



Photo by: Cassandra Cerny, GVEA

Alaska Affordable Energy Strategy Update to Alaska Energy Efficiency Partnership

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June 30, 2016

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- What is the AkAES?
- Update on AkAES and preliminary results
- Recommendations from “Energy Efficiency and Financing Needs Assessment” a report by the Vermont Energy Investment Corp. for the AkAES

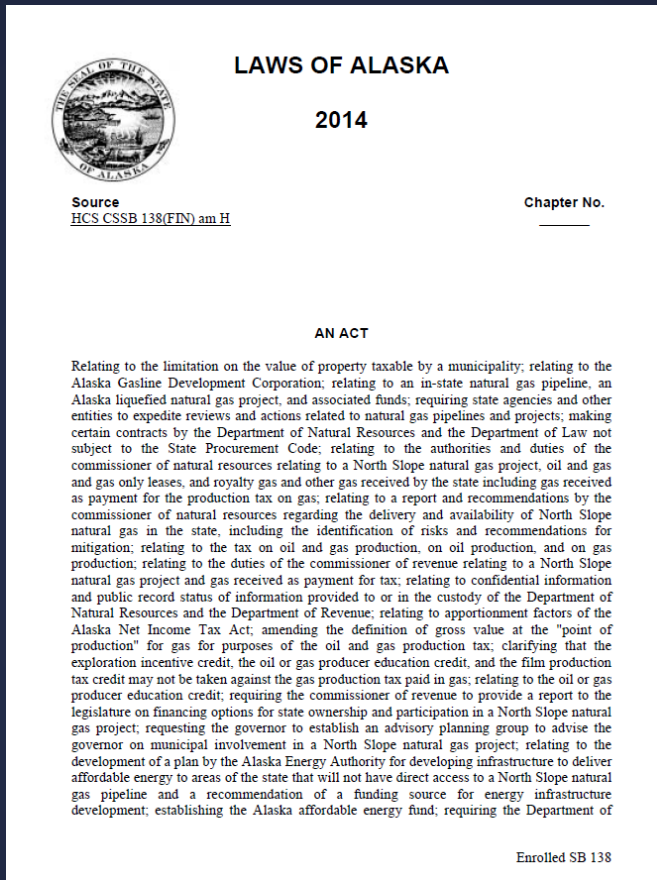
Senate Bill 138

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.

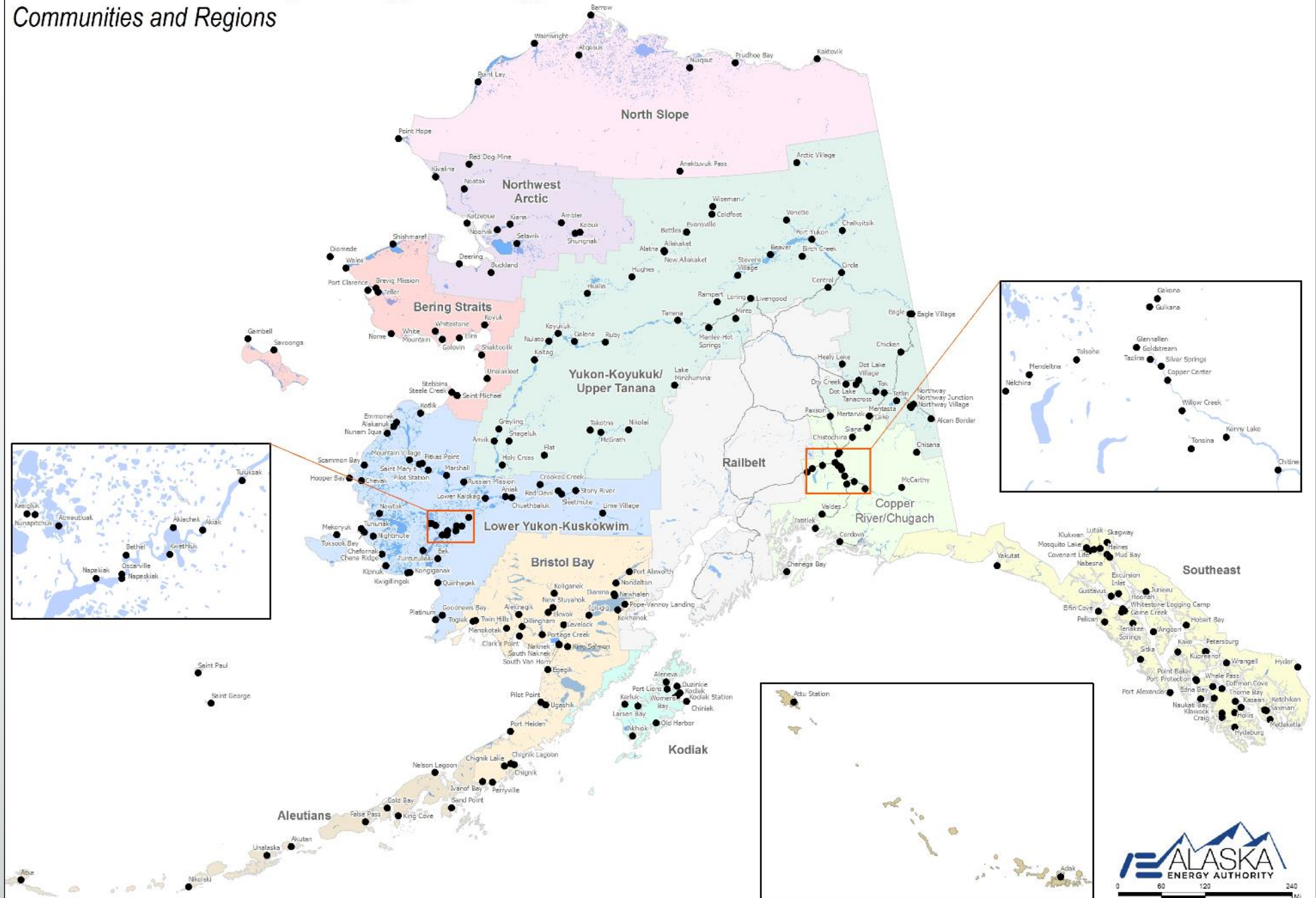
Started: May 2014

Report and Proposed Legislation Due:
January 1, 2017



Alaska Affordability Energy Strategy

Communities and Regions



Over 200
Communities

Over 165,000
people



AkAES Planning Horizons

Short-term:

1. With the current budget climate, what can the state do to maximize the reduction in community energy costs?
 - a. For example, how to spend a hypothetical \$1M to best benefit a community?
 - b. Where will the hypothetical \$1M come from?
2. Test options to prepare the state for the long-term plans

Long-term:

1. How should the state invest money available through the Affordable Energy Fund to provide the maximum benefit to communities?

Sectors Addressed

- Residential: Electricity & Heating Costs
- Public Facilities (including water/sewer): Electricity & Heating Costs
- Private Commercial Facilities: Electricity & Heating Costs

Not Addressing:

- Industrial
- Transportation (within and between communities, except for delivery of fuel or energy-related infrastructure)

Areas of Study for Affordable Energy

Infrastructure

- Energy Efficiency
- Diesel Efficiency
- Renewable Energy
- Transmission & Interties
- Fuel Delivery & Storage
- Fuel Switching

Non-infrastructure

- Direct Underwriting (subsidies)
- Management Improvements
- Ownership & Project financing

Preliminary Results

Infrastructure Opportunities for Affordable Energy in Communities

Infrastructure opportunities modeled on best available:

- Community-level data
- Project-type costs
- Project-type performance
- Population forecasts
- Diesel price forecasts

Modeled opportunity for:

- Efficiency
 - Residential, non-residential, water/wastewater
- Renewables
 - Wind, solar, hydro power
 - Heat Recovery
 - Biomass (cordwood, pellets)
 - Air source heat pumps
- Transmission
- Diesel efficiency

We will be able to compare the potential opportunities in a community to assist the communities in making sound investment decisions

Preliminary Model Output Results

Significant opportunity remains for

- Residential & non-residential **energy efficiency** for both heat and electric

Regionally & locally significant opportunity exists for:

- **Fuel delivery** upgrades
- **Renewables—biomass**, wind, ASHPs

Additional models are still in development:

- Hydro, diesel efficiency, heat recovery, and inerties

Less opportunity exists for:

- **LNG** has a low chance of being economically viable for either electricity or thermal loads
- **Solar** has a low chance of being economically viable for utility-scale electricity generation

Summary of Preliminary Model Results

Project Type	Cost Effective NPV benefits	Cost Effective NPV Costs	Cost Effective NPV Net benefit
Solar Power	\$824,000	\$638,000	\$185,700
Wind Power	\$191,000,000	\$102,000,000	\$88,000,000
Biomass (Cordwood)	\$344,000,000	\$182,000,000	\$162,000,000
Biomass (Pellets)	\$290,000,000	\$69,700,000	\$220,000,000
Residential Efficiency	\$658,000,000	\$429,000,000	\$228,000,000
Non-residential Efficiency	\$1,220,00,000	\$396,000,000	\$824,000,000
Interties			
Hydropower			
Heat Recovery		Still to come	
Diesel Efficiency			
Air-Source Heat Pumps			

Potential for more than \$1 billion in investment needed to exploit cost effective projects with a net benefit of more than \$1.5 billion

Project Development & Non-Infrastructure Opportunities

Improvements possible across the entire project development cycle—for funding agencies and utilities

1. Initial **project selection**
2. **Coordination** between stakeholders
3. Access to **financing**
4. Project implementation: feasibility through design
 - a) Find **fatal flaws** early, if possible
5. Utility **management** and project **operation**

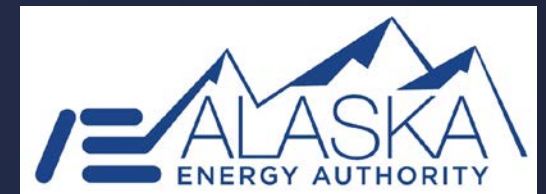
Significant Opportunity = Significant Investment

- There is **more need & more opportunity** than can be accomplished through state funds alone
- The state will need to provide **new types of assistance** to communities to help them access existing state, federal, NGO, and private financing opportunities
- Careful **coordination between stakeholders** will be needed to deliver the current services with fewer state grant dollars
- **Alignment** of policy, regulations, and financing/incentives will be needed



Alaska Affordable Energy Strategy:

Energy Efficiency and Financing Needs Assessment



Introduction to VEIC



EE & Financing Needs Assessment

- Objectives
 - Catalog and assess efficacy of existing initiatives supporting efficiency in the AkAES regions
 - Forecast need and opportunities for efficiency in the AkAES regions
 - Identify national best practices and assess fit for enhancing efficiency services in the AkAES regions
 - Recommend strategies and policy options

- VEIC partnered with CCHRC

- Informs AEA Alaska Affordable Energy Strategy

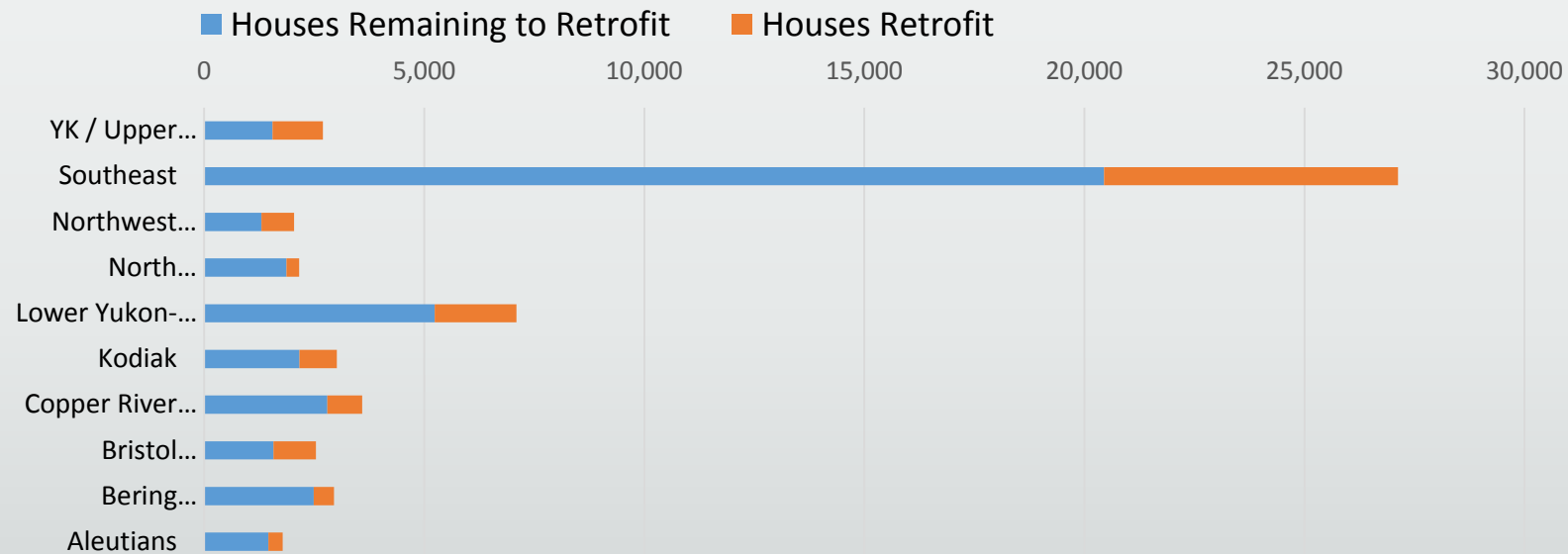
Recommendations

Direct state funding	Indirect state funding	Establishing / enhancing requirements
Sustained Weatherization Program support	Continue with technical services, training, and research	Establish an energy efficiency resource standard (EERS)
Market-based programs and incentives	Join and/or create regional coalition(s)	Expand building codes , support and enforcement statewide; identify and implement “stretch” code
Upstream product initiatives and incentives		Participate in and adopt minimum product standards
Support energy service contracts via public and private channels		Create targets or requirements for investment of a portion of assistance, endowment or public benefit corporate portfolios to support energy efficiency

Recommendation 1: Establish a sustainable mechanism for Weatherization funding in rural Alaska.

- 41,000 homes (half in Southeast) have not participated in the weatherization program
- Annual expenditures - \$272 million in heating fuels / \$125 million in electricity
- Central to energy affordability in AkaES region

Weatherization Opportunity in AkaES Regions





Recommendation 1: Establish a sustainable mechanism for Weatherization funding in rural Alaska.

- Forecast potential of \$231 million in net benefits to the AkAES region (B/C of 1.74) with a total cost of \$450 million and savings of \$681 million from weatherization over 15 years
- Recommend target of **extending weatherization** services to reach 80% or more of all eligible rural Alaskan Households within the next 10 years
- Recommend establishing **annual targets**:
 - 4,000 homes weatherized annually
 - Annual budget of \$36 million (10 yrs)

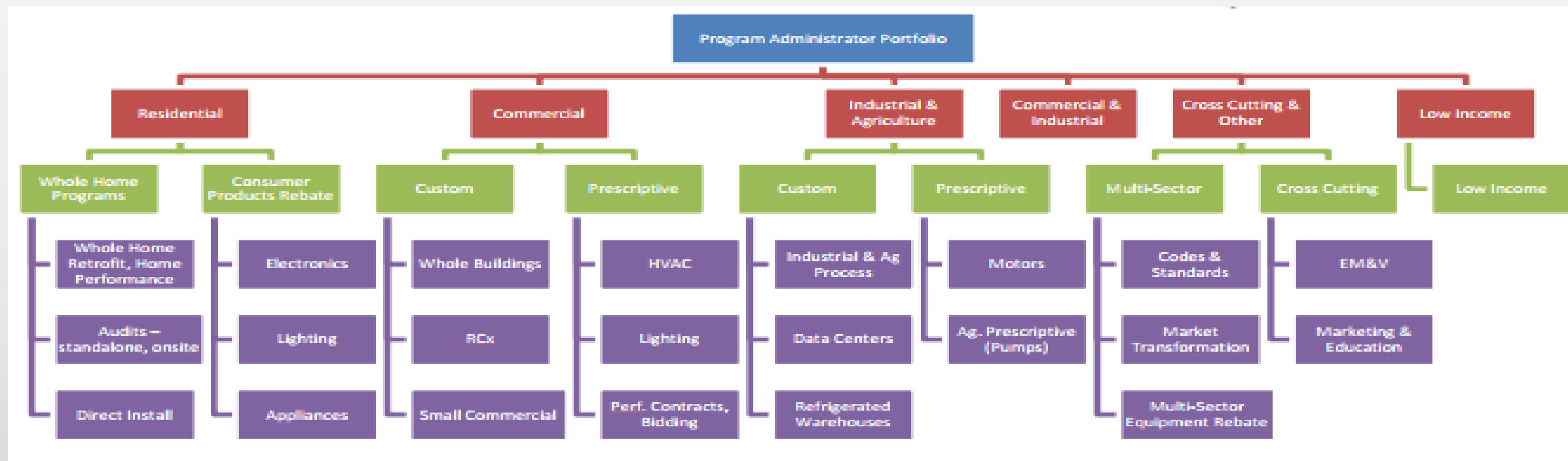


Recommendation 2: Create statewide market-based energy efficiency programs and incentives.

- **National Best Practice** – Diversity of programs reflect diversity of buildings, end-uses, market channels and EE delivery mechanisms
- Alaska has **excellent resources and experience** in delivering energy efficiency services to rural communities (e.g. AEA, AHFC, ANTHC, CCHRC, HA's)
- **Diverse mix** of actors in the energy sector with federal, state, local, tribal, non-profit, for-profit, and academic representatives all actively **engaged**
- **Sustainable funding remains as a barrier** to consistent programs and services and continued EE industry growth

Recommendation 2: Create statewide market-based energy efficiency programs and incentives.

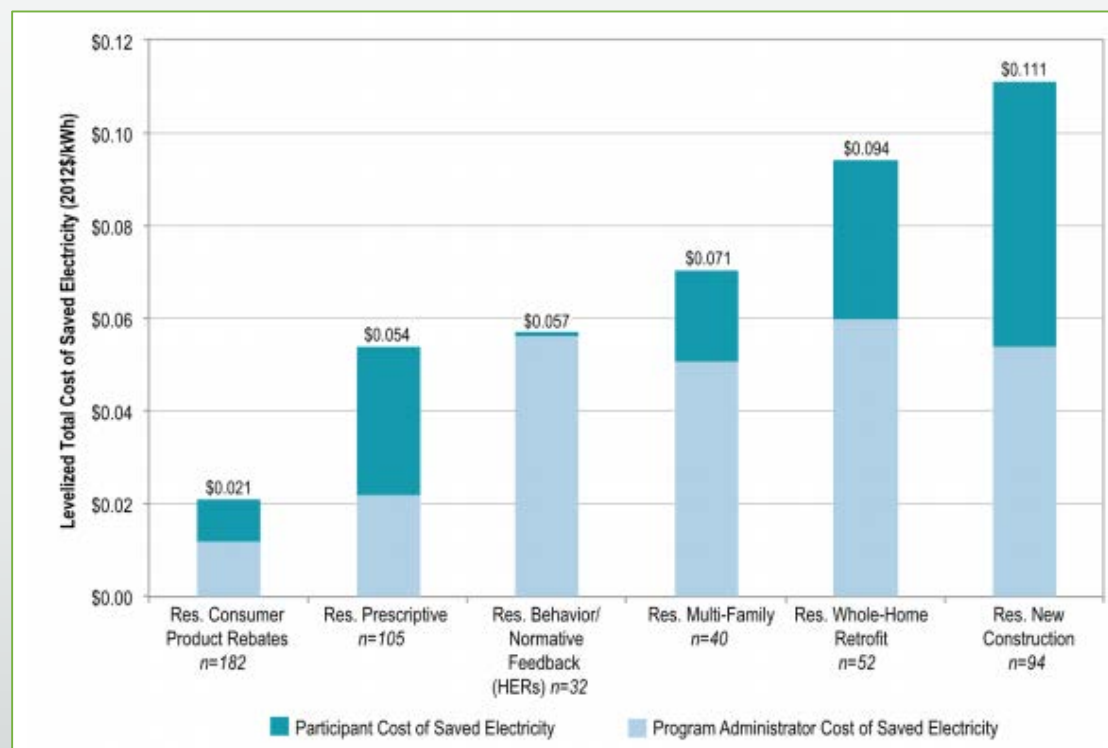
- Recommend development of statewide energy efficiency services (programs, incentives, technical services) to leverage larger market in Railbelt to better serve AkaES regions




Source: LBNL

Recommendation 3: Develop upstream heating equipment and lighting incentives and initiatives.

- **National Best Practice** – Delivery of commercial and residential incentives to buy-down or markdown costs at retailer/distributor level for lighting and HVAC equipment
- **High benefit-to-cost ratio** (or low levelized cost of energy saved) compared to other comprehensive efficiency services
- Absence of targeted EE incentives in AK to **influence time-of-sale** and early replacement of inefficient lighting and heating equipment



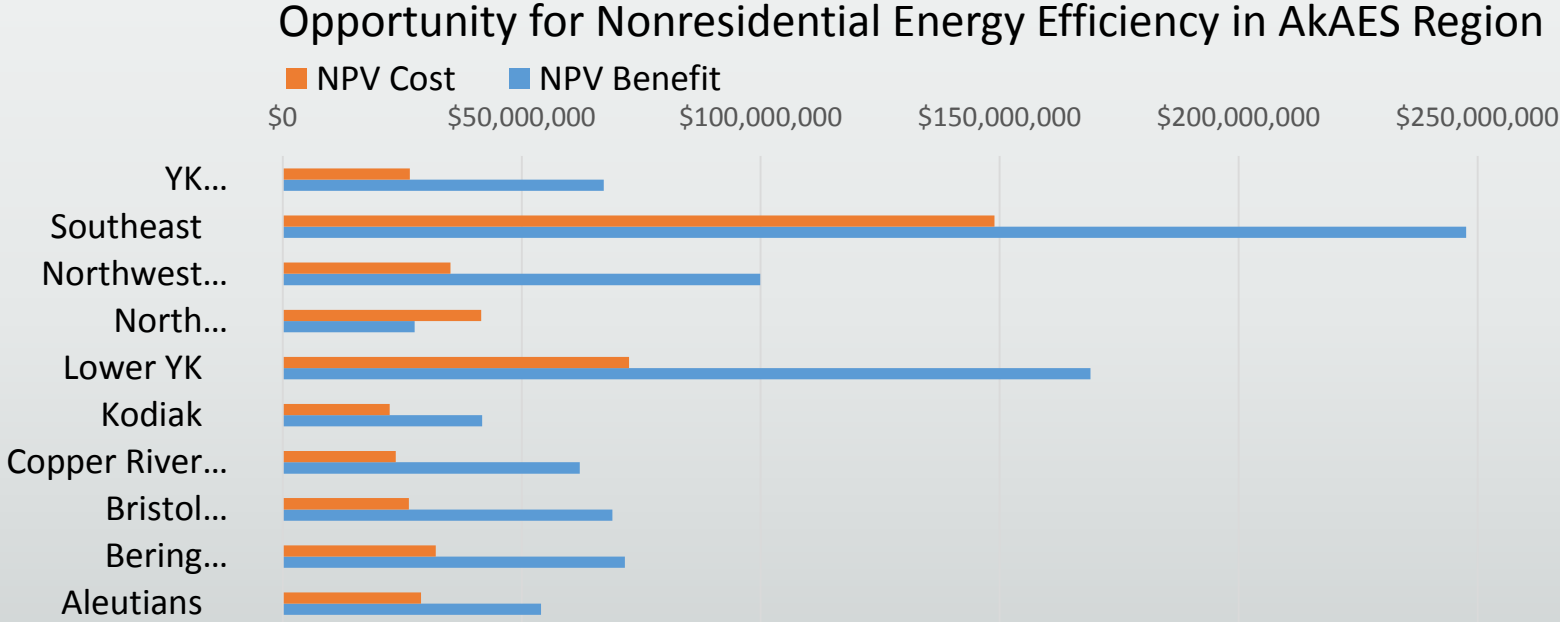


Recommendation 3: Develop upstream heating equipment and lighting incentives and initiatives.

- Recommend targeting **larger hub and distribution centers** (e.g. Anchorage and Fairbanks) for outsized impact on the AkAES communities due to the higher costs and limited product availability in local communities
- Recommend complementing with strategies for **supporting smaller, local community stores and dealers** to support both planned and emergency purchases, avoiding lost upgrade opportunities.
- **Evaluate** opportunities for additional **market sector specific systems** (e.g. pumps and motors)

Recommendation 4: Support expansion of energy service contracts and strategies for serving non-residential buildings.

- ~ 10,000 non-residential buildings in AkAES region
- Annual expenditures - \$265 million in heating fuels / \$181 million in electricity
- High energy intensity and larger square footage results in outsized **potential for energy efficiency**



Recommendation 4: Support expansion of energy service contracts and strategies for serving non-residential buildings.

- Rural Alaska faces logistical challenges and projects that are typically smaller and potentially more risky than those the private sector ESCOs will take on
- Existing ESCOs serving Alaska primarily with state buildings and larger commercial buildings
- Recommend evaluating new models (e.g. **PPESCO**) to complement and expand existing options for public buildings – including schools – to achieve deeper energy savings





Recommendation 5: Continue technical services, research, and training.

- **National Best Practice** – Comprehensive and sector-level specialization (e.g. health care, public safety, water and wastewater, and education) to identify cost-effective and sector specific EE solutions
- Alaska has **deep experience and track record** in supporting EE statewide (e.g. AFHC, AEA, ANTHC and CCHRC) with technical services, research and training
- **Strong partnerships** established with federal agencies (DOE, NREL, USDA, US BIA) for supporting demonstration projects, training, applied research and regional energy planning



Recommendation 5: Continue technical services, research, and training.

- Recommend committing funding to include **support for technical services, research and training** as part of comprehensive efficiency services.
- Recommend leveraging existing state funding with additional funding for **research and development** through academic institutions, federal funds, and with private support from foundations and private investment
- Increase building **operational efficiency** (e.g. training, retro-commissioning, building energy monitoring)
- Incorporate key account management for larger commercial customers



Recommendation 6: Join and/or form collaborative partnership(s).

- **National Best Practice** – Regional collaborations offer opportunities for greater efficiencies for coordinated procurement of services and/or development of programs
 - National organizations - e.g. Consortium for Energy Efficiency (CEE)
 - Regional organizations - e.g. Northwest Energy Efficiency Alliance (NEEA)
- Stakeholders in Alaska have engaged in statewide and regional partnerships focused on EE and building best practices for arctic climates (Such as the **Alaska Energy Efficiency Partnership**)
- **Standardization needed** around EE technical reference manuals, evaluation and monitoring protocols critical for setting/tracking EE against goals



Recommendation 7: Establish a statewide energy efficiency resource standard.

- Key components that support EERS
 - **Direct-cost recovery** - recovery of costs related to the administration/implementation of efficiency programs. Recovered through rate cases, system benefits charges, and tariff rider/surcharges.
 - **Fixed-cost recovery** - decoupling and lost revenue adjustment mechanisms for utilities to recover marginal lost revenue associated with fixed operating costs.
 - **Performance incentives** - mechanisms that reward utilities for reaching certain electric efficiency program goals, and impose a penalty for performance below the agreed-upon goals
- 25 states have established and adequately fund EERS to identify savings targets for EE programs administered by utilities or independent statewide program administrators
- Complementary to House Bill 306 setting goal for **reducing per-capita energy consumption by 15 percent by 2020**
- Recommend developing 5 & 10 year **statewide savings targets**



Recommendation 8: Adopt and expand support for statewide energy efficiency building energy codes for residential and non-residential buildings.

- **National Best Practice** – Energy codes for residential and non-residential buildings, along with technical support and enforcement, help establish and build consistent statewide practices that can improve building safety, durability, affordability, comfort, and efficiency.
- Vast majority of residential new construction is **voluntarily meeting BEES** and achieving advanced code requirements.
- HAs focused on **long-term energy affordability** for tenants
- Comparison of ARIS against Dept of Labor estimates for new construction suggest **significant underreporting of BEES by HAs**
- **Statewide building energy codes** will support BEES standardized designs, procurement, workforce training and building practices.



Recommendation 9: Adopt minimum efficiency design and procurement standards.

- **National Best Practice** - ENERGY STAR building and product specifications often adopted as minimum efficiency criteria for federal, state, commercial and public buildings to guide long-term efficiency in buildings
- Establish standard purchasing / procurement requirements for energy-efficient equipment and other measures meeting or exceeding **minimum performance standards** established by **ENERGY STAR**



Recommendation 10: Establish targets and guidelines to channel a portion of assistance, endowment, and public-benefit corporation investments toward efficiency.

- **National Best Practice** – Public benefit funds established frequently with a **surcharge or societal benefit charge (SBC)** on all electric ratepayer (commercial and residential) bills to support utility or statewide EE and RE programs.
- Recent federal efforts to unlock private-sector investment in addition to state level **revolving loan funds and “Green Banks”**
- Recommend establishing guidelines for ensuring revenues, assistance, and other forms of investment are **dedicated to energy efficiency**, for the benefit of Alaska residents and businesses, statewide.

Discussion and Questions

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