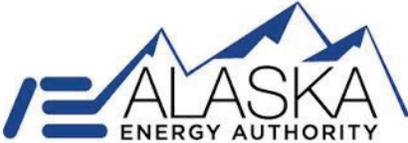


ALASKA AFFORDABLE ENERGY STRATEGY:

A Framework for Consumer Energy Sustainability Outside of the Railbelt



December 30, 2016
(Revised January 19, 2017)
www.akenergyauthority.org

This report was made possible through a legislative mandate as articulated in SLA 2014 SB 138 requiring Alaska Energy Authority (AEA) to investigate opportunities for delivering affordable energy infrastructure in non-Railbelt communities.

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INTRODUCTION

The Alaska Energy Authority (AEA) was tasked by the 28th Alaska Legislature to provide recommendations to improve the affordability of energy in areas of the State not serviced by the proposed natural gas pipeline (gasline). The Alaska Affordable Energy Strategy (AkAES) is the result of this effort.

AkAES is a strategic plan to improve the methods by which the State works with non-Railbelt communities and utilities to identify, evaluate, develop and maintain cost-effective energy solutions. The strategy includes recommendations for policy, financing mechanisms, strengthened regulation and other administrative tools. This report is a summary of the AkAES strategy. A longer, complementary report titled *AkAES Methodology, Findings, and Recommendations* goes into greater detail.

AkAES recommendations point to solutions with or without the gasline. Many of these recommendations can be implemented immediately.

Many Alaska communities face barriers to building and maintaining energy infrastructure including: lack of economies of scale, lack of access to a specialized workforce, geographic isolation and lack of access to funding. The State has tried to address these challenges with various programs and services that have reduced consumer costs. Given the State's current fiscal crisis, it is important to seek efficiencies without compromising benefits to communities.

To this end, AEA investigated opportunities for delivering more affordable energy to non-Railbelt communities, the efficacy of existing energy programs, as well as policy and/or regulatory changes that have potential to contribute to more reasonably priced, safe, stable and reliable consumer energy in non-Railbelt areas.

This project draws on decades of State research and experience, and also considers the current economic conditions in Alaska.

The primary outcome of AkAES is a streamlined, data-driven approach geared toward identifying, evaluating, developing and maintaining cost-effective energy solutions in Alaska for the long term.

The AkaES offers a streamlined, data-driven approach to identifying, evaluating, developing and maintaining cost-effective energy solutions over the long term. The AkaES has the potential to ease the necessary transition from a reliance on grants for energy infrastructure to a system in which loans and private investment play a larger role. The AkaES recommendations are expected to result in more sustainable energy infrastructure in the study area. AkaES recommendations are also expected to bring statewide benefits in the form of cost savings. State money can be saved through improved project selection, diversification of financing options and strengthening accountability to maximize the full economic potential of energy projects and programs.

The recommendations and funding options below are organized into four categories. Full descriptions follow on page 15.

A. Identification of cost-effective projects

- A1. Improve data collection and analysis and increase public access to the data
- A2. Clarify the State's role in working with communities on energy project identification, planning and financing
- A3. Establish energy codes for residential and non-residential buildings

B. Financing and funding of projects

- B1. Allow Bulk Fuel loan participants to purchase non-petroleum fuels
- B2. Create a "one-stop-shop" fund for communities that allows for segregated State, federal and private grants and loans for energy projects
- B3. Create an energy loan program with refund provisions that reward project performance
- B4. Statutorily allow voluntary on-bill financing and Commercial Property Assessed Clean Energy (C-PACE)
- B5. Modify Home Energy Rebate rules to expand access to residential efficiency services and stabilize State funding for residential Weatherization Assistance Program

C. Accountability and sustainability

- C1. Strengthen business and financial management assistance for Power Cost Equalization (PCE)-eligible utilities
- C2. Draw on the State's partnerships with regional and statewide entities to more cost-effectively provide needed assistance
- C3. Develop a cost-effective regulatory system to ensure rural electric utilities maintain "fit, willing and able" status

- C4. Require PCE-eligible, non-residential buildings of more than 5,000 square feet to have an energy audit and perform cost-effective retrofits
- C5. Empower the Regulatory Commission of Alaska (RCA) to have siting authority over generation and transmission for economically regulated utilities
- C6. Enact a one percent-per-year fuel reduction target for electric utilities until cost-effective gains have been realized

As required by statute, the report also recommends potential funding sources, discussed in more detail later in the report.

D. Funding State energy programs:

- D1. Use funds from the Alaska Affordable Energy Fund (AS 37.05.610) when they become available
- D2. Pay for PCE administrative expenses and fund some energy programs with PCE funds
- D3. Establish a universal service charge to support community energy projects and programs
- D4. Continue the PCE program and revive the Alaska Heating Assistance program

LEGISLATIVE INTENT

The legislative mandate for AkaES is contained in Sec. 75 of Chapter 14, SLA 14 (HCS CSSB 138(FIN) am H), authorizing legislation for the in-state gasline. The intent of the mandate was to ensure an equitable distribution of gasline benefits for all Alaskans. Communities in proximity to the gasline will potentially benefit from natural gas, while others will benefit from an affordable energy plan funded by a portion of the State’s gasline revenues. The outcome, however, is a plan that has value independent of the gasline revenue stream.

SB 138 instructs AEA to:

“develop a plan for developing infrastructure to deliver more affordable energy to areas of the State that are not expected to have direct access to a North Slope natural gas pipeline”

“identify ownership options, different energy sources... recommend the means for generating, delivering, receiving and storing energy in the most cost-efficient manner” and “may consider the development of regional energy systems that can receive and store bulk fuel”

“[f]or those citizens for whom there is no economically viable infrastructure available, recommend the means for directly underwriting the energy costs of the citizens to make their energy costs more affordable”

“recommend a plan for funding the design, development, and construction of the required infrastructure” including to “identify a source of rent, royalty, income or tax”

“provide the plan and suggested legislation for the design, development, construction and financing of the required infrastructure to the Legislature before January 1, 2017”

CONCURRENCE WITH EXISTING ALASKA STATE ENERGY POLICY

Additionally, the legislation tasked AEA with considering the State’s current energy policy, established in 2010 by House Bill 306. Several of the components of the 2010 energy policy comport with the needs of the communities and are included in AkaES, including:

- Encouragement of statewide energy efficiency codes for new and renovated residential, commercial and public buildings
- Decreasing public building energy consumption through conservation activities and energy efficient technology
- Promotion and development of renewable and alternative energy resources
- Identification and assistance with development of the most cost-effective, long-term sources of energy for each community statewide
- Creation and maintenance of a State fiscal regime allowing for permitting and regulatory processes that encourage private sector development of the State’s energy resource

- Streamlined regulatory processes and review that balance the economic costs of review with the level of regulation necessary to protect the public interest
- Use one office or agency, as may be specified by law, to serve as a clearinghouse in managing the State's energy-related functions to avoid fragmentation and duplication and to increase effectiveness

THE STUDY AREA

AEA worked with the Alaska Gasline Development Corporation (AGDC) to define the study area as the entire State excluding communities served by the Railbelt electric grid. The study area includes more than 200 communities and approximately 25 percent of the State's population (165,000 Alaska residents).



With the exception of a few larger Southeast communities, the AkaES study area is generally characterized by small, geographically isolated communities that rely heavily on diesel fuel for both electric generation and heating. The median community size is 300 residents and more than 90 percent of the communities have populations of fewer than 2,000 people.

In 2016, the retail price for a gallon of heating oil ranged from a low of less than \$1.50 per gallon (due to local subsidies) to as high as \$10 per gallon. The median cost for electricity without factoring in the PCE subsidy was \$0.62 per kilowatt-hour. Residents in the study area pay some of the highest costs for energy in the nation.

To maintain current energy infrastructure in the AkaES study area, it is estimated that more than \$20 million for power generation and \$13 million for bulk fuel storage in annual investment is needed. The cost of maintaining transmission lines, alternative energy systems, building efficiency and other components of the energy system would be additional annual costs.

AFFORDABILITY

Affordability is impacted by the cost of the good or service being purchased, by the income of the purchaser and by other goods and services competing for those same dollars. AEA evaluated several potential methods for determining an appropriate, Alaska-specific definition of affordability for this report. Possible definitions included bringing energy costs in the study area in line with the Railbelt and setting a threshold for percentage of household income spent on utility bills. All potential definitions were rejected either due to the unreliability of community-level census data or because the definition would be unachievable under any reasonable fiscal projection.

Given the State's current and projected fiscal environment, consumer energy costs are expected to increase in much of the AkAES study area as less money is available for grants and subsidies. The AkAES recommendations should be compared against a future with less government funds, not the past where State and federal grants were plentiful.

The impact of the AkAES recommendations should be compared against a future with less government funds, not the past where State and federal grants were plentiful.

AEA uses the term "cost effective" for "affordable" as a practical way of defining the primary goal of the project which is to reduce the cost of energy in AkAES study area communities.

A FRAMEWORK FOR GUIDING DECISIONS

SB 138 requires that AEA "develop a plan for developing infrastructure to deliver more affordable energy." AEA understood "infrastructure" to include electric and heat generation resources, both renewable and non-renewable, as well as analysis of energy efficiency improvements. The AkAES includes recommendations for selecting, developing and managing these types of energy infrastructure projects; it does not recommend a list of specific projects.

AEA did consider regional energy infrastructure projects. These options were ruled out for insufficient cost-effectiveness, therefore there are no recommendations relating to specific infrastructure or capital projects (e.g. liquefied natural gas delivery into rural Alaska communities).

METHODOLOGY & FINDINGS

In developing the knowledge base, AEA placed a premium on learning from previous work and collaborating with State and federal government agencies; local, regional and tribal entities; utilities; and non-governmental organizations that would be best situated to understand the causes and potential solutions to energy cost challenges within the study area.

The drivers of energy cost were identified and assessed in order to understand if and how those factors could be changed. In particular, over 3,000 potential infrastructure projects were evaluated using best available data and the Alaska Affordable Energy Model, a new community energy evaluation tool developed as a part of the AkaES project.

To ease the transition to loan-based financing and reduce the development and operational risks of infrastructure projects, non-infrastructure solutions such as improvements to financial, management and technical capacity were investigated.

Further research was done to see how the findings could be used to build off of the successes of current State energy programs.

STAKEHOLDER COLLABORATION

AEA worked with the following four groups during the course of the AkaES project.

- I. **Technical Advisory Committee:** This group was comprised of the Alaska Center for Energy and Power (ACEP), the Alaska Gasline Development Corporation (AGDC) and the Institute for Social and Economic Research (ISER). The committee provided guidance on the study methodology, assessment and evaluation of technology solutions.
- II. **Advisory Group:** This group was comprised of eight State entities, regional organizations and utilities that provided guidance and feedback on work done by AEA and contractors.
- III. **Contractors:** Academic, private sector and federal entities were contracted to provide specific technology, program and/or policy data collection and analysis. All reports generated for the AkaES are available on the AEA website:
<http://www.akenergyauthority.org/Policy-Planning/AffordableEnergy>.

- IV. Alaska Energy Stakeholders: This group included dozens of local, regional, State and federal government entities, NGOs, private companies and utilities that provided data, expertise and review of work products developed over the course of the project.

RESEARCH FINDINGS AND HIGHLIGHTS

Below are five high-level findings from the AkAES study.

The Drivers of Energy Costs

Energy costs are driven by complex variables, some easier to influence than others. There are two primary categories of cost drivers: the per-unit cost and the amount of energy consumption.

The retail rate for heating fuels include commodity cost, which for heating oil is determined by an international market. Additional factors include the costs to transport and store the fuel. Local markup, which is highly variable, is the last major driver of cost. Since many communities purchase fuel one or two times per year, the retail price does not respond quickly to changes in the commodity cost.

Electricity cost drivers are more complex. The retail rate is broadly divided into the fuel costs and non-fuel costs. The fuel costs are determined by the unit cost of fuel (which is free for renewables), the generation efficiency and line losses. Non-fuel costs include paying for personnel, overhead and operations and maintenance. Non-fuel costs can be offset by other types of utility sales, including heat sales and pole rentals. Utility size and structure have a strong impact on the non-fuel costs. For the non-economically regulated utilities, local pricing decisions can have a large positive or negative impact on price. A number of communities and/or boroughs subsidize electricity prices, and other communities have rates that are significantly above their reported expenses.

Decisions made in planning and program implementation by State and federal agencies can also have a direct impact on the rates that consumers pay in communities.

The amount of energy consumed is influenced by: Alaska's colder climates, varying levels of building quality and consumer behaviors. State energy programs have been successful in cost-effectively reducing energy consumption and federal efficiency standards have also contributed to reduced per-customer residential sales.

Infrastructure Improvements to Address Energy Cost Drivers

Strategies deployed to increase access to affordable energy must be tailored to the specific resources, needs and capacity of the community and/or utility they are intended to benefit. In order to analyze the cost-effectiveness of various infrastructure improvements in a given community, AEA developed the Alaska Affordable Energy Model with the assistance of Geographic Information Network of Alaska (GINA) to use the best available resource, generation and cost data.

Demand-Side Energy Efficiency: Energy efficiency improvements in residential and non-residential buildings was found to be cost effective across the study area, with an identified comprehensive annual savings potential of more than 10 million gallons of heating oil.

Electricity: Opportunities for improvements in electricity generation, transmission and distribution were found to be very site-specific. AEA found that renewable energy generation opportunities for wind and hydro are limited by local resources and the economy of scale. The most significant opportunity for cost savings in electricity generation and distribution is in reducing distribution line losses.

Heat: Alternative sources of thermal energy, including biomass and air-source heat pumps (ASHPs), were also investigated. Again, the geographic distribution and potential savings were found to be very site-specific based on the availability of resources and the economy of scale.

Natural Gas: AEA found that liquefied natural gas (LNG) is not likely to be economically viable in the AKAES study area given current market conditions.

Regional Bulk Fuel: Regional bulk fuel facilities were found to be potentially cost-effective in two locations, one on the upper Kuskokwim and another on the upper Yukon.

Non-Infrastructure Improvements to Address Energy Cost Drivers

While infrastructure projects were initially the intended focus of the AKAES, the project found instead that other, non-infrastructure improvements can have a significant role in reducing the cost of energy in communities, especially in those without cost-effective infrastructure options.

Utility Management: Utilities and communities have benefited from the direct savings of economies of scale realized by consolidating utility management functions. Additional savings can be realized through management decisions that impact the near-term performance and long-term life expectancy of the energy infrastructure, e.g. operations and maintenance.

Operations and Maintenance: Research showed that the expected performance and/or economic life of energy projects is not always realized. This increases costs to consumers and the State. Consumers pay higher rates than are necessary. The State pays for more technical assistance, capital costs and PCE subsidy. Energy projects require appropriate, regular maintenance and adequate operation over the long term in order to realize the project's expected performance and economic life. Maintenance of the system requires a certain level of technical, business, and financial capacity, the degree of which will depend on the complexity of the system.

Helping utilities meet standards necessary for accessing loan financing will reduce the need for State capital funds.

Informed Decision-Making: Risks exist across the entire life cycle of all projects. Decisions at all stages influence the cost and sustainability of projects. The AkaES found that acknowledging and mitigating risks—particularly through a staged approach to funding, clear pre-construction study requirements and using qualified and experienced personnel—leads to better outcomes.

Use Loans to Leverage Public Funding and Encourage Private Sector Investment

Declining State revenue has increased the urgency of transitioning government support for energy projects from grants to more loans, where State funding is used to incentivize and supplement debt financing. In addition to the economic imperative, there are indications that this shift can improve project selection, accountability and performance. Changing the system which State agencies and communities have grown accustomed will require significant work to address the more stringent financial, managerial and technical capacity requirements for loan-based financing.

While it will not be possible to shift all State funding to loans—the per capita costs might be too great for some communities—the AkaES found that many communities and utilities are in a position to take on more debt for cost-effective projects.

The AkaES found that communities need more flexibility in funding opportunities to address their needs. Currently, many communities find themselves choosing and developing projects based on what type of funding happens to be available rather than on the actual needs of the community.

Simply increasing the availability of loans while reducing grant opportunities will not be sufficient to catalyze a widely-adopted transition to loan-based funding. The State may need to provide incentives, technical assistance and regulatory requirements to support and encourage the transition to a loan-based project funding system. Helping utilities meet standards necessary for loan financing will reduce the need for State capital funds.

Among barriers to private sector investment that the AkaES project revealed is a lack of knowledge of investment opportunities in rural Alaska. Using the tools and resources suggested for identifying cost-effective projects, the State can help identify opportunities—through rigorous data collection and analysis—for private sector investors.

Private sector investors are generally more risk-averse than the State, meaning that they will require a higher return on investment and/or be less willing to invest in communities lacking strong financials and traditional collateral. Additional financial instruments, such as loan-loss reserves, may be needed to absorb some of the risks for private sector investors.

Reducing Community need for Power Cost Equalization

With approximately \$40 million in yearly subsidy, the Power Cost Equalization program is the largest consistent source of energy funding in the AkaES study area. Opportunities presented in the AkaES are expected to reduce costs to the PCE program.

Non-infrastructure strategies could potentially save millions of dollars per year for both consumers and the PCE program. End-use efficiency, particularly in PCE-eligible, non-residential community facilities, would save additional funds. This savings provides benefit to both consumers and the State treasury.

Potential Sources of Sustainable Energy Funding

Lack of sustainable program funding is a major barrier to the success of all current energy programs, with the exception of PCE. Identifying “a source of rent, royalty, income or tax” was also a requirement of the project’s enabling legislation. The AkAES identified a number of potential sources of sustainable energy funding including existing endowments, future legislative funds, removing existing tax exemptions and increasing existing regulatory charges.

Improving Collaborative Leadership for Community and Consumer Energy

The State’s current efforts to assist communities are spread over multiple agencies and rely on interagency collaboration and coordination to provide assistance to communities. The AkAES found that targeted State energy policy, combined with the designation of a State entity with authority to consolidate and manage consumer energy programs, to the extent that is reasonable, would create efficiencies by streamlining the delivery of energy programs and services.

ALASKA AFFORDABLE ENERGY STRATEGY RECOMMENDATIONS

STRENGTHEN STATE GOALS

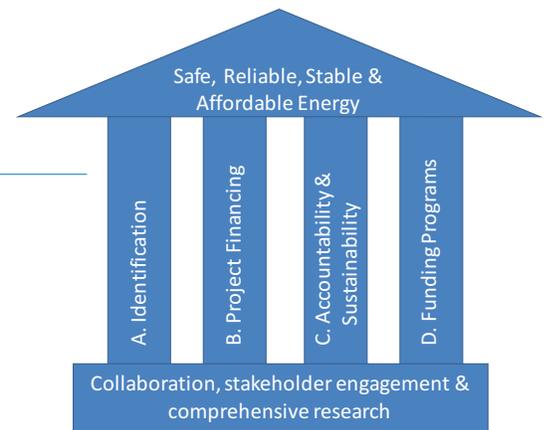
Given the critical importance of sustainable community energy systems that are safe, stable and reliable, it is recommended that the State energy goals be enhanced to include:

All communities will have safe, stable, reliable and affordable energy by 2030.

Barrier(s) addressed: Current State goals speak to increasing renewable energy, efficiency, natural gas distribution, use of a loan program and that the State should remain a leader in petroleum and natural gas production and become a leader in renewable and alternative energy development. None of these goals speak to the development and maintenance of basic, critical energy infrastructure such as diesel powerhouses.

THE FOUR PILLARS OF THE AKAES

The AkaES proposes an evidence-based management framework to guide decision-making. Additionally, each recommendation aims to address barriers to achieving affordable energy in the study area.



The AkaES recommendations are built on a foundation of collaboration, stakeholder engagement and comprehensive research. Implementation of the recommendations requires changes to statute, regulation and policy. The recommendations are organized into four categories or pillars that support the aforementioned goal of delivering safe, reliable, stable and affordable energy:

- A.** Identification of cost-effective projects
- B.** Financing cost-effective projects
- C.** Accountability and sustainability
- D.** Funding State energy programs

The solutions proposed by the AkaES all employ at least one of the following:

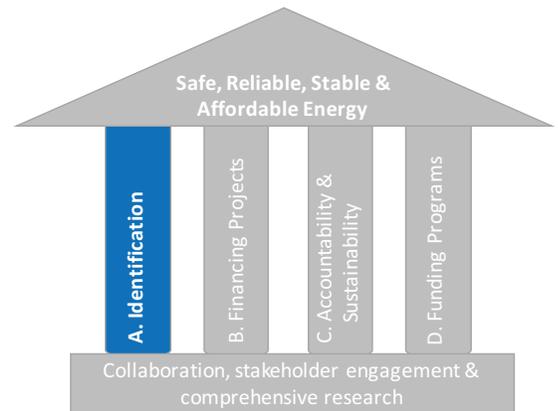
- 1) Direct financing (e.g. grants, loans, incentives)
- 2) Technical assistance (e.g. the collection and sharing of data, information, analysis, evaluation, consultation)
- 3) Requirements (e.g. mandates, regulations, performance standards)

The following recommendations build off of the many successes of Alaska's energy programs within the study area.

Each individual recommendation would bring benefit if implemented, whether as stand-alone actions or collectively as a suite of changes. The greatest degree of benefit, however, would come from implementing all recommendations together.

A. IDENTIFICATION OF COST-EFFECTIVE PROJECTS

A one-size-fits-all approach to energy does not work for Alaska communities. Socioeconomic realities differ greatly across the study area, as do barriers to long-term, sustainable project development including access to resources and capital, a trained and local workforce, revenue, resource availability and generation capacity, amongst others. Better community-level data are necessary to make well-informed decisions about energy projects and programs.



There are also forces outside of communities that create barriers to optimum project identification and selection. Many energy programs are governed by a multitude of State and federal agencies, and evaluation criteria for projects are not always consistent across programs. To overcome these barriers, AKAES recommends the following:

A1. IMPROVE DATA COLLECTION AND ANALYSIS

1. Collect and create publicly accessible, community-level energy data for Alaska communities that receive PCE or have a population greater than 20 people.
2. Collect and create publicly accessible data regarding State energy programs for the purpose of improving their cost effectiveness.
3. Maintain an online analysis tool, the Alaska Affordable Energy Model, to provide guidance regarding the cost effectiveness of energy infrastructure opportunities in Alaska's communities.

Benefit(s): High-quality energy data and analysis can help deliver savings by improving project identification, risk management and program design.

Barrier(s) addressed: Communities and potential investors, both public and private, lack quality data and data-driven decision support tools to identify and evaluate the cost effectiveness

of potential infrastructure and non-infrastructure opportunities. Community energy data is not systematically collected, analyzed and made available. When the risks associated with community energy projects are not clearly understood, the results can increase costs and stymie investment.

Connections to other recommendations: An energy data program, coordinated with the State's existing energy data initiatives, would collect and analyze data generated by the implementation of other recommendations. The data program would help to identify projects for financing (Recommendations B2 and B4) and create efficiency in assisting communities (Recommendations A2, C1 and C2) through new data and analytic tools. Data would be collected that could assist communities with meeting regulatory requirements (Recommendation C3).

A2. CLARIFY STATE'S ROLE IN WORKING WITH COMMUNITIES ON PROJECT IDENTIFICATION, PLANNING AND FINANCING

This recommendation would establish a process for providing community assistance outside of grant fund management. The State can designate a sole agency to work with communities to identify, plan and secure financing for improvements to generation efficiency, lower line losses, fuel storage, incorporation of renewable energy, residential and non-residential energy efficiency and/or improvements to management, as well as operations and maintenance. Although AEA performs this function through regulations in support of the organization's mission, there is no clear statutory language that mandates the State help communities reduce their energy costs. This should be formalized as a core responsibility of the State energy office.

Benefit(s): Formalizing the State's role in project selection can lead to reduced cost to communities through improved project selection and significant savings to the State through reduced PCE expenditures. Savings for participants in the Alaska Heating Assistance Program are also possible.

Barrier(s) addressed: A clear process for communities to engage the State regarding energy projects outside of grants and loans does not exist. Designation of a state agency for this purpose creates accountability and continuity for communities seeking support.

Connections to other recommendations: This recommendation would help utilities fulfill the cost-effective fuel reduction target under Recommendation C6 and the efficiency requirement outlined in Recommendation C4. State involvement early in project development can reduce project risks and help projects access appropriate financing including the Community Energy Fund for Alaska (Recommendation B2).

A3. ESTABLISH RESIDENTIAL AND NON-RESIDENTIAL BUILDING ENERGY CODES FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS

1. Consolidate 134 statutory references to building codes in one section of State statute.
2. Give authority for code administration to one or two agencies.
3. Authorize a code commission through a public regulation process to establish and update building and energy codes.

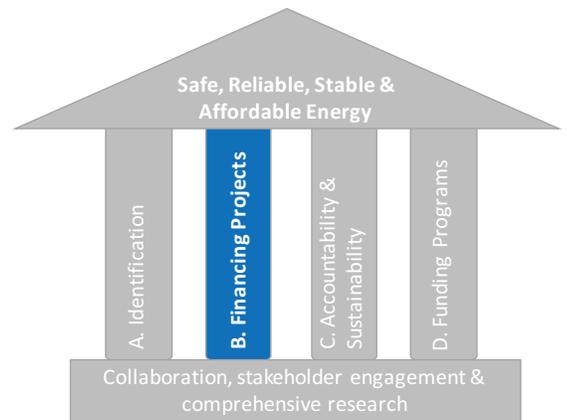
Benefit(s): Building to a higher standard is cost effective and less expensive than retrofitting a poorly built building later. There are direct savings to the Power Cost Equalization and Alaska Heating Assistance programs as well as potential benefit to public health, safety and the environment.

Barrier(s) addressed: Buildings consume the majority of energy in communities. New buildings that are not built to a high standard have higher operational and lifetime costs. Currently, building codes are referenced in more than 134 Alaska statutes with authority for enforcement spread throughout six state agencies. Consolidation of these codes and agency responsibility will create cost savings for the State and create clarity for communities and builders.

Connections to other recommendations: Building energy codes will reduce the need for some services in the future, such as the Weatherization Assistance Program, other home energy retrofit programs and PCE.

B. FINANCING COST-EFFECTIVE PROJECTS

State and federal grant funds are decreasing, and utilities and communities will need to rely more heavily on loan programs in the future. The energy project funding landscape in Alaska is multifaceted and often in flux; navigating it is a barrier for some communities. Small communities that are not members of a larger utility co-op and do not have traditional collateral often have trouble accessing debt financing.



The recommendations that follow provide a mechanism to reduce loan transaction costs for borrowers and lenders, match communities with appropriate funding entities and create incentives for project performance.

B1. ALLOW BULK FUEL LOAN PARTICIPANTS TO PURCHASE NON-PETROLEUM FUELS

- For example, cordwood, pellets and liquefied natural gas.

Benefit(s): This would extend the same financial risk reduction to communities that use non-petroleum fuels as for petroleum fuels. This also removes a potential disincentive to communities considering switching to non-petroleum fuels.

Barrier(s) addressed: Many energy infrastructure projects use non-petroleum fuels. There is currently no State-funded loan that allows for the purchase of those fuels.

Connections to other recommendations: Alternative fuel sources may be identified through mechanisms created by other recommendations; communities that currently rely on the bulk fuel loan program would benefit from comparable financial risk reduction.

B2. CREATE A ONE-STOP-SHOP FUND FOR COMMUNITIES THAT ALLOWS FOR SEGREGATED STATE, FEDERAL AND PRIVATE GRANTS AND LOANS THAT COULD BE BLENDED TO DEVELOP ENERGY PROJECTS

The Community Energy Fund for Alaska (CEFA):

- Can create cost efficiencies by creating a single portal to a variety of fund sources, reducing lines of repetitive inquiry and overlap of efforts by multiple agencies
- Can provide access to public and private funding sources
- Be accessible by utilities, municipalities, boroughs, cities, tribes and non-residential facility owners, to the extent allowed for by the original funding source
- Be available for generation, distribution, transmission and energy efficiency projects
- Would require that the project is a cost-effective strategy for meeting a community energy need

NOTE: For utility-scale generation projects, the use of CEFA funds would require adherence to the proposed utility management, financial and performance standards per Recommendation C3.

Benefit(s): This recommendation reduces the need for State grant funds and increases involvement of non-State investors. The CEFA has potential to reduce transaction costs for communities and investors. Existing State energy infrastructure grant and loan programs could be consolidated under the CEFA to create cost efficiencies. CEFA fund requirements would increase accountability through adherence to the proposed standards resulting from Recommendation C3.

Barrier(s) addressed:

- Fewer State grant opportunities are available for energy projects and communities may have difficulty identifying and securing alternative funding/financing sources.
- Funding sources are not always available for identified community needs.
- Transaction costs for projects in communities with small populations negatively impact the economics of energy projects and create barriers to achieving a deal.
- The State does not have the needed funding. Enacting this recommendation would allow communities to focus on identifying and developing the best project options rather than pursue a myriad of funding options.

Connections to other recommendations: All of the recommendations for project identification could lead into this new fund. The proposed standards resulting from Recommendation C3 would help to reduce risk for State and other investors. The next recommendation, B3, is a subset of this recommendation.

B3. CREATE A LOAN PROGRAM WITH REFUND PROVISIONS THAT REWARD PROJECT PERFORMANCE

- The loan provisions, as a financing product available through the Community Energy Fund for Alaska, will allow for partial annual reimbursements over the economic life of the project to incentivize meeting performance and reporting objectives.

Benefit(s): The opportunity to receive a refund creates an incentive for communities to maintain infrastructure, achieve energy project objectives and cost-effective performance standards. The State will experience savings in reduced need for PCE, emergency technical responses to repair equipment and capital grants. The increased performance and life of the infrastructure will also reduce costs for consumers.

Barrier(s) addressed: It is difficult to ensure completion of the maintenance protocols needed to deliver the expected performance and extend the life of energy infrastructure in many communities. Without proper equipment maintenance, communities do not enjoy the full economic value of energy infrastructure projects, increasing the cost of energy in that community for consumers and the State.

Connections to other recommendations: This recommendation is a key financial product of the Community Energy Fund for Alaska. It also directly ties in with the goals associated with accountability and sustainability. The proposed enhanced business and financial assistance to utilities (Recommendation C1) will ensure that utilities are able to meet performance standards.

B4. STATUTORILY ALLOW VOLUNTARY ON-BILL FINANCING AND C-PACE

Benefit(s): Voluntary programs, such as on-bill financing and Commercial Property Assessed Clean Energy (C-PACE), allow for the financing of efficiency and renewable energy projects to be bound to the property, removing uncertainty regarding length of ownership. C-PACE was introduced in 2015 and is anticipated to be reintroduced by the Governor in 2017.

Barrier(s) addressed: Building ownership length is variable and sometimes difficult to predict. Individuals and organizations, therefore, may not recoup the energy efficiency or renewable energy investments through lower energy bills. Commercial property owners want to minimize how much debt is booked; C-PACE allows off-book debt financing of building-level energy projects. C-PACE allows longer terms than traditional commercial loans, decreasing impact on cash flow and increasing the potential scope of cost-effective projects.

Connections to other recommendations: The CEFA (Recommendation B2) could act as a funding source for either on-bill financing or C-PACE. Either of these financing mechanisms could assist large public facilities in financing the cost-effective retrofit required in Recommendation C4.

B5. STABILIZE THE STATE'S FUNDING FOR RESIDENTIAL EFFICIENCY PROGRAMS:

- Ensure a \$10 million-per-year baseline for the Weatherization Assistance Program.
- Modify rules of the Home Energy Rebate (HER) program to expand residential efficiency services. Develop income-based, tiered match requirements to better leverage State investment in residential efficiency and allow participation of households whose incomes are too high for the Weatherization Assistance Program but too low for the Home Energy Rebate program as it is currently structured.

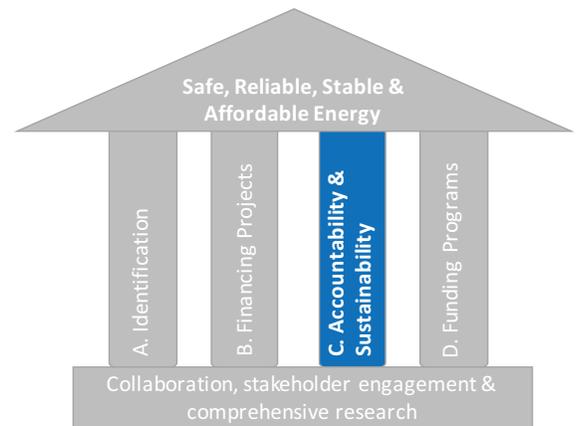
Benefit(s): The recommendation allows households above the Weatherization Assistance Program maximum income limits to receive residential efficiency services. The new tiered match approach effectively leverages greater private investment. Stabilizing funding for the Weatherization Assistance Program secures a well-trained workforce and provides services to those with the highest need.

Barrier(s) addressed: Funding uncertainty impacts the maintenance and capacity of energy efficiency programs that serve consumers with the highest need. Existing income limits are rigid, leaving many consumers without access to residential efficiency services. Smaller, rural communities need more assistance to access services that allow participation in the HER program.

Connections to other recommendations: On-bill financing (Recommendation B4) could be a way to assist HER participants with financing the match requirement.

C. ACCOUNTABILITY AND SUSTAINABILITY

The current system for delivering affordable energy, at both the State and local levels, lacks the incentives and requirements needed to create accountability and sustainability. Many State programs are not required to report ongoing performance of systems, and there are often no incentives or disincentives for grantee performance and reporting. The PCE program does have two technical standards related to diesel efficiency and levels of line loss, but there are no utility standards related to operational efficiency, e.g. proper maintenance and proper financial management.



These factors can lead to consumers paying more than is necessary due to excessive line loss, lower-than-expected generation, or higher-than-average administrative costs. Without grants, consumers will pay even more for infrastructure if it is not properly maintained.

The State likewise ends up spending more on PCE, technical assistance and capital grants than would be necessary if there was greater utility accountability.

Greater accountability will also create the conditions that will allow more communities and utilities to be able to access non-State financing.

C1. STRENGTHEN BUSINESS AND FINANCIAL MANAGEMENT ASSISTANCE FOR PCE-ELIGIBLE UTILITIES

Benefit(s): Millions of dollars of potential savings for consumers and the State through improved management and financial practices are possible. Improved business practices will facilitate access to non-State financing sources for many utilities.

Barrier(s) addressed: Analysis shows that some utilities underreport their eligible expenses to PCE, thereby reducing their access to PCE subsidy, increasing financial risks and decreasing potential access to non-State financing of energy projects.

Connections to other recommendations: Recommendation C3 will identify communities in need of business and financial assistance. The CEFA (Recommendation B2) would require better business and financial management from participants.

C2. DRAW ON THE STATE'S PARTNERSHIPS WITH REGIONAL AND STATEWIDE ENTITIES TO MORE COST-EFFECTIVELY PROVIDE NEEDED ASSISTANCE

- Assistance could include: utility financials, record keeping and management, project management, bulk fuel operations and maintenance, non-residential efficiency, etc.

Benefit(s): Increasing the economy of scale of management and technical services could unlock millions of dollars of savings through improved utility operations. Regional entities are likely to know details about a local energy provider and be quick to identify and respond to a need. This recommendation would leverage AEA's recent regional planning efforts.

Barrier(s) addressed: Many communities do not have adequate capacity or economy of scale to cost-effectively manage projects and/or infrastructure.

Connections to other recommendations: This recommendation will help utilities meet the standards proposed in Recommendation C3. A regional entity could act as a conduit of CEFA funds to communities. Partnerships could also help with non-residential efficiency (Recommendation C4) and utility fuel reduction strategies (Recommendation C6).

C3. DEVELOP A COST-EFFECTIVE REGULATORY SYSTEM TO ENSURE RURAL ELECTRIC UTILITIES MAINTAIN "FIT, WILLING AND ABLE" STATUS

Benefits(s): This recommendation will ensure that initial utility standards are maintained through the life of a project. Ensuring standards are met in an ongoing way is expected to improve service and reduce costs to the community and State, and can help utilities access non-State financing.

Barrier(s) addressed: There are no standards that require unregulated electric utilities to operate in a way that provides safe, stable, reliable and affordable energy after they have received a Certificate of Public Convenience and Necessity (CPCN).

Connections to other recommendations: The data gathered from this recommendation will feed into the State Energy Data program (Recommendation A1). The recommendation will reduce risk for investors in the CEFA (Recommendation B2).

C4. REQUIRE PCE-ELIGIBLE, NON-RESIDENTIAL BUILDINGS LARGER THAN 5,000 SQUARE FEET TO HAVE AN ENERGY AUDIT AND PERFORM COST-EFFECTIVE RETROFITS

- Public and/or community buildings greater than 5,000 square feet would be required to perform energy retrofits if the retrofit would produce net savings within 10 years.

Benefit(s): Reducing energy consumption frees up funding for other community needs and helps ensure that the State is not paying more than necessary to operate facilities.

Barrier(s) addressed: Many large community facilities are not energy efficient, increasing their operating costs.

Connections to other recommendations: The Community Energy Fund for Alaska (Recommendation B2) provides a financing mechanism for cost-effective retrofits. On-bill financing and C-PACE (Recommendation B4) would also provide financing instruments. State technical assistance (Recommendation A2) and/or regional organizations (Recommendation C2) would help guide building owners through the process of auditing and implementing efficiency measures.

C5. EMPOWER THE REGULATORY COMMISSION OF ALASKA (RCA) TO HAVE SITING AUTHORITY OVER GENERATION AND TRANSMISSION FOR ECONOMICALLY REGULATED UTILITIES

Benefit(s): This recommendation provides certainty that utility investments will be recovered through rates. The recommendation also provides a measure of oversight and consumer protection by reducing the risk of building unnecessary infrastructure that must be paid for through increased rates.

Barrier(s) addressed: Currently, the RCA makes a determination on the eligibility of energy infrastructure *after* it has been built. Empowering the RCA with siting authority would require

that the determination of eligibility is made prior to construction. The possibility that the RCA might not allow a utility to recover costs from a new generation plant is a source of uncertainty for energy system investors.

Connections to other recommendations: The recommendation could provide more certainty for investors participating in the CEFA (Recommendation B2).

C6: ENACT A ONE PERCENT-PER-YEAR FUEL REDUCTION TARGET FOR ELECTRIC UTILITIES UNTIL COST-EFFECTIVE EFFICIENCY GAINS HAVE BEEN REALIZED

- Measurement of reduction will be based on a percentage of fuel for generation per residential customer to avoid penalizing utilities with load growth.

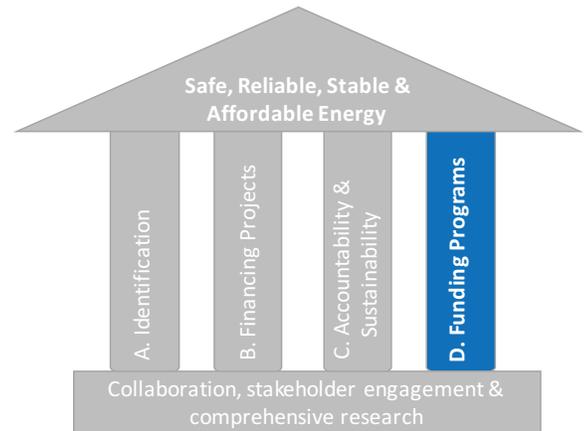
Benefit(s): Cost-effective efficiency gains will reduce costs for consumers. The State will realize savings through reduced PCE subsidies. The recommendation will increase the market for energy private sector services to utilities and provides flexibility as savings can be achieved through diesel efficiency, line loss reduction, renewable energy installation and energy efficiency improvements.

Barrier(s) addressed: The State does not require utilities to find cost savings through efficiency and renewable projects. There is no requirement for continued improvement.

Connections to other recommendations: This recommendation helps spur the involvement of utilities for all other recommendations. Technical assistance to help utilities identify and implement savings measures could be provided by State (Recommendation A2) and regional (Recommendations C2) entities. The Community Energy Fund for Alaska (Recommendation B2) provides a financing mechanism for cost-effective retrofits. On-bill financing and C-PACE (Recommendation B4) could also be effective financing instruments.

D. FUNDING STATE ENERGY PROGRAMS

Identifying “a source of rent, royalty, income or tax” is a requirement of the project’s enabling legislation. In the past decade, the State has spent over \$1 billion on energy projects. The needs met by those appropriations will still exist in the future. Although the previous recommendations are expected to provide savings to the State, funding will be needed to meet community needs and bring more affordable energy to communities.



D1. USE THE ALASKA AFFORDABLE ENERGY FUND (AS 37.05.610) WHEN IT BECOMES AVAILABLE

- Chapter 14, SLA 14 created a special account in the general fund to provide a source from which the Legislature may appropriate money to develop infrastructure to deliver energy to areas of the State that are not expected to have, or do not have, direct access to a pipeline transporting natural gas from the North Slope.
- AS 37.05.610 suggests that up to 20 percent of the revenue from the State’s royalty gas from an Alaska LNG project (after the payment of rents and royalties to the Permanent Fund) may be placed in this account to help with energy delivery in the AkaES target area.

Benefit(s): The Alaska Affordable Energy Fund could provide a sustainable source of funding.

Barrier(s) addressed: Sustainable energy funding is not currently available.

Connections to other recommendations: The Alaska Affordable Energy Fund could provide funding to expand the scope of services supplied by energy programs and be used as a source of funding for the CEFA in Recommendation B2.

D2. PROVIDE FOR PAYMENT OF PCE ADMINISTRATIVE EXPENSES AND FUND ENERGY PROGRAMS WITH PCE FUNDS.

Benefit(s): This would reduce the need for undesignated general funds for State energy programs.

Barrier(s) addressed: There are near-term funding issues for State energy programs.

Connections to other recommendations: Shifting some of the current burden to the PCE Endowment would allow for near-term implementation of many recommendations.

D3. TO SUPPORT COMMUNITY ENERGY PROJECTS AND PROGRAMS, ESTABLISH A UNIVERSAL SERVICE CHARGE

- Remove the current exemption for heating oil from the State fuel tax. Develop equivalent charges for natural gas and electricity.

Benefit(s): The heating oil charge will require removal of a current exemption, and the other charges would create parity among the major energy sources. Collection would be at the local utility or retailer in communities within the study area. This would also allow access to currently unavailable data on heating oil to better understand community energy consumption.

Barrier(s) addressed: A fair, equitable and sustainable way to fund energy programs is needed. Previous energy policy reports have identified per-unit energy surcharges as a means by which other states generate receipts to fund energy-related programs.

Connections to other recommendations: A sustainable fund source will allow for greater benefit to Alaska's energy consumers and a source of funding for the CEFA in Recommendation B2 and Weatherization and Home Energy Rebate programs (Recommendation B5).

D4. CONTINUE THE POWER COST EQUALIZATION & ALASKA HEATING ASSISTANCE PROGRAMS

Benefit(s): The Power Cost Equalization and Alaska Heating Assistance Programs are known programs that help underwrite the cost of energy in the AkaES target area.

Barrier(s) addressed: For those communities without access to cost-effective infrastructure, AEA was instructed by the legislation to identify a way to directly underwrite the cost of energy.

Connections to other recommendations: PCE is considered by some investors as a secure revenue source that reduces their risk of investing in communities.

**ADDITIONAL OPPORTUNITY FOR CONSIDERATION:
CONSIDER GIVING A STATE ENTITY THE AUTHORITY TO CONSOLIDATE AND
MANAGE STATE CONSUMER ENERGY PROGRAMS**

Benefit(s): A State entity with the authority to consolidate and manage consumer energy, to the extent that it is reasonable, would increase efficiency of delivering State energy programs to communities.

Barrier(s) addressed: Implementation of the previous recommendations may spread State energy programs over a half-dozen agencies. This would be further complicated by institutional gaps and competing agency mandates. Developing a coordinated and strategic plan to best assist communities becomes problematic.

Connections to other recommendations: The State entity would coordinate almost all other aspects of these recommendations, although the RCA would remain independent.



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AEA's mission: Reduce the cost of energy in Alaska.

