Alaska Affordable Energy Strategy

Why LNG Matters to Southeast Alaska

Emily Ford, energy policy and outreach manager

Sept. 15, 2015
Senate Bill 138

Alaska Affordable Energy Strategy

Plan and recommendations to the Legislature on infrastructure needed to deliver affordable energy to areas in the state that do not have direct access to a North Slope natural gas pipeline.

Due: January 1, 2017
SB 138: Alaska Affordable Energy Fund

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 North Slope natural gas pipeline

- 20 percent of the revenue from the state’s royalty gas from an Alaska LNG project (after the payment to the permanent fund)
Avoiding Silos

- Stakeholder Engagement to Build on Local Expertise
- Capitalize on Previous Efforts
- Alignment with Administrative Order 272
- Building on Existing Energy Champions
- Engaging Rural Stakeholders
- Technical Advisory Group
AkAES & Regional Planning

AkAES:
State-directed, program oriented, specific legislative mandate, allocation of resources, economic & technical comparison between potential choices

Regional Planning:
Community-driven blueprint for success, includes priority list of projects, not dependent on state funds

Common elements between AkAES and Regional Plans
Developing Recommendations

What AkAES is expected to develop:

- Prioritized list of program-level recommendations
  - Improvements to current programs
  - New programs (loans, grants, incentives, assistance) to fill identified gaps
  - Ways to cost effectively leverage regulations and requirements

- Useful tools and data for communities and regions to help prioritize projects
Three Phases of Development

1. Identify Rural Energy Cost Drivers
   • Including fuel, infrastructure costs, etc.

2. Identify Strategies to Reduce Costs
   • Energy efficiency, projects, etc.

3. Allocation of Resources
How do you Define Affordable?

Two primary options for using “Affordable” to allocate resources:

1. Need-based: “Affordable” includes the ability to pay
   a. Some combination of energy unit prices and/or costs and median household income of the community

2. Need-blind: “Affordable” is a price or cost target
   a. A goal for energy unit prices and/or costs
Cold temperatures create operational challenges for utilities

Reliable power is vital for remote communities in winter

Climate impacts the availability of some renewable resources

Cold temperatures increases energy use for heating

How do you Define Affordable: Need Based Example
How do you Define Affordable: Target Pricing
Electricity

4 Quadrants based on Access to Energy Resources:

1. Natural Gas/Renewables
2. No Natural Gas/Renewables
3. No Natural Gas/No Renewables
4. Natural Gas/No Renewables
Heat

4 Quadrants based on Access to Energy Resources:

1. Natural Gas/Renewables
2. No Natural Gas/Renewables
3. No Natural Gas/No Renewables
4. Natural Gas/No Renewables
Evaluate communities individually on ability to cost-effectively access to renewable energy or natural gas.

Provide funding mechanisms, assistance, and other changes to promote cost-effective measures in communities.
Impacts of Residential Energy Efficiency

Residential Energy Costs per AHFC Star Rating and Percent of Total Energy Cost Reduction if raised to 5-Star standard

- Modeled using AkWARM program assuming 1200 sf, 3 br house, and PCE
- Average Housing is rated 2-3 Stars

Average Energy Costs and Percent of Total Energy Cost Reduction if raised to 5-Star standard

<table>
<thead>
<tr>
<th>Location</th>
<th>1-star</th>
<th>2-star</th>
<th>3-star</th>
<th>4-star</th>
<th>5-star</th>
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<tbody>
<tr>
<td>Bethel</td>
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<td>57%</td>
<td>44%</td>
<td>31%</td>
<td>66%</td>
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<tr>
<td>Domestic Hot Water</td>
<td>57%</td>
<td>43%</td>
<td>31%</td>
<td>21%</td>
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<tr>
<td>Appliances/lights</td>
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<td>Unalaska</td>
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<td>Wrangell</td>
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<tr>
<td>Heat</td>
<td>71%</td>
<td>48%</td>
<td>36%</td>
<td>25%</td>
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# AkAES Study Overview

<table>
<thead>
<tr>
<th>Phase 0:</th>
<th>1) Do preliminary research, 2) develop study plan and budget, 3) identify partners and contractors</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>- 1 &amp; 2 complete, 3 in progress</td>
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<tr>
<td>Phase 1:</td>
<td>Data collection: Drivers for energy and project costs</td>
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<tr>
<td></td>
<td>- In progress</td>
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<tr>
<td>Phase 2:</td>
<td>20-year forecast for energy consumption, costs, and project benefits</td>
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<td></td>
<td>- In progress</td>
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<tr>
<td>Phase 3:</td>
<td>Develop strategies for reducing energy costs</td>
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<td>- Scopes defined</td>
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<tr>
<td>Phase 4:</td>
<td>Develop and evaluate potential policy options to implement strategies</td>
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<td></td>
<td>- Scopes defined</td>
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<tr>
<td>Phase 5:</td>
<td>Prioritize policy options and develop Evaluation, Measurement and Verification (EM&amp;V) plans</td>
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</tbody>
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Phase 1: Data Collection
- Past & Current Funding
- Geographic Cost Multipliers
- Flow of Goods
- Transportation Limitations
- Community Info
  - Energy Prices
  - Electricity Production
  - Socio-economic
- End Use
  - Consumption
  - Program Assessment
- Generation, Transmission, & Distribution
  - Catalogue GT&D
  - Assess Technology
  - Program Assessment
- Management & Ownership
  - Management
  - Ownership

Phase 2: 20 Year Forecast Based on Status Quo
- Energy Source
- Consumption
- Prices
- Infrastructure Expenditures

Phase 3: Strategies for Affordable Energy
- Subsidy
- Options, Amount
- Heat
- Electricity
- Transportation Needs
- Regional
- Local
- Retrofit Facilities
- O&M Programs
- Technology Development
- GT&D Infrastructure
- O&M

Phase 4: Policy & Implementation Plans
- Incentives
- Loans
- Grants
- Direct Funding
- Direct Underwriting
- Tech Assistance
- Coordination Assistance
- Direct Ownership

Phase 5: Prioritization & Outcomes
- EM&V Plans
- Recommended Policies
- All Policy Options
- Expected Outcomes
- Codes
- Regulatory Requirements
- Statutory Requirements

What has been done? What has been effective? What is the current need? What are current local choices?

What will be the energy consumption, generation, costs, and issues in the next 20 years based on current trends?

What should be done on a community/regional/statewide level to deliver affordable energy?

What are potential policies to implement the strategies?

Which policies should be implemented and what are the expected outcomes of those policies?
Phase 1: Data Collection

- Past & Current Funding
  - Infrastructure Funding
  - Direct Subsidies
- Transportation
  - Geographic Cost Multipliers
  - Flow of Goods
  - Transportation Limitations
- Community Info
  - Energy Prices
  - Electricity Production
  - Socio-economic
- End Use
  - Consumption
  - Program Assessment
- Generation, Transmission, & Distribution
  - Catalogue GT&D
  - Assess Technology
  - Program Assessment
- Management & Ownership
  - Management
  - Ownership
Phase 2: 20-Year Forecast

- Energy Source
- Consumption
- Prices
- Infrastructure Expenditures
Phase 3: Strategies for Affordable Energy

Transportation Needs
- Subsidy
  - Heat
    - Options, Amount
  - Electricity
    - Regional
    - Local

End Use Efficiency
- Management & Ownership Improvements
- Ownership Options
  - Management Improvements

O&M Programs
- Technology Development
  - GT&D Infrastructure
    - O&M
    - GT&D Infrastructure

Retrofit Facilities
- GT&D Infrastructure
  - O&M
  - Management Improvements
Phase 4: Policy & Implementation Plans

Direct Funding
- Incentives
- Loans
- Grants
- Direct Underwriting

Indirect Funding
- Tech Assistance
- Coordination Assistance
- Direct Ownership

Requirements
- Codes
- Regulatory Requirements
- Statutory Requirements
Phase 5: Prioritization & Outcomes

All Policy Options

- Recommended Policies
- Expected Outcomes
- EM&V Plans
Case Study: LNG Study

Contractor: Northern Economics (Subcontractor: Michael Baker Engineers)

Goal: To assist AEA in determining if LNG can be a viable solution for bringing long-term affordable energy to the communities that would not have direct access to the proposed natural gas pipeline, and, if so, what policy options exist that could assist communities in this transition

Target Completion Date: April 2016
LNG Study Outline

Phase 1: Data Collection
- Engineering analysis for LNG infrastructure requirements
- Modeling—costs for LNG, infrastructure, operations, etc.
- Barriers—interviews with utilities, LNG suppliers, etc.

Phase 2: Forecast LNG Demand
- LNG demand at the community-level based on best-case scenario assumptions

Phase 3: Develop Strategies for LNG
- Determine geographic areas
- Strategies to remove barriers to implementation,
- Investment required & savings opportunities

Phase 4: Policy Recommendations
- Programs to capture opportunity: 1) Direct Funding, 2) Indirect Funding and/or Assistance, or 3) Requirements