



Alaska Energy Authority and the Alaska Affordable Energy Strategy

Sara Fisher-Goad
Municipal Advisory Gas Project Review Board
Sept. 30, 2014



Alaska Energy Authority: Mission

“To Reduce the Cost of Energy in Alaska”

- AEA is an independent and public corporation of the State of Alaska
- Created by the Alaska Legislature in 1976
- 44.83.070: “ The purpose of the Authority is to promote, develop, and advance the general prosperity and economic welfare of the people of the state by providing a means of financing and operating power projects and facilities that recover and use waste energy and by carrying out the powers and duties assigned to it under AS 42.45.”

AEA Projects and Programs

Projects

- Rural Power Systems Upgrades
- Bulk Fuel Tank Farms
- Wind
- Hydroelectric
- Ocean and River
- Geothermal
- Combined Heat and Power
- Biomass

Programs

- Power Project Loan Fund
- Training
- Circuit Rider
- Emergency Response
- Emerging Energy Technology Fund
- Renewable Energy Grant Fund
- Village Energy Efficiency Program
- Energy Efficiency and Conservation
- Statistical Report
- Power Cost Equalization
- Regional Energy Planning

AEA-Owned Infrastructure

- Bradley Lake Hydro
- Alaska Intertie
- Susitna-Watana Hydro

Focusing on Communities



- Emphasizing community-based approach to projects
- Technical assistance, regional planning and project management
- Provide synergy between planning, projects and funding sources
- Assist communities to move to project-ready status
- Break down internal silos



Sara Fisher-Goad
Executive Director

AEA Owned Infrastructure

Oversee Alaska intertie
IMC participant
Oversee Bradley Lake
BPMC participant
Susitna Watana development

Gene Therriault
Policy and Outreach

Policy development
Inter and intra agency
coordination
Legislative liaison
Public outreach
Conference coordination
Stakeholder engagement
Regional energy planning
Community Assistance:
(non-technical)
Project assistance support
Grant application development
Circuit rider solicitation and
coordination
Training program

Sean Skaling
Program Development/Project
Evaluation

Program development
Technical and economic analysis
Ranking of energy projects
Data collection, analysis and
reporting
Technology analysis
EETF and energy efficiency
PPF loans
Technology working groups
Resource assessment
Community Assistance:
Technology and energy source
analysis

Sandra Moller
Operations
Project Implementation:

Project management
Infrastructure construction
Data instrumentation
Grant scope of work
Contract scope of work
Community Assistance:
Circuit rider
Technical/mechanical
Assistance/training

Michael Lamb
Finance

Accounting
Procurement
PCE
Grants

AEA-Owned Infrastructure

Alaska Intertie: Improving Railbelt Transmission



Alaska Intertie



- AEA owns Alaska Intertie, no outstanding debt
 - 170 miles between Willow and Healy
 - 345 kv transmission line
- Operated by AEA and Railbelt utilities through Intertie Management Committee
- Recently adopted open access and reliability language
- AEA-commissioned study identified \$900 million in priority transmission system projects
 - Un-constraining Bradley Lake Power: \$402.2 million
 - Southcentral Substations: \$20.5 million
 - Northern Intertie projects: \$480.7 million
- Annual projected savings \$146-241 million

Investing in Energy Infrastructure

Large Projects

Bradley Lake Hydro

- Produces about 10% of Railbelt electricity
- AEA-owned asset
- Low-cost energy producer
- 120 megawatts, 4.5 cents/kWh

Susitna-Watana Hydro

- 735-feet high
- Will serve approximately 80% of Alaskans
- 2,800,000 MWh annually (roughly half of current Railbelt demand)
- FERC licensing process, SB 42 authorized AEA to pursue licensing
- 100+ years of long-term, stable rates



Bradley Lake Hydroelectric Project



Susitna-Watana Hydro: Artist's Rendering

Bulk Fuel and Rural Power System Upgrades

- Help utilities improve efficiency, safety and reliability of power systems
 - Promote local hire and training
- Completed \$304 million in rural bulk fuel and rural power system upgrade projects since 2000, in partnership with Denali Commission
- Common to see 30 to 40% increase in fuel savings after a Rural Power Systems Upgrade is completed





Perryville: Wind



Prince Wales Island: Biomass

Renewable Energy Grant Fund

- Displaces volatile-priced fossil fuels through heat recovery, hydro, wind, geothermal, biomass, solar, wind and transmission projects
- Places Alaska at or near the forefront of incentivizing renewable energy
- 227 grants totaling \$250 million
- 72 projects currently under construction
- In 2013 13 million gallons of diesel and natural gas equivalent were displaced
- Capitalizes on local energy resources
- Benefits businesses not eligible for PCE
- Expands Alaska's renewable energy knowledge base

Emerging Energy Technology Fund



Fairbanks Ground Source Heat



Testing Safe and Efficient Exhaust Thimble

- Provides funds for projects that can demonstrate commercial viability within 5 years
- Includes renewable and alternative energy
- Nearly \$11 million provided to 20 projects
- Projects in Juneau, Fairbanks, Kodiak, Delta Junction, Nenana, Nikiski, Igiugig, Tuntutuliak, Kwiglingok and Kotzebue
- Program extended to 2020

Energy Efficiency and Conservation



State goal to reduce per capita energy use by 15% by 2020

- AEA's focus: commercial buildings, rural public buildings, industrial facilities and electrical efficiency
- Statewide outreach and education AKEnergyEfficiency.org
- Coordination between State agencies

Results:

- \$1,534,062 and 282,938 diesel equivalent gallons in projected savings
- Average immediate savings of implemented efficiency measures: \$0.29 cents/ \$1 invested, 300% ROI after 10 years
- Alaska Commercial Energy Audit Program measures produce 30% savings with 6.2 year simple payback



Village Energy Efficiency Program



Kiana: Fire House Weatherization



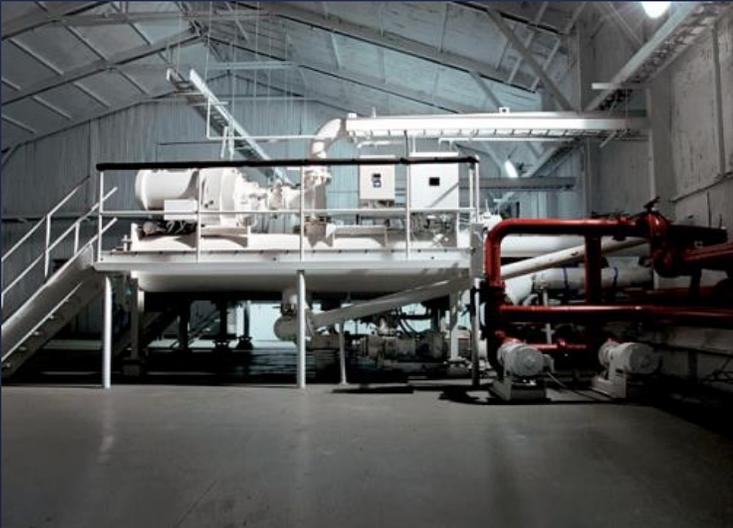
King Cove: LED Light Fixtures

- Provides grant funding for small, high-energy cost communities to implement energy efficiency and conservation measures in the public buildings and facilities.
- Eligible applicants include:
 - Municipalities, cities, school districts, unincorporated villages, Alaska Native regional and village corporations, tribal consortiums, regional housing authorities, traditional councils
- 2013: Seven projects received \$1,381,000
- Projects include retrofitting lights, replacing outdated HVAC equipment and boilers, improving insulation and building siding and replacing windows.

Power Project Fund



Cordova: Humpback Creek Hydro



Chena Hot Springs: Geothermal

- Provides low-interest loans to upgrade or develop small-scale electric power facilities
- Includes bulk fuel storage, transmission and distribution, waste energy, energy conservation, energy efficiency and alternative energy facilities and equipment
- Projects more than \$5 million require Legislative approval

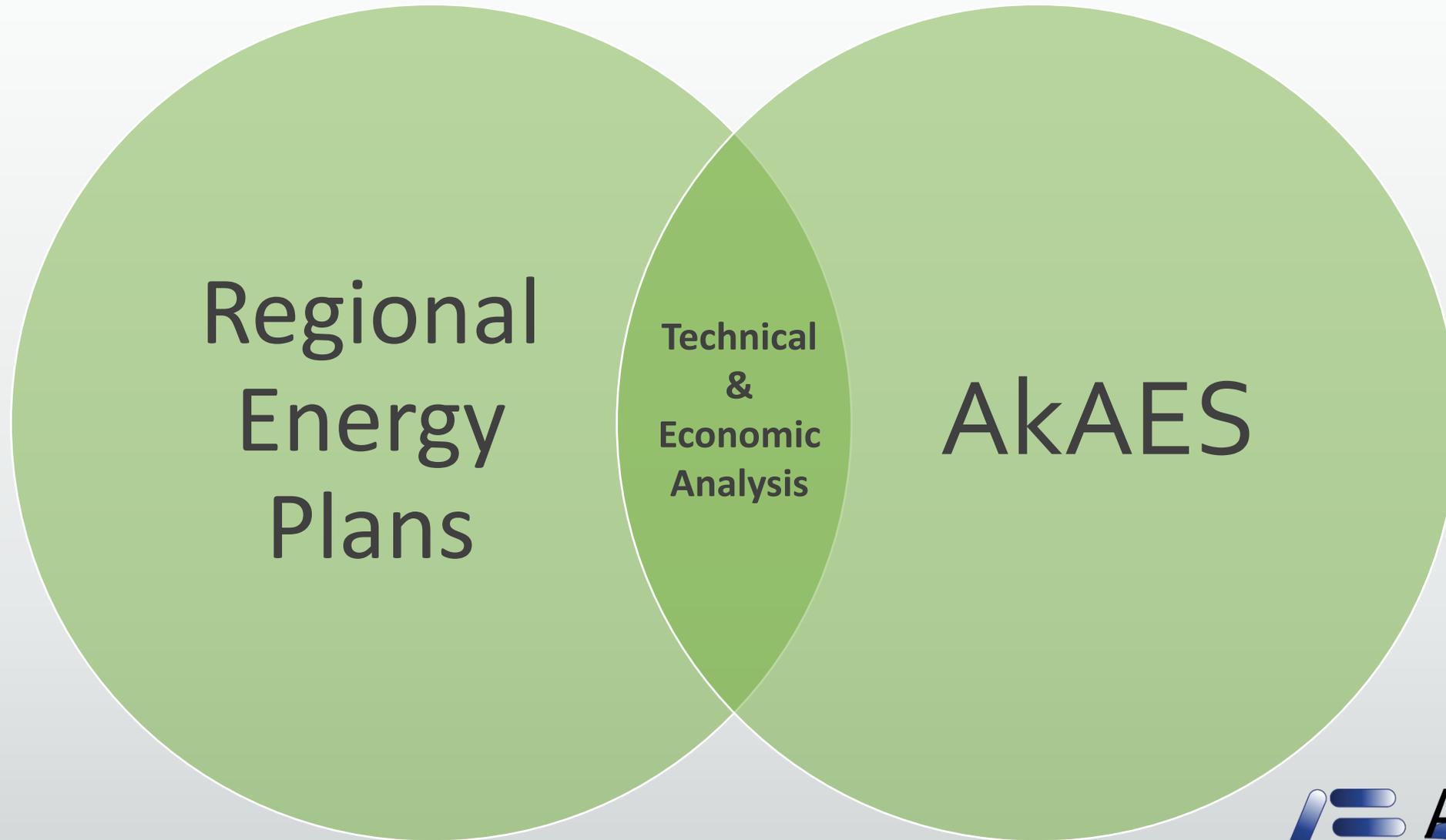
Power Cost Equalization

- Provide economic assistance in rural Alaska where electrical rates can be 3 to 4 times higher than in urban Alaska
- Available to community facilities and residential customers
- Regulatory Commission of Alaska (RCA) sets rates, calculations based on use, costs and efficiencies
- Approximately 80,000 people live in the 188 participating communities

Regional Energy Planning

- Energy Pathways led to regional planning
- Address unique challenges while capitalizing on regional resources
- Locally driven and community-vetted blueprint for sustainability
- Provide specific, actionable recommendations
- Identify means of providing stable and affordable electric, heat and transportation energy from renewable and fossil fuels
- Build capacity at local and regional level to enable stakeholders to continue planning process

Relationship between Planning Efforts

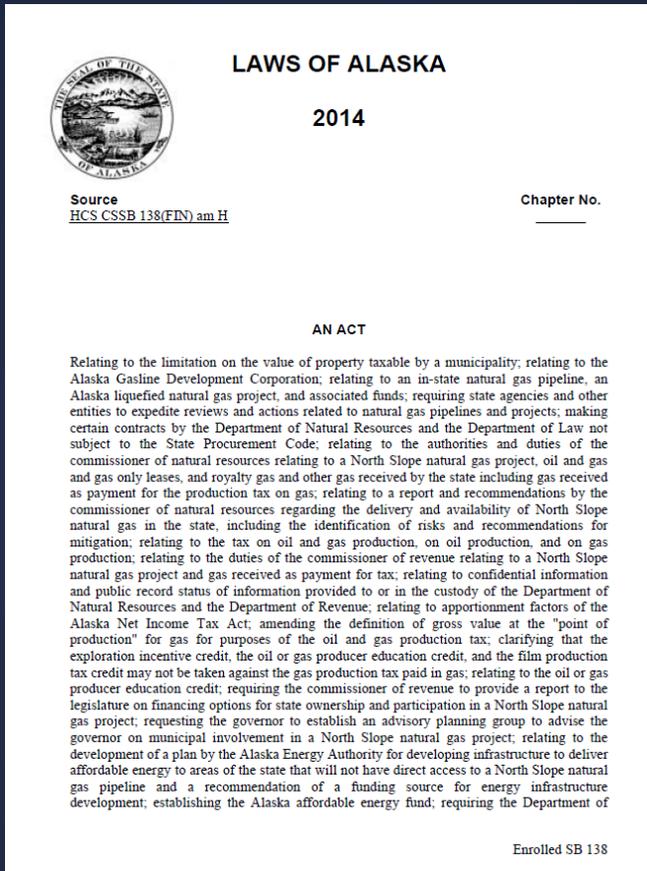


Senate Bill 138

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



Alaska Affordable Energy Strategy

- Identify the most cost-efficient manner of delivering more affordable energy
- Maintain consistency with Alaska's energy policy (AS.44.115)
- Facilitate multi-agency coordination, including Alaska Gasline Development Corporation, AIDEA, and Department of Revenue
- Stakeholder Outreach and Involvement



Alaska Affordable Energy Strategy

- Identify ownership options, different energy sources, including: fossil fuels, hydro projects, tidal, and other alternative energy sources
- Consult with the Department of Revenue on potential financing of constructing economically-viable infrastructure
 - Includes rent, royalty, income or tax received by the state that may be appropriated
 - Recommend underwriting to make energy affordable without options for economically-viable infrastructure
- Consider development of regional energy bulk storage and distribution within regions
- Provide legislation for the design, development, construction and financing of required infrastructure by Jan. 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

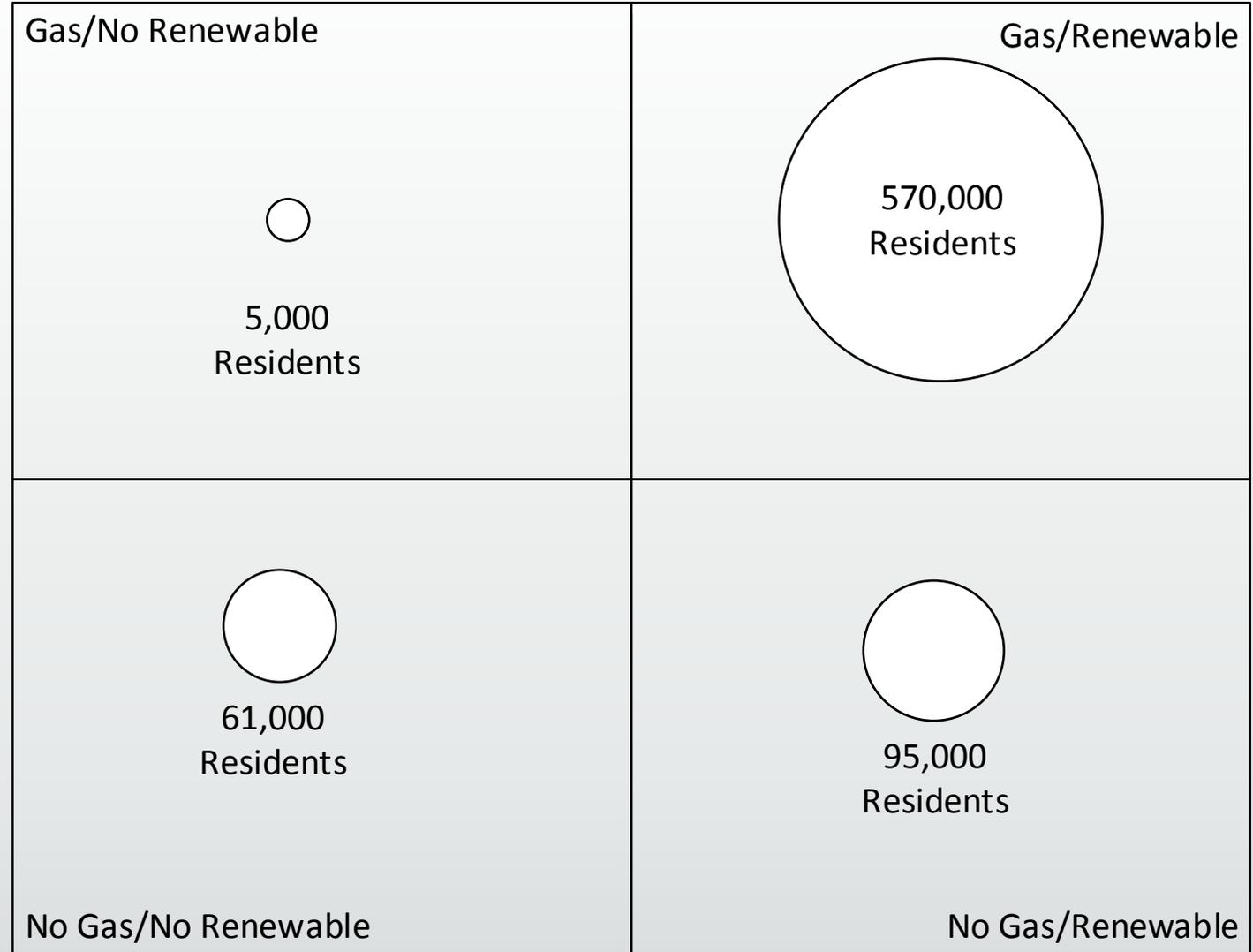
- Interest stays with the fund
- 20 percent of the revenue from the state's royalty gas from an Alaska LNG project (after the payment to the permanent fund)

Describing Alaska's Energy Resources

- Community and regional access to energy sources varies and often drives cost
- Four Energy Quadrants:
 1. Natural Gas/Renewable Energy
 2. Natural Gas/No Renewable Energy
 3. No Natural Gas/No Renewable Energy
 4. No Natural Gas/Renewable Energy
- Energy for heat & electricity are separated into distinct quadrants

ELECTRICITY

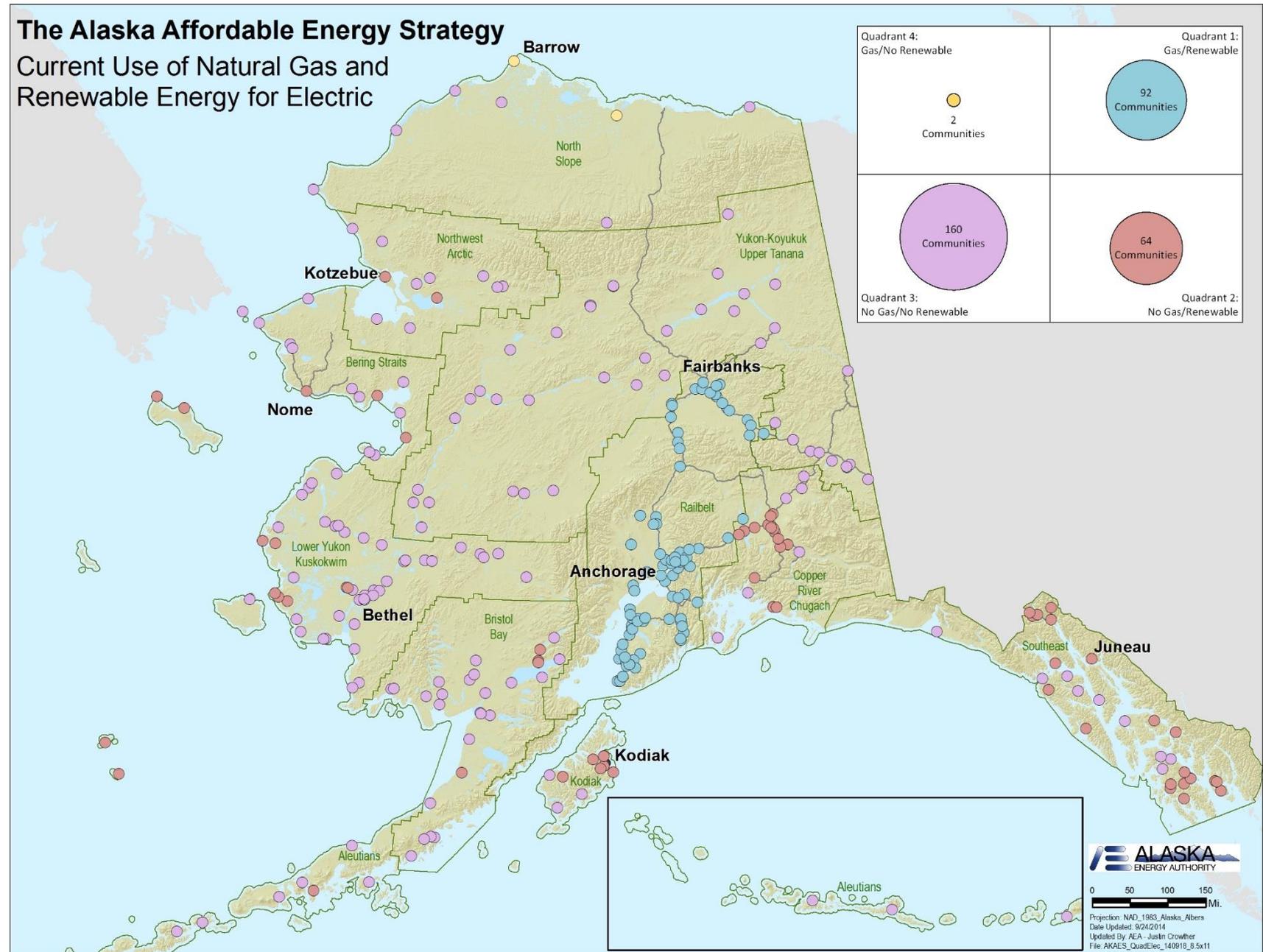
All Four Quadrants by Population: Electricity



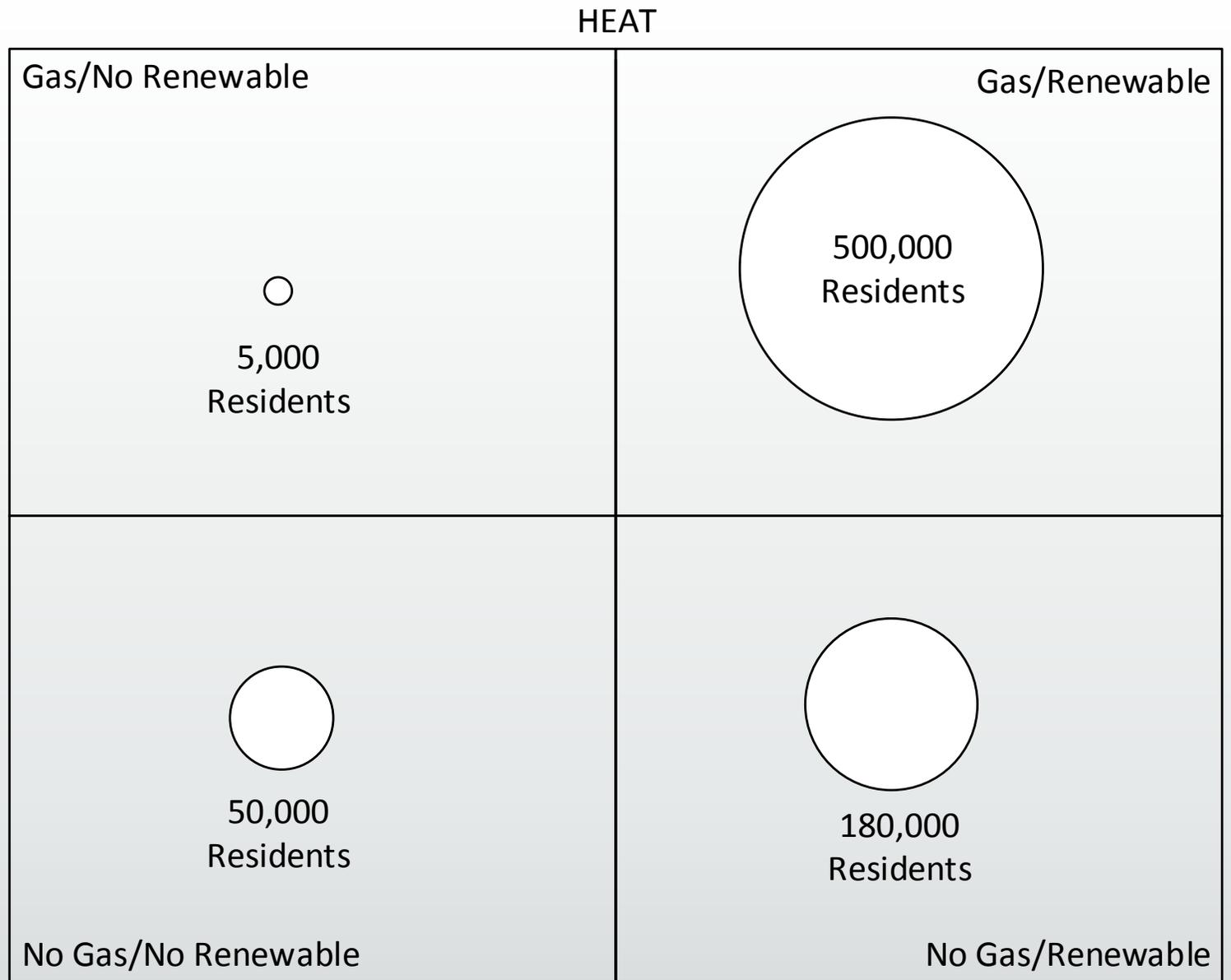
All Four Quadrants by Community: Electricity

The Alaska Affordable Energy Strategy

Current Use of Natural Gas and
Renewable Energy for Electric



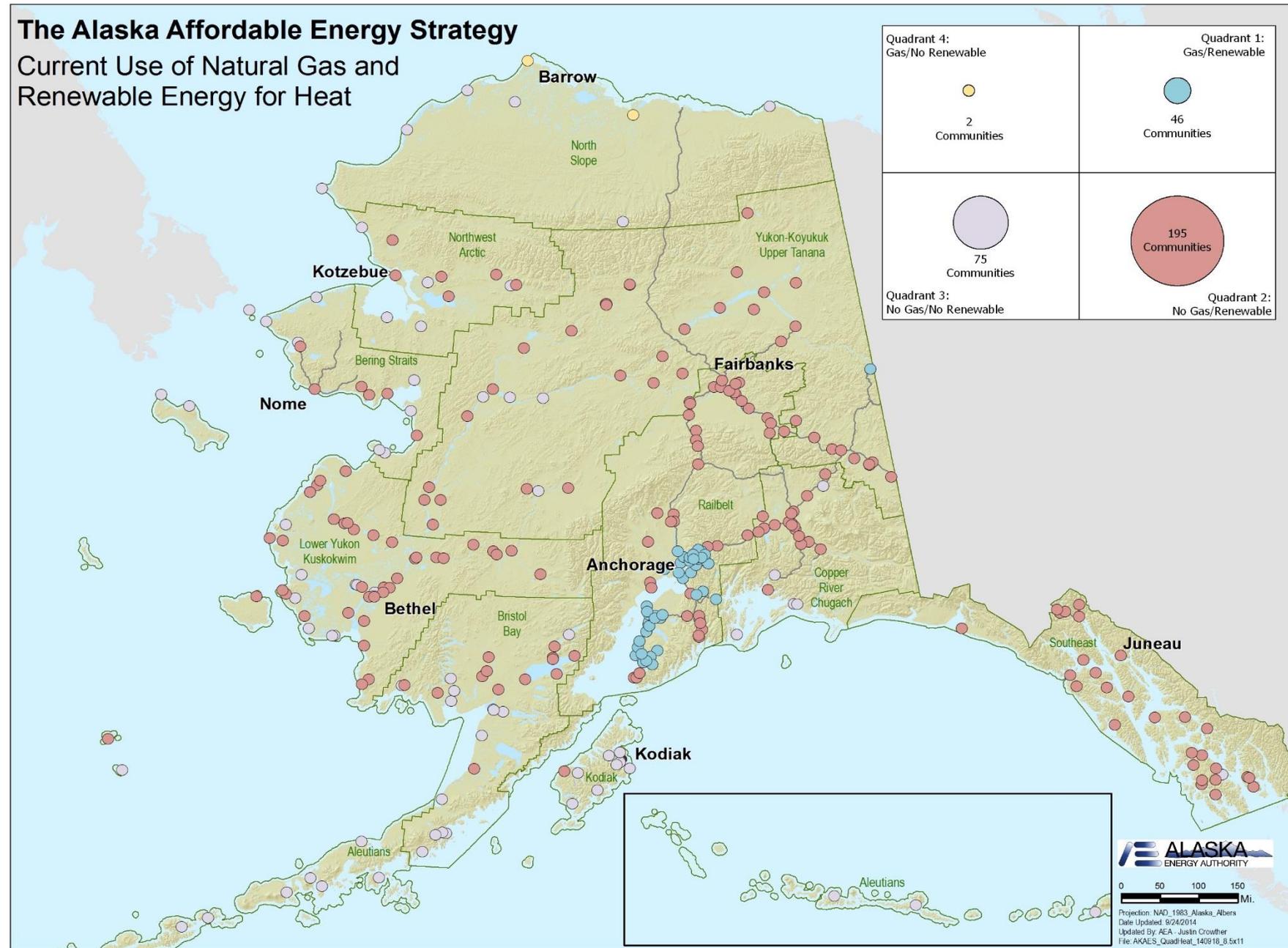
All Four Quadrants by Population: Heat



All Four Quadrants by Community: Heat

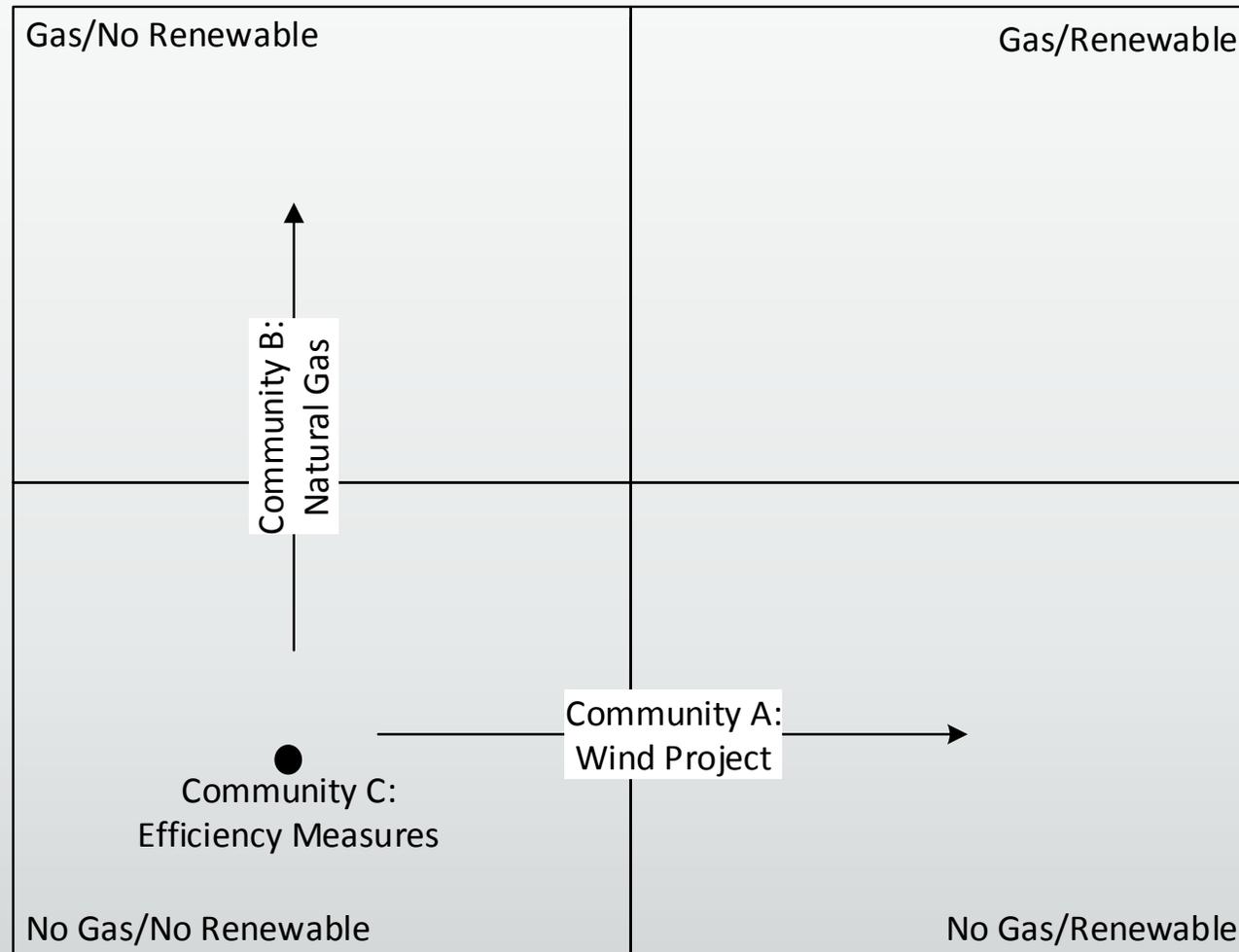
The Alaska Affordable Energy Strategy

Current Use of Natural Gas and Renewable Energy for Heat



Cost-Effective Strategies Impact a Community's Energy Mixture

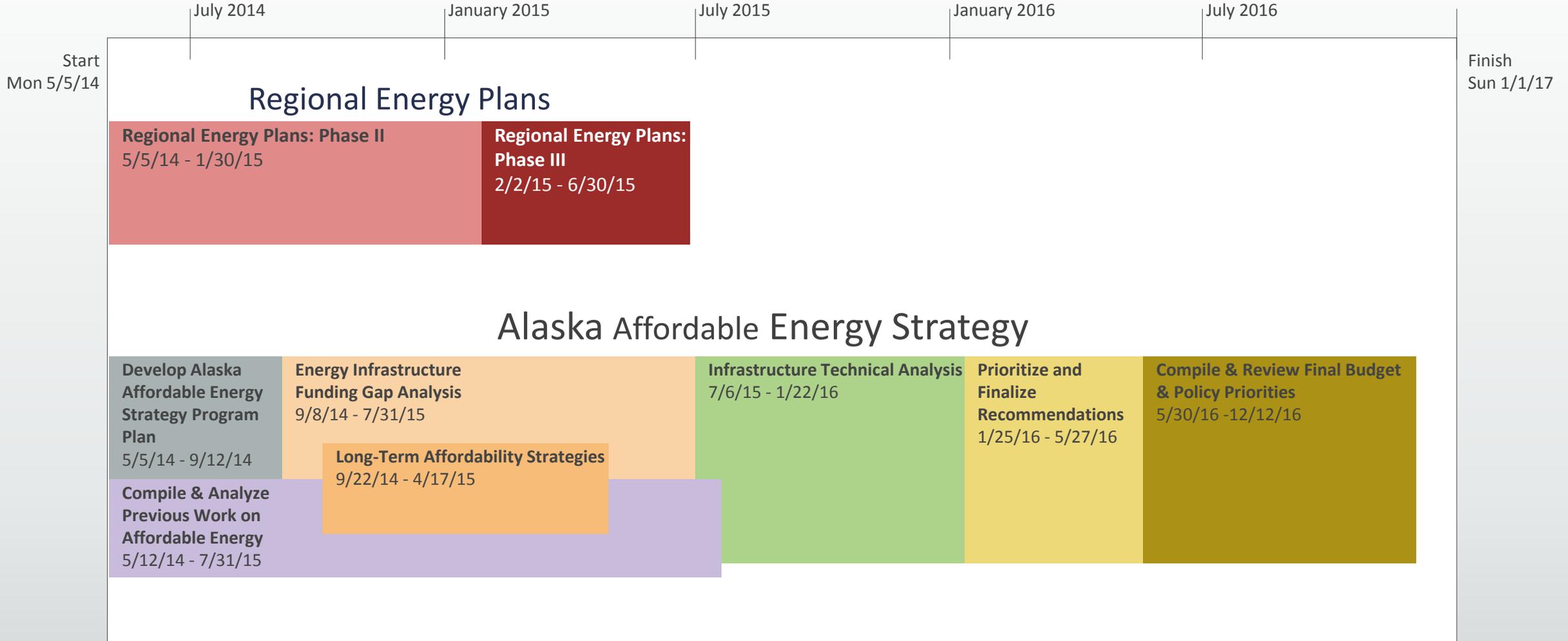
Cost Effective Measures to Improve Energy Affordability



Quadrant Strategies

- Potential strategies include:
 - Energy Efficiency and Deep Village Retrofits
 - New infrastructure (fossil fuels and renewables)
 - Improved Operations and Maintenance
 - Utility Management
 - Transmission
 - Storage
 - Possible Direct Subsidy

Energy Planning Timelines



AKEnergyAuthority.org

