Overview of Alaska Affordable Energy Strategy and the Role of Hydropower

Neil McMahon
Energy Planning Manager

Presentation to the US Society on Dams
September 20, 2017
AEA’s mission is to reduce the cost of energy in Alaska
AEA takes a community-centered approach with:

- Technical assistance
- Energy planning
- Resource assessment
- Project identification
- Funding
- Training
- O&M

Akutan, AK
In 2014, Senate Bill 138 tasked AEA to

- Develop a plan for cost-effective energy outside the Railbelt
- Consider existing policy
- Recommend funding mechanisms
The 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.
Study area communities

NOTICE
New Fuel Prices
Gas= $7.50 per gallon
2 Cycle Oil= $7.50
Motor Oil= $6.75
Diesel= $8.50 per gallon
Propane= $300 per tank

Venetie, 1/5/17

Mostly small
Mostly remote
High energy costs
Energy source for electricity by AEA energy region

Source: Alaska Energy Statistics (2013)
Comprehensive research and analysis to develop policy recommendations

• Conducted primary research
• Compiled existing research
• Analyzed potential projects
Hydropower in Alaska
Alaska Affordable Energy Model
Tools & Results
Alaska Affordable Energy Model

• A reconnaissance level planning tool
  • 13 built-in project types
• Integrates data from multiple sources
• Facilitate community project identification and planning
• Does not include Railbelt

http://model-results.akenenergyinventory.org/current/index.html
Historical and forecasted trends available through AAEM

- Energy generation by source
- Energy consumption by sector
  - Heat
  - Electricity
- Electricity price
- Fuel price
  - Heating oil
  - Diesel for power generation
This region includes historical values from PCE and AHFC/DCRA surveys.

Heating oil is based on a regional average adder over the $/gal price of utility diesel.

Diesel price projection based on international crude oil forecast and local conditions.

Fuel prices
Current projection includes:
- future energy prices
- changes in consumption
- status quo generation efficiency & line losses

Other projects:
- generation data from Renewable Energy Fund or other source
- financing of infrastructure over 50 years
- changes in consumption
- loss of recovered heat from diesel genset

Hydro project evaluation
### Evaluating Potential Projects

#### Efficiency projects
- Residential Energy Efficiency
- Non-residential Energy Efficiency
- Water and Wastewater Efficiency
- Wind Power (Modeled)
- Wind Power: False Pass Wind Energy Project
- Solar Power
- Hydropower: False Pass Hydroelectric Feasibility Study and Conceptual Design

#### Electricity generation
- Transmission and Interties
- Diesel Efficiency
- Biomass for Heat (Cordwood)
- Biomass for Heat (Pellet)
- Residential ASHP
- Non-Residential ASHP

#### Thermal projects

Cost effective projects have a benefit cost ratio greater than 1.0.
Compiled results across all communities

**AAEM**

- **Efficiency** (residential, non-residential, water/sewer) highest overall savings
- **Hydro**: Most cost effective option in 16 communities, save nearly 6M gallons of diesel/year
- **Wind**: locally significant

**Other Opportunities**

- Generation efficiency
- Reduce line loss
- Utility consolidation and/or management efficiency
Alaska Affordable Energy Strategy: Policy Recommendations
The AkAES is a framework to build safe, stable, reliable, and affordable energy systems
AkAES Recommendations & Hydro Project Development

• Improve data collection and dissemination
• Consolidate and expand state services for providing and leveraging financing for energy projects
• Set fuel reduction targets for electric utilities
• Provide sustainable funding sources for power projects
For More Information

Affordable Energy Strategy

http://www.akenergyauthority.org/Policy-Planning/AlaskaAffordableEnergyStrategy

• Full report
•Commissioned reports

Alaska Affordable Energy Model

http://www.akenergyinventory.org/energymodel

• Results
• Documentation
• Model code and installation
AEAs mission: Reduce the cost of energy in Alaska.