEA	164
Twin Hills	AEA	43	Port Alsworth	AEA	101	Kongganak	AEA	164
Goodnews Bay	AVEC	43	Holls	APAT	101	Stevens Village	AEA	164
Marshall	AVEC	43	Hyuzburg	APAT	101			
Akrak	AEA	44	Hucka	AVEC	101	Tuluksak	DONE	165
Fort Yukon	AEA	45	Nulato	AVEC	101	Koyukuk, Distribution	DONE	165
Takelina	AEA	45	Savvonga	AVEC	101	Deenng	DONE	166
Beaver	AEA	45	Tegak	AVEC	101	Tuntulak	DONE	166
Dravog Mission	AVEC	45	Deenng, Dist	AEA	105	Kolik	DONE	166
Ouzma, w/hydro	AEA	46	Bren Crook	AEA	105	White Mtn. Distribution	DONE	170
Wainwright	N.S.	48	Kotauun	AEA	105			
Napakak	AEA	50	Perryville	AEA	105	Naknek	IT	0
Phol Point w/BFU	AEA	50	Red Devil	AEA	105	Naryvak	IT	0
Ruby	AEA	50	Kiana	AVEC	105	Newhalen	IT	0
Quinhagak	AVEC	53	Noorvik	AVEC	105	Nondalton	IT	0
Pelican	AEA	54	Almautluak, Dist	AEA	111	Oscarville	IT	0
Point Hope	N.S.	54	Kolik, Dist	AEA	111	Port Lions	IT	0
Akhiok	AEA	54	Ekwok	AEA	111	Soldovia	IT	0
Esk	AVEC	54	Nelson Lagoon	AEA	111	South Naknek	IT	0
Lower Kalskoo	AVEC	57	Tellin	APAT	111	Thorne Bay	IT	0
AEA Projects		117						
AVEC		80						
North Slope (N.S.)		7						
White Grid Volages (I.T.)		9						Updated: 4/12/03

APPENDIX G, cont.**Needs/Projects for the NonRailbelt**

- **BFU Funding Needs:** AEA made an assessment in 2000 of Bulk Fuel Storage facilities in 171 communities. The result is that AEA is responsible for 141 projects while AVEC is responsible for 51 communities. The balance of the 132 projects had a bulk capacity upgrade need of approximately 26,000,000 gallons. In a typical community project, AEA upgrades approximately 90% of the existing storage capacity. This average is anticipated to decline as AEA undertakes projects that are lower on the deficiency list and thus require less effort to upgrade. To date (including the 2003 construction season), AEA has upgraded 9,500,000 gallons of capacity and has projected that only 11,000,000 of capacity remain to be upgraded. Funds needed to complete the Bulk Fuel storage facilities total \$343,000,000 (AEA \$196,000,000; AVEC \$147,000,000).

APPENDIX H**Needs/Projects for Southeast and Four Dam Pool Communities**

The mountainous terrain coupled with a wet, maritime climate provide significant opportunities for hydroelectric generation. The mountainous terrain and island environment has also limited the development of roads and other infrastructure including transmission lines connecting the communities within the region. Hydroelectric power plants and diesel generators provide nearly all of the electric power generation in Southeast Alaska. Natural gas and coal, the primary fuel sources for electric generation in the Railbelt areas of the State, are not commercially available in Southeast.

Primary Southeast Alaska Electric Utilities and 2002 Energy Sales

	Utility	Sales (MWh)	% of Total
Upper Lynn Canal Region			
Skagway	AP&T	10,521	1.4%
Haines	AP&T	11,725	1.6%
Chilkat Valley/Klukwan	THREA	1,308	0.2%
Subtotal		23,554	3.2%
North Region			
Juneau	AEL&P	311,550	41.9%
KMC-GC (Greens Creek)	Self	55,845	7.5%
Hoonah	THREA	4,161	0.6%
Gustavus	Gustavus Electric Co.	1,390	0.2%
Excursion Inlet Cannery	Self	5,375	0.7%
NPS - Glacier Bay	Self	1,000	0.1%
Subtotal		379,321	51.0%
West Central Region			
Sitka	Municipal System	91,802	12.4%
Angoon	THREA	1,737	0.2%
Tenakee Springs	Municipal System	382	0.1%
Subtotal		93,921	12.6%
Tyee-Swan Region			
Wrangell	Municipal System	25,229	3.4%
Petersburg	Municipal System	36,617	4.9%
Kake	THREA	3,964	0.5%
Ketchikan	Municipal System	142,567	19.2%
Mellakatta	Mellakatta Power & Light	13,543	1.8%
Subtotal		221,920	29.9%
Prince of Wales Region			
Craig/Klawock/Thorne Bay/Kasaan	AP&T	21,355	2.9%
Coffman Cove	AP&T	674	0.1%
Hollis	AP&T	507	0.1%
Hydaburg	AP&T	1,449	0.2%
Naukati Bay	AP&T	382	0.1%
Whale Pass	AP&T	213	0.0%
Subtotal		24,580	3.3%
Totals		743,296	100.0%
Totals - Average MW		84.9	

APPENDIX H, cont.**Needs/Projects for Southeast and Four Dam Pool Communities**

The Four Dam Pool projects also include the Terror Lake (22.6 MW) project in Kodiak and the Solomon Gulch (12.0 MW) project in Valdez. The Terror Lake project serves Kodiak and the Solomon Gulch project serves Glennallen, Valdez and the Copper River Basin. These two projects coupled with the Swan Lake and Lake Tyee projects in Southeast comprise the projects now owned by the Four Dam Pool Power Agency.

These projects were purchased from the State of Alaska on January 31, 2002. Members of the Four Dam Pool Power Agency include the City of Ketchikan, the City of Wrangell, the City of Petersburg, Kodiak Electric Association and Copper Valley Electric Association.

A number of sub-regional transmission lines and new hydroelectric resources have been evaluated by the electric utilities in Southeast Alaska. Some of these projects are well into the development process and are proposed to be constructed in the near future. These projects are summarized with their assumed on-line dates as follows:

Project	Community/Utility	Projected On-Line Year
Craig - Hollis Transmission Line	AP&T	2003
Craig - Hydaburg Transmission Line	AP&T	2004
Coffman Cove Transmission Line	AP&T	2007
South Fork Hydroelectric Project	AP&T Prince of Wales	2006
Lake Dorothy Hydroelectric Project	AEL&P	2007
Haines - Chilkat Valley Transmission Line	AP&T	2007
Kasidaya Hydroelectric Project	AP&T Upper Lynn Canal	2006
Falls Creek Hydroelectric Project	Gustavus Electric Co.	2008

Date shown is dependent on ability to obtain project funding

APPENDIX H, cont.**Needs/Projects for Southeast and Four Dam Pool Communities****Potential New Southeast Alaska Hydroelectric Projects**

	<u>Community / Utility</u>	<u>Capacity (kW)</u>	<u>Annual Energy Generation Capability¹ (MWh)</u>	<u>Estimated Capital Cost² (\$millions)</u>
Upper Lynn Canal Region				
Kasidaya Creek	Haines-Skagway/AP&T	3,000	12,000	7.0
Connelly Lake	Haines-Skagway/AP&T	5,000	30,000	14.0
Subtotal		5,000	30,000	
North Region				
Lake Dorothy - Phase 1	Juneau/AEL&P	15,000	75,000	
Lake Dorothy - Phase 2	Juneau/AEL&P	32,000	94,000	
Gartina Falls	Hoonah	600	1,900	3.8
Water Supply Creek	Hoonah	600	1,800	3.1
Falls Creek	Gustavus/GEC	800	2,500	4.1
Subtotal		49,000	175,200	
West Central Region				
Takatz Lake	Sitka	20,000	82,800	82.0
Katlian River	Sitka	7,000	29,800	70.5
Thayer Creek	Angoon	1,000	8,500	NA
Subtotal		28,000	121,100	
Tyee-Swan Region				
Thomas Bay (Swan Lake)	Petersburg	40,000	164,400	193.0
Lake Tyee Third Turbine	Petersburg - Wrangell	10,000	1,000	NA
Sunrise Lake	Wrangell	4,000	12,200	NA
Anita - Kunk Lake	Wrangell	8,000	28,200	NA
Virginia Lake	Wrangell	12,000	42,700	NA
Thoms Lake	Wrangell	7,300	25,600	NA
Whitman Lake	Ketchikan/KPU	4,600	19,640	7.6
Connell Lake	Ketchikan/KPU	1,900	11,640	5.5
Mahoney Lake	Ketchikan/KEC	9,600	45,600	NA
Triangle Lake	Metlakatla/MP&L	3,900	16,885	12.9
Subtotal		101,300	367,865	
Prince of Wales Region				
South Fork	Craig-Klawock/AP&T	2,000	7,000	3.5
Lake Mellon/Reynolds Creek	Craig-Klawock/AP&T	10,000	-	NA
Subtotal		12,000	7,000	
Totals		195,300	701,165	

APPENDIX H cont.

Needs/Projects for Southeast and Four Dam Pool Communities



Transmission Line Development/Regional Planning:

Except for transmission lines connecting several Prince of Wales Island communities, the Lake Tye to Wrangell & Petersburg transmission line, and a submarine cable connecting Haines & Skagway, the communities within Southeast Alaska are not currently interconnected.

In 1997, the Southeast Conference Intertie Committee was formed including representation from a broad range of utilities, municipalities and organizations from all over Southeast Alaska. A study was commissioned by Southeast Conference and completed in 1997 by Acres International to evaluate the technical feasibility of an interconnected Intertie system throughout Southeast Alaska. The results of the study served as the basis upon which Congress passed a bill authorizing the project including federal funding participation.

Southeast Conference commissioned an engineering & economic analysis of the Southeast Alaska Intertie Project in 2003. This study was completed by D. Hittle & Associates in 2003. The study provides an update of the original Acres report and includes updated cost estimates and recommended segment phasing. Three transmission segments are currently under varying stages of development

APPENDIX H, cont.

Needs/Projects for Southeast and Four Dam Pool Communities

1. Swan Lake – Lake Tye Segment:

Originally developed by the City of Ketchikan, the project is being transferred to the Four Dam Pool Power Agency. The Agency, owner of the Swan Lake and Tye Lake generation facilities, will be responsible for all remaining construction activity. This Intertie segment has been several years in development and is now poised for completion. All of the necessary permits are in hand, all but one mile of the 57 mile right-of-way between the Swan Lake and Tye Lake hydroelectric plants has been cleared, the structure sites have been surveyed and sampled, and final engineering design is nearly complete. The surplus power from Lake Tye will be used to offset diesel generation in Ketchikan and allow more efficient use of existing generation facilities.

2. Juneau – Greens Creek Mine – Hoonah Segment:

The \$41 million, 63.5-mile Juneau - Greens Creek Mine – Hoonah segment is coupled with the private development of the \$35 million, 15-megawatt Lake Dorothy Hydroelectric project. The first 11 miles of the Intertie – from the Douglas Bridge to North Douglas Island have been completed by Alaska Electric Light & Power. Hydroelectric energy delivered across the Juneau-Greens Creek-Hoonah Intertie will completely replace diesel-generated energy in Hoonah and at the Greens Creek Mine. In Hoonah, the Intertie will displace over 400,000 gallons of diesel fuel annually, supplying hydroelectric energy to 860 residents and 435 homes. In addition, the Intertie will displace over 5 million gallons of diesel fuel used annually to generate electrical energy at the Greens Creek Mine.

3. Petersburg – Kake Segment:

The project would involve the construction of between 46 and 59 miles of transmission line (depending on the route selected) interconnecting the communities of Petersburg and Kake. The potential long-term benefits of the Intertie would be to use surplus generation from the Lake Tye hydroelectric project to offset diesel generation in Kake. Additional benefit is the potential interconnection to the Woewodski Island Mine project that is currently under exploration by Olympic Resources and Bravo Venture Group. This project has promising mineral potential similar to the existing Greens Creek mine near Juneau. The estimated cost of this project is \$ 23.1 million dollars if the shortest and most direct route is selected. Most of the line would parallel existing logging roads in the region. Two short submarine cables would probably be required. This segment will be designed for eventual interconnection to Sitka to the West as well as future interconnection to the Juneau – Hoonah segment.

APPENDIX H, cont.

Needs/Projects for Southeast and Four Dam Pool Communities

Routes for transmission lines between the communities of Southeast Alaska have been identified based on previous studies. These routes combine lengthy submarine cables and overhead transmission lines generally through undeveloped areas. The routes for the most part, are included as identified power system corridors in the Tongass National Forest Land Management Plan. The costs to construct and develop each of these lines at current cost levels have been estimated and are summarized as follows:

	Estimated Cost (millions)	Line Length (miles)		
		Sub. Cable	Overhead	Total
SEI - 1 Juneau - KMCGC -Hoonah	\$37.1	34.5	18.7	53.2
SEI - 2 Kake - Petersburg	23.1	1.7	49.9	51.6
SEI - 3 Metlakatla - Ketchikan	6.0	1.0	16.0	17.0
SEI - 4 Ketchikan - Prince of Wales	31.7	17.2	18.0	35.2
SEI - 5 Kake - Sitka	50.3	35.0	24.0	59.0
SEI - 6 Hawk Inlet - Angoon - Sitka	81.2	82.0	22.0	104.0
Less: SEI-6 costs common to SEI-5	(9.5)		(20.0)	(20.0)
SEI - 7 Hoonah - Gustavus	26.4	29.0	1.0	30.0
SEI - 8 Juneau - Haines	69.8	2.8	82.5	85.3
Total System	\$316.0	203.2	212.1	415.3

It should be noted that significant alternative configurations and route options exist for SEI-2, SEI-4, SEI-6 and SEI-8 which would change the estimated length and cost of these lines. The various alternatives will need to be evaluated more thoroughly in the future as development of these lines proceeds. Depending on the timing of construction of the Intertie segments, estimated costs will need to reflect the estimated impact of inflation.

Electric loads in Southeast Alaska are forecasted to increase at approximately 1% per year. Some communities are expected to see slightly higher rates of growth in the next - few years due to expanded economic activity in their areas. The potential for noticeable increases in energy requirements exists, however, particularly due to possible new mining operations.

The planned additions of new small hydroelectric facilities and the relatively slow growth expected in electrical loads reduces the near-term benefits that could be realized with Interties between certain communities.

APPENDIX H, cont.**Needs/Projects for Southeast and Four Dam Pool Communities**

An evaluation of the costs and benefits of the Intertie segments has been prepared to determine when the savings in diesel energy generation production expenses would exceed the costs of purchasing and delivering power over the Interties. The results of this analysis indicate when new Intertie segments would

be considered "economically justifiable". The recommended timing of the new Intertie segments, as determined by this analysis, is as follows:

	Projected On-Line Year
SEI - 1 Juneau - KMCGC - Hoonah	2007
SEI - 2 Kake - Petersburg	2007
SEI - 3 Metlakatla - Ketchikan	2015-2020
SEI - 4 Ketchikan - Prince of Wales	2020-2025
SEI - 5 Kake - Sitka	2025-2030
SEI - 6 Hawk Inlet - Angoon - Sitka	2020-2025
SEI - 7 Hoonah - Gustavus	After 2030
SEI - 8 Juneau - Haines	After 2030

The estimated cost of the total Southeast Intertie system is shown in Table 5-11. For the most part, the costs included in Table 5-10 do not acknowledge any cost savings that could possibly occur if several components of the system were to be constructed concurrently. Significant savings could potentially be realized if multiple submarine cable crossing systems were installed at the same time.

TABLE 5-11
Estimated Cost of Project Development and Construction
Southeast Alaska Intertie System

SEI - 1	Juneau - KMCGC - Hoonah	\$ 37,076,000
SEI - 2	Kake - Petersburg	23,073,700
SEI - 3	Metlakatla - Ketchikan	5,962,400
SEI - 4	Ketchikan - Prince of Wales	31,693,000
SEI - 5	Kake - Sitka	50,345,800
SEI - 6	Hawk Inlet - Angoon - Sitka	81,193,400
	Less: SEI-6 costs common to SEI-5	(9,506,000)
SEI - 7	Hoonah - Gustavus	26,372,200
SEI - 8	Juneau - Haines	69,779,000
	Total System	\$ 315,989,500

The total estimated cost of the system is \$316.0 million. Of this amount, approximately \$7.0 million is for inclusion of fiber optic systems in both the submarine and overhead portions of the transmission lines.

The total estimated cost is significantly less than the \$435.8 million indicated in the 1997 Southeast Alaska Electrical Intertie System Plan. The 1997 Plan amount included \$69.8 million for the Tyee-Swan Intertie that is not included in Table 5-11. The 1997 Plan also included approximately \$55.5 million more for the interconnection between Juneau, Hoonah and Sitka than is indicated for SEI-1 and SEI-6 in total in Table 5-11, above.

Appendix I

FY03 PCE Program Participating Utilities

Akiak, City of		Chignik Lake Electric Utility	North Slope Borough
Akiachak Native Community		Chitina Electric Inc.	Anakutuvuk Pass Point Hope
Akiak, City of		Circle Electric Utility	Atkasuk Point Lay
Akutan Electric Utility		Cordova Electric Co-op	Kaktovik Wainwright
Alaska Power Company		Diomedea Joint Utilities	Nuiqsut
Allakaket/Alatna	Hydaburg	Egegik Light & Power	Nunam Iqua Electric Company
Bettles/Evansville	Klawock	Ekwoq Electric	Nushagak Electric Cooperative
Chistochina	Mentasta	Elfin Cove Electric Utility	Dillingham Aleknagik
Coffman Cove	Naukati	False Pass Electric Association	Ouzinkie, City of
Craig	Northway/Northway Village	G & K	Pedro Bay Village Council
Dot Lake	Skagway	Cold Bay	Perryville, City of
Eagle/Eagle Village	Tetlin	Galena, City of	Pilot Point Electrical
Haines	Thorne Bay/Kassan	Golovin Power Utilities	Platinum, City of
Healy Lake	Tok	Gustavus Electric Company	Port Heiden, City of
Hollis	Whale Pass	Gwitchyaa Zhee Utilities	Puvurnaq Power Co
Alaska Village Electric Cooperative		Ft. Yukon	Kongiganak
Alakanuk	Nightmute	Hughes Light & Power	Ruby, City of
Ambler	Noatak	Igiugig Electric Company	Sand Point Electric Co.
Anvik	Noorvik	I-N-N Electric Cooperative	St. George MuniElectrUtility
Brevig Mission	Nulato	Iliamna Nondalton	St. PaulMuniElectrUtility
Chevak	Nunapitchuk	Newhalen	Takotna Comm Assoc. Utilities
Eek	Old Harbor	Ignatchiaq Electric Company	Tanalian Electric Coop.
Elim	Pilot Station	Deering	Port Alsworth
Emmonak	Pitka's Point	King Cove, City of	Tanana Power Company
Gambell	Quinhagak	Kipnuk light Plant	Tatitlek Electric Utility
Goodnews Bay	Russian Mission	Kobuk Valley Electric Company	Teller Power Company
Grayling	Savoonga	Kokhanok Village Council	Tenakee Springs, City of
Holy Cross	Scammon Bay	Kolijaneq Village Council	Tlingit Haida Reg Elect Auth
Hooper Bay	Selawik	Kotlik Electric Services	Angoon Kake
Huslia	Shageluk	Kotzebue Electric Association	Chilkat Valley Klukwan
Kaltag	Shaktoolik	Koyukuk, City of	Hoonah
Kasigluk	Shishmaref	Kwethluk, Inc.	Tuluksak Tradit Power Utility
Kiana	Shungnak	Kwigillingok	Tuntutuliak Comm Service
Kivalina	St. Mary's/Andreafsky	Larsen Bay Utility Company	Twin Hills Village Council
Koyuk	St. Michael	Levelock Electric Cooperative	Umnak Power Company
Lower Kalskag	Stebbins	Lime Village Electric Company	Nikolski
Marshall	Togiak	Manley Utility Company	Unalakleet Valley Electric Coop
Mekoryuk	Toksook Bay	Manokotak Power Company	Unalaska Electric Utility
Minto	Tununak	McGrath Light & Power	Ungusraq Power Company
Mt. Village	Upper Kalskag	Middle Kusko. Electric Coop	Newtok
New Stuyahok	Wales	Chathbaluk Sleetmute	Venetie Village Electric
Alutiiq Power Company		Crooked Creek Stony River	White Mountain Utilities
Karluk		Red Devil	Yakutat Power
Andreanof Electric Corporation - Atka		Naknek Electric Association	
Aniak Light & Power Company		Naknek King Salmon	
Atmautluak Joint Utilities		South Naknek	
Beaver Joint Utilities		Napakiak Ircinraq Power Company	
Bethel Utilities Corp.		Napaskiak Electric Utility	
Bethel	Oscarville	Nateraq Light Plant	
Buckland, City of		Chefornak	
Central Electric, Inc.		Nelson Lagoon Electric Cooperative	
Chenega Bay IRA Village		Nikolai Light & Power	
Chignik Electric		Nome Joint Utility System	
Chignik Lagoon Power Utilities			

FY03 PCE PROGRAM STATISTICS

Participation Statistics	Fiscal Year 2003	Fiscal Year 2002	Percent Change 2002 - 2003
Population Served	79,229	79,555	-0.4%
Communities Served	185	187	-1.1%
Participating Utilities	89	90	-1.1%
Total Residential Customers	25,713	25,495	0.9%
Total Eligible Community Facilities Customers	1,776	1,746	1.7%
Total Eligible Customers	27,489	27,241	0.9%
Production Statistics			
Total Diesel Generation (kWh)	370,976,960	386,658,693	-4.1%
Total Hydroelectric Generation (kWh) (1)	25,599,909	7,889,500	224.5%
Total Purchased Power (kWh)	45,840,367	45,755,222	0.2%
Total kWh Sold (All Customers) (2)	403,156,646	401,804,401	0.3%
PCE Eligible kWh - Residential	89,786,393	89,314,504	0.5%
PCE Eligible kWh - Community Facilities	33,828,803	34,342,099	-1.5%
Total PCE Eligible kWh shown as percent of total kWh sold.	31%	31%	0.0%
Average Monthly PCE Eligible kWh - Residential Customers (3)	291	293	-0.7%
Average Monthly PCE Eligible kWh - Community Facilities	1,587	1,645	-3.5%
Average Monthly PCE Eligible kWh - Community Facilities / Per Resident	36	36	0.0%
Financial Statistics			
Average Price of Fuel Oil (\$/gallon)	1.33	1.32	0.8%
Total Fuel Oil Consumed (gallons)	27,295,935	28,161,794	-3.1%
Total cost of fuel purchased by the utilities (\$)	36,400,050	37,059,110	-1.8%
Total Operating Costs (\$)	59,003,506	57,169,071	3.2%
Operating expenses per total kWh sold (\$)	0.1464	0.1410	3.8%
PCE legislative funding appropriations (\$)	15,700,000	15,700,000	0.0%
Total PCE payments (\$) (4)	15,448,480	15,469,105	-0.1%
Average PCE payment per eligible kWh (\$)	0.1250	0.1251	-0.1%
Average annual required PCE payment per customer (\$) (3)	562	569	-1.2%

(1) Substantial increase in hydro generation due to the production of Cordova's Power Creek hydro facility.

(2) Value reduced by 3,194,515 kWh's in FY02, and by 1,063,387 in FY03 to eliminate double counting of kWh's where power is bought and sold between utilities participating in the PCE Program.

(3) Calculation assumes all customers were eligible to receive twelve (12) months of PCE credit.

(4) During FY03 PCE payments were made at a 84% level for the first eight (8) months, and at a 90% level for the next three (3) months, and at a 92% level for the last month.

**PCE PROGRAM
HISTORICAL TRENDS
Fiscal Year 1993 - 2003**

	Fiscal Year 1993	Fiscal Year 1994	Fiscal Year 1995	Fiscal Year 1996	Fiscal Year 1997
PARTICIPATION					
Participating Utilities	96	95	95	96	96
Communities Served	166	173	175	180	191
Population Served	69,626	73,392	75,776	75,488	77,406
CUSTOMERS					
Residential	20,857	21,732	22,361	23,316	23,820
Commercial	5,363	5,202	5,299	6,391	5,778
Community Facilities	1,285	1,366	1,361	1,452	1,510
Total Customers	27,505	28,300	29,021	31,159	31,108
FUNDING					
Appropriations (\$)	\$18,026,700	\$17,920,000	\$18,635,000	\$19,385,600	\$18,500,000
Disbursements (\$)	\$17,341,042	\$17,516,024	\$18,493,448	\$19,201,515	\$17,906,275
Disbursements/Customer (\$)	\$630	\$619	\$637	\$616	\$576
Funding Level (Annual Average % of full PCE rates)	89.17%	95%	97.5%	97.5%	85%
CONSUMPTION					
Total MWH Sold (MWH)	313,535	340,102	359,569	363,783	374,455
PCE Eligible MWH Residential & Commercial (6)	104,545	105,630	108,217	112,484	115,803
PCE Eligible KWH/Month/Customer, Residential & Commercial	332	327	326	316	326
PCE Eligible MWH Community Facilities	23,331	24,344	26,447	27,420	28,308
Eligible KWH/Month/Capita, Community Facilities	28.0	28.0	29.0	30.0	31.0
Total PCE Eligible MWH (MWH)	127,877	129,974	134,194	139,904	144,112
Eligible KWH/Month/Customer, Total Customers	388	383	385	374	386
COSTS					
Average Price of Fuel Oil (\$/gallon)	\$0.990	\$0.970	\$1.010	\$1.01	\$1.11
Total Gallons of Fuel Oil Consumed (gallons)	24,932,287	26,663,700	27,861,416	27,540,292	28,159,435
Total Cost of Fuel Oil (\$)	\$25,246,066	\$27,391,271	\$27,616,949	\$27,849,969	\$31,174,864
Total Operating Costs (\$)	\$43,974,601	\$48,431,445	\$47,200,227	\$52,174,734	\$51,068,505
EFFICIENCY RATIOS					
Operating Expenses per total KWH Sold (\$/kWh)	\$0.1400	\$0.1270	\$0.1310	\$0.1430	\$0.1360
RATES					
Average PCA/PCE per Eligible KWH (\$/kWh)	\$0.1350	\$0.1350	\$0.1380	\$0.1370	\$0.1240

(1) Commercial customers are ineligible to receive PCE credit, per July 2000 legislation.

(2) PCE funding levels for FY99 were paid at the a reduced level of 85% for the first ten (10) months of the program year, and reduced to 73.5% for the last two (2) months of the program year.

(3) PCE funding levels for FY01 were paid at the 100% level for the first eleven (11) months, and reduced to 74% for the last month of the program year.

(4) PCE funding levels for FY02 were paid at the reduced level of 92% for the first seven (7) months, 80% for the next four (4) months, and 66% for the last month of the program year.

(5) PCE funding levels for FY03 were paid at the reduced level of 84% for the first eight (8) months, 90% for the next three (3) months, and 92% for the last month of the program year.

(6) PCE Eligible MWH Residential & Commercial is a combined total for years FY89 - FY99. FY00 - FY03 represents residential eligible MWH's only.

**PCE PROGRAM
HISTORICAL TRENDS, cont.
Fiscal Year 1993 - 2003**

	Fiscal Year 1998	Fiscal Year 1999	Fiscal Year 2000	Fiscal Year 2001	Fiscal Year 2002	Fiscal Year 2003
PARTICIPATION						
Participating Utilities	97	98	94	91	90	89
Communities Served	193	194	188	189	187	185
Population Served	78,179	79,377	77,625	79,708	79,555	79,229
CUSTOMERS						
Residential	24,423	25,226	24,753	25,123	25,426	25,713
Commercial	5,895	5,955	(1)	(1)	(1)	(1)
Community Facilities	1,609	1,627	1,675	1,732	1,740	1,776
Total Customers	31,927	32,808	26,428	26,855	27,166	27,489
FUNDING						
Appropriations (\$)	\$18,700,000	\$18,050,000	\$15,700,000	\$17,090,222	\$15,700,000	\$15,700,000
Disbursements (\$)	\$18,503,992	\$17,949,524	\$14,415,676	\$17,076,203	\$15,469,105	\$15,448,480
Disbursements/Customer (\$)	\$580	\$547	\$545	\$636	\$569	\$562
Funding Level (Annual Average % of full PCE rates)	85%	(2)	100%	(3)	(4)	(5)
CONSUMPTION						
Total MWH Sold (MWH)	383,549	403,663	391,454	390,802	401,804	403,157
PCE Eligible MWH Residential & Commercial (6)	118,553	128,836	85,873	87,524	89,315	89,786
PCE Eligible KWH/Month/Customer, Residential & Commercial	326	364	265	290	293	291
PCE Eligible MWH Community Facilities	29,954	33,016	30,216	33,062	34,342	33,829
Eligible KWH/Month/Capita, Community Facilities	32.0	35.0	32.4	35.0	36.0	36.0
Total PCE Eligible MWH (MWH)	148,507	161,852	116,089	120,585	123,657	123,615
Eligible KWH/Month/Customer, Total Customers	388	411	293	325	379	327
COSTS						
Average Price of Fuel Oil (\$/gallon)	\$1.07	\$0.98	\$1.10	\$1.37	\$1.32	\$1.330
Total Gallons of Fuel Oil Consumed (gallons)	28,380,048	28,296,365	27,697,657	27,358,835	28,161,794	27,295,935
Total Cost of Fuel Oil (\$)	\$30,235,332	\$27,701,300	\$30,427,210	\$37,547,880	\$37,059,110	\$36,400,050
Total Operating Costs (\$)	\$53,803,948	\$54,539,372	\$41,487,005	\$55,436,898	\$57,169,071	\$59,003,506
EFFICIENCY RATIOS						
Operating Expenses per total KWH Sold (\$/kWh)	\$0.1400	\$0.1350	\$0.1060	\$0.1410	\$0.1410	\$0.1464
RATES						
Average PCA/PCE per Eligible KWH (\$/kWh)	\$0.1250	\$0.1450	\$0.1240	\$0.1416	\$0.1251	\$0.1250

(1) Commercial customers are ineligible to receive PCE credit, per July 2000 legislation.

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(3) PCE funding levels for FY01 were paid at the 100% level for the first eleven (11) months, and reduced to 74% for the last month of the program year.

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(5) PCE funding levels for FY03 were paid at the reduced level of 84% for the first eight (8) months, 90% for the next three (3) months, and 92% for the last month of the program year.

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Appendix J
Alaska Energy Policy Task Force Members

Chair: Mike Barry, Chairman of the Board
AIDEA/Alaska Energy Authority (AEA)
www.aidea.org

Vice Chair: H.A. Red Boucher, Alaska Wireless Technology
Board Member, Chugach Electric Association (CEA)
www.chugachelectric.com

Tom Boutin, Deputy Commissioner
State of Alaska-Department of Revenue
www.state.ak.us

Dave Carlson, Intertie Coordinator
Southeast Conference
www.seconference.org

Wayne Carmony, General Manager
Matanuska Electric Association (MEA)
www.matanuska.com

Rick Eckert, Manager of Finance
Homer Electric Association (HEA)
www.homerelectric.com

Steve Haagenson, President/CEO
Golden Valley Electric Association (GVEA)
www.qvea.com

Meera Kohler, President/CEO
Alaska Village Electric Cooperative (AVEC)
www.avec.org

Robert Wilkinson, CEO
Copper Valley Electric Association (CVEA)
www.cvea.org

