

Alaska Energy Authority Agency Overview

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Alaska Energy Authority

Presentation to House Energy
Committee

February 21, 2017





AEA's mission is to reduce the
cost of energy in Alaska

Alaska Energy Authority Activity Quadrants

Rural
Programs/Services

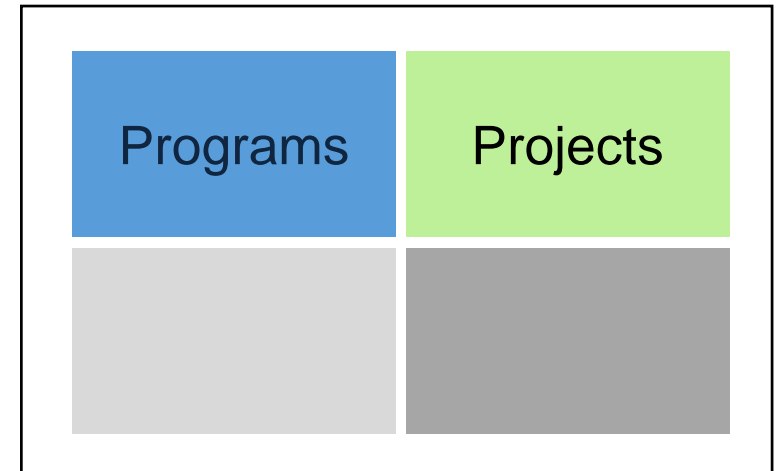
Rural Projects/
Infrastructure

Urban
Programs/Services

Urban Projects/
Infrastructure

Presentation Order

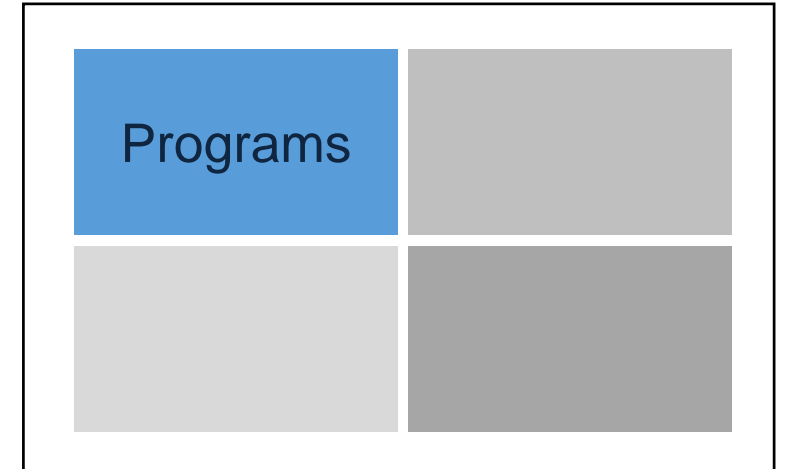
1. Rural programs/services and projects
2. Power Cost Equalization overview
3. Urban/Statewide programs and projects
4. Railbelt assets, management coordination, and planning



1. Rural Programs/Services & Projects

Rural Programs/Services

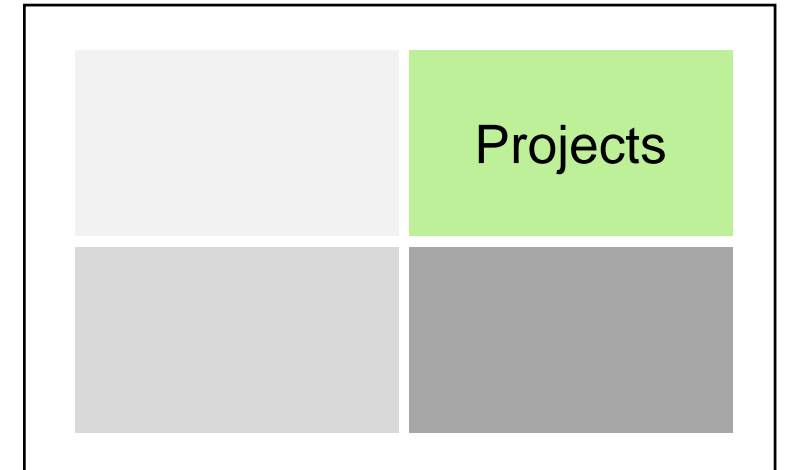
- PCE utility clerk training
- Utility operator training
- Technical assistance - utility operators
- Circuit rider
- Electrical emergency response*
- Power Cost Equalization (PCE)
- Power Project Fund loans (PPF)
- Technical assistance – technology areas
- Energy policy lead

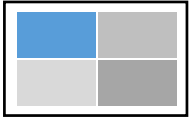


**Though a recurring service this is funded by capital budget authorization*

Rural Projects/Infrastructure

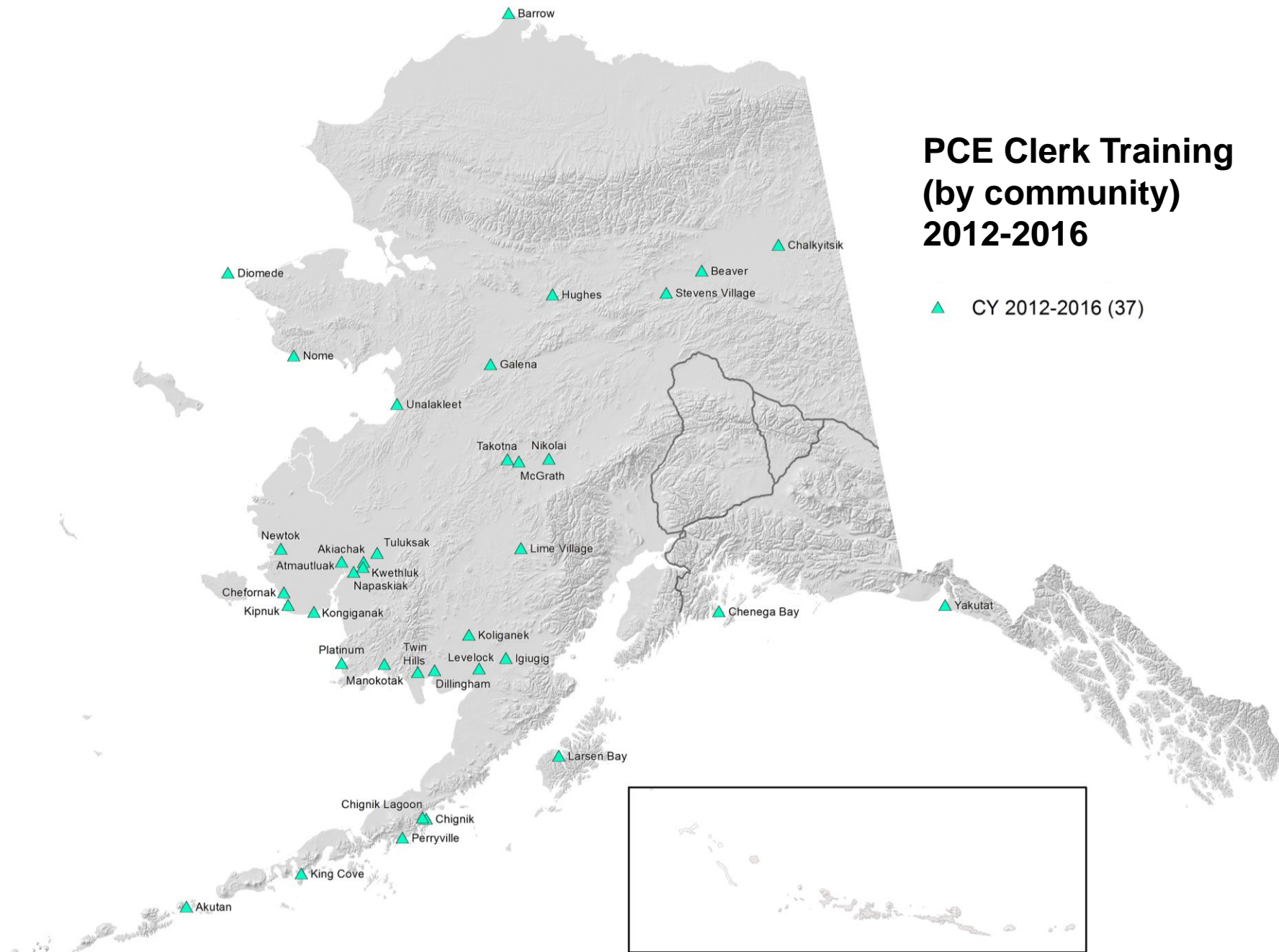
- Rural Power System Upgrades
- Bulk Fuel Tank Farms
- End-use Efficiency
- Hydroelectric Power
- Biomass
- Heat Recovery
- Wind
- Energy Planning
- Renewable Energy Grant Fund
- Emerging Energy Technology Grant Fund

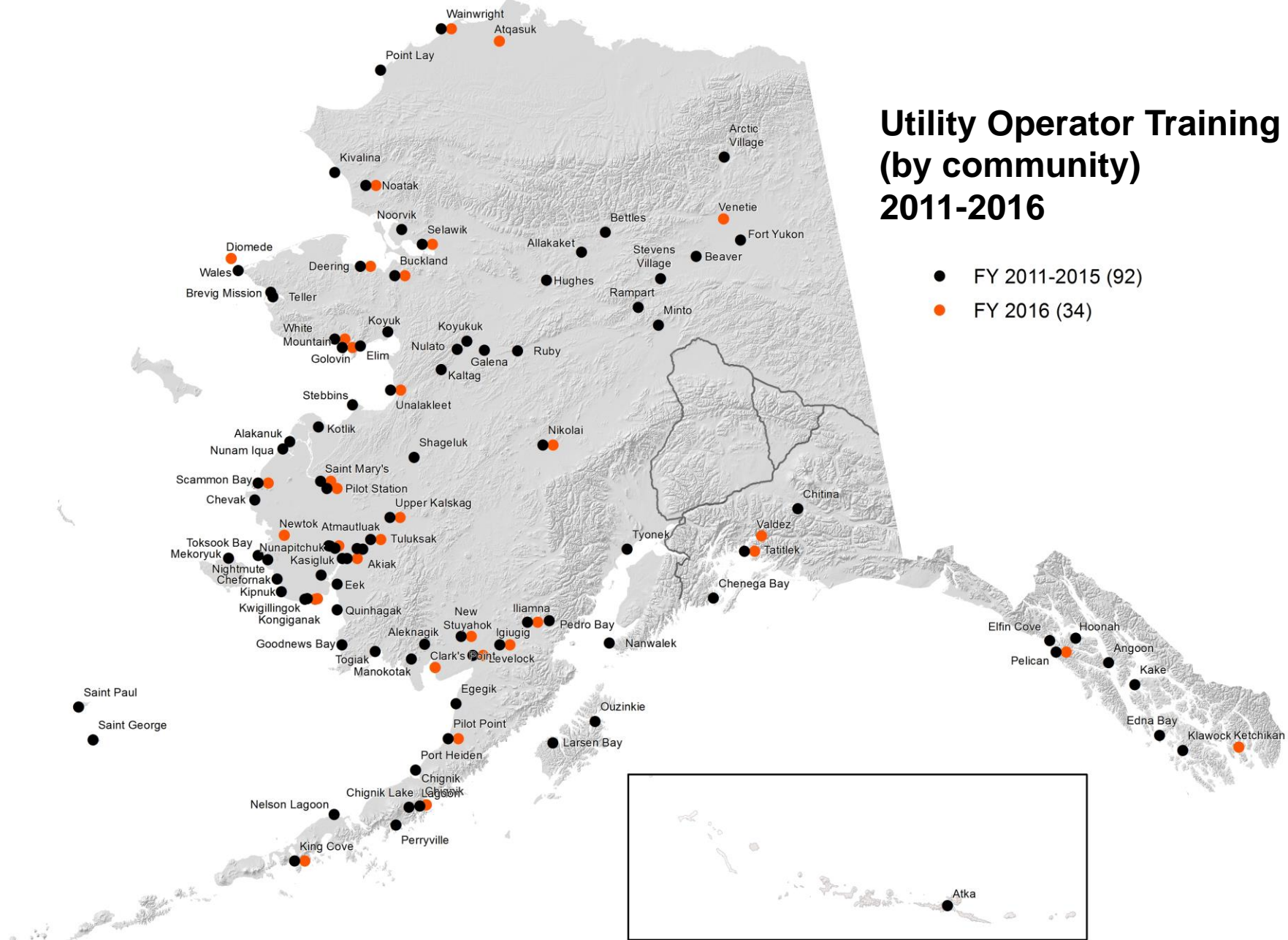




PCE Clerk Training (by community) 2012-2016

▲ CY 2012-2016 (37)

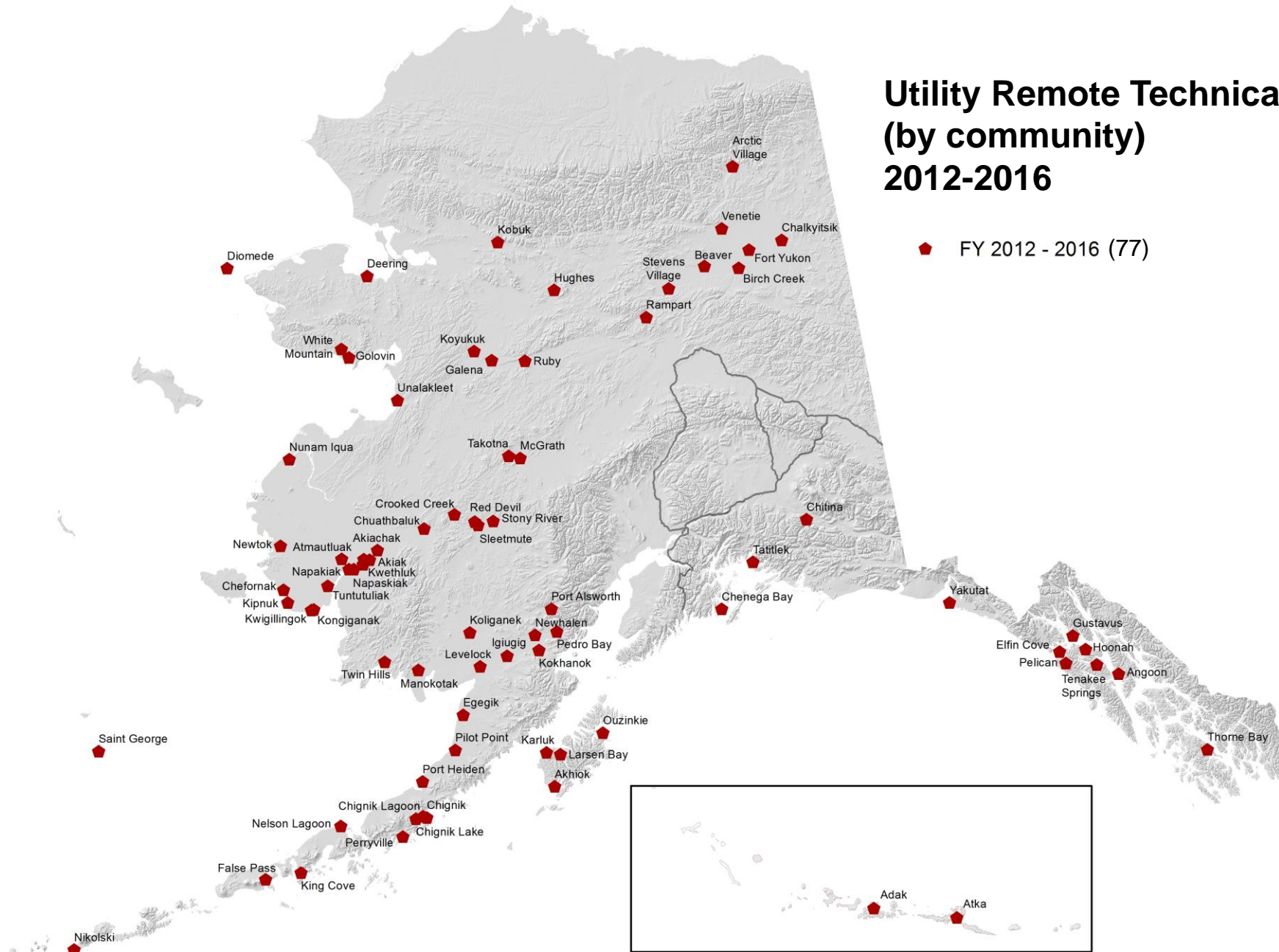


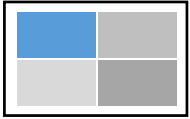




Utility Remote Technical Assistance (by community) 2012-2016

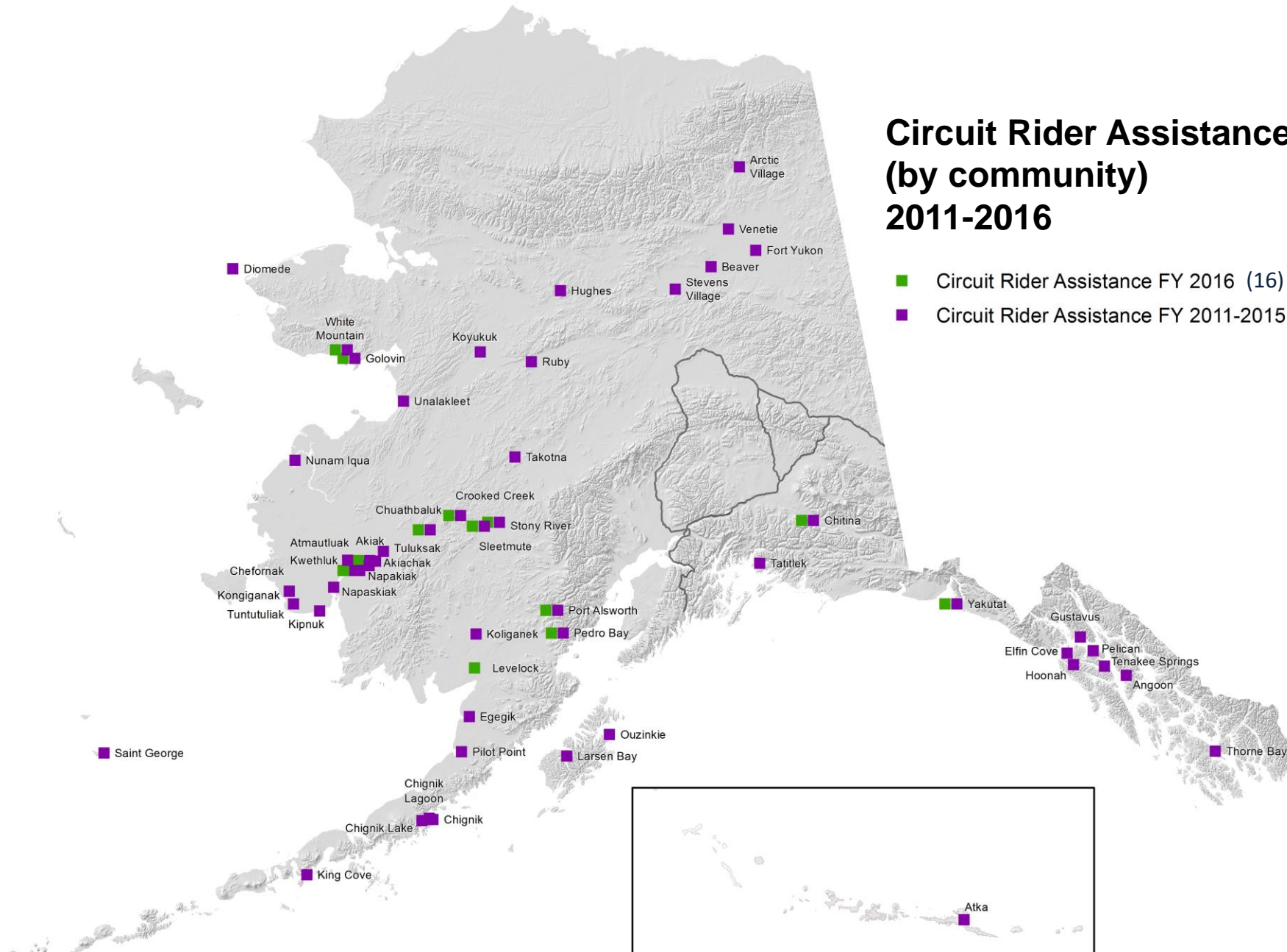
◆ FY 2012 - 2016 (77)

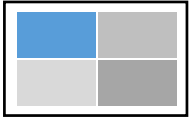




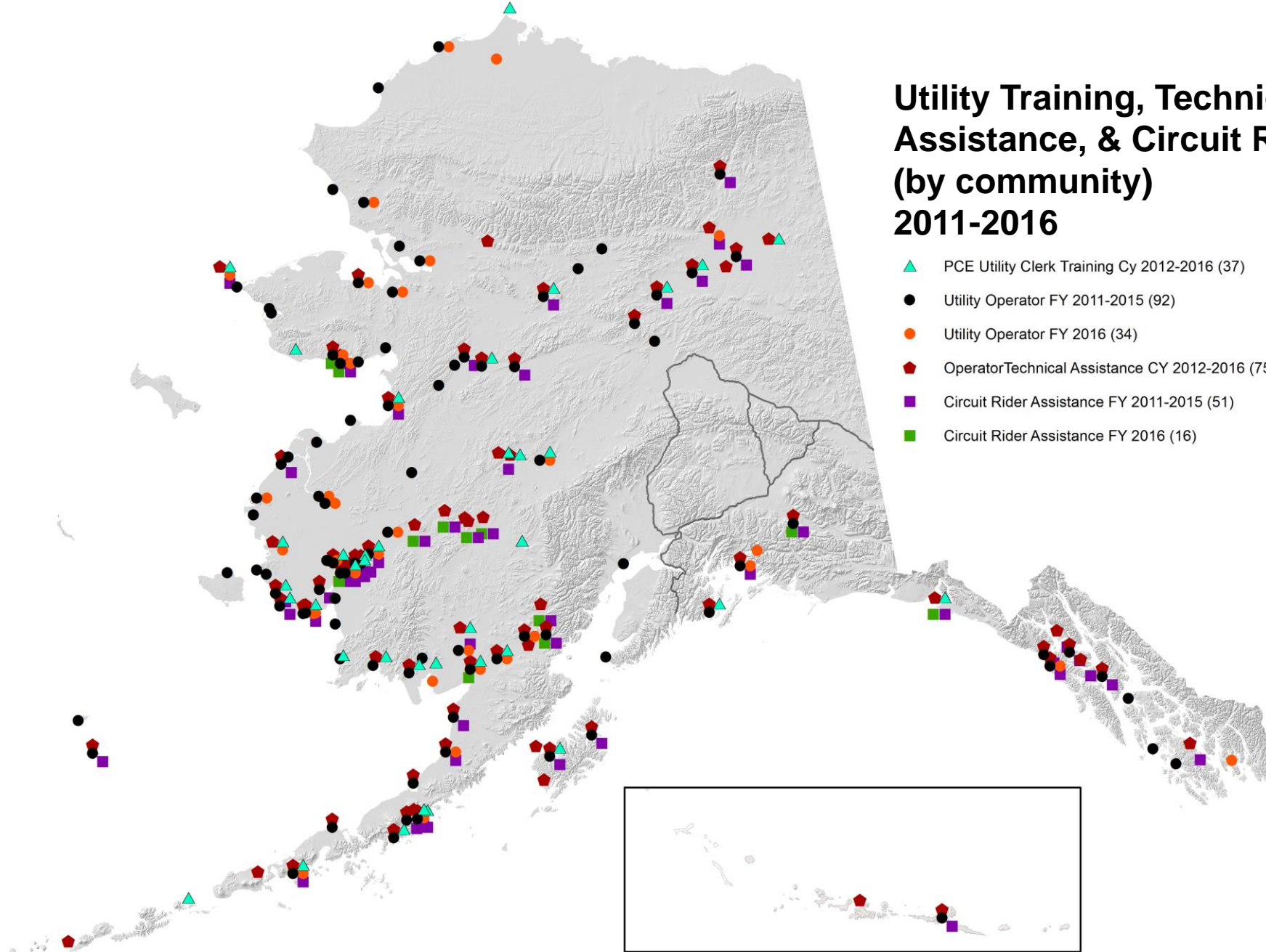
Circuit Rider Assistance (by community) 2011-2016

- Circuit Rider Assistance FY 2016 (16)
- Circuit Rider Assistance FY 2011-2015 (51)





Utility Training, Technical Assistance, & Circuit Rider (by community) 2011-2016





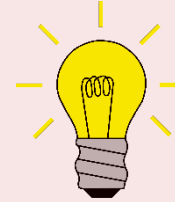
3 AAC 108.230. Electrical emergency assistance provided by the authority

(a) If a **utility** eligible under 3 AAC 108.210 **suffers an electrical emergency, the authority will, subject to the availability of appropriations, assist the utility in responding to the emergency and recovering the ability to generate and transmit power** to the utility's customers in a manner that does not constitute a significant threat to life or property. **Assistance may include financial assistance or technical assistance, including emergency repairs.**

(b) In this section, "**electrical emergency**" means a condition in a utility's system that presents an **imminent danger** to life or likelihood of **significant disruption of electrical service.**



Emergency Response Flow



Regular
Utility
Operations

Power
Outage

AEA Emergency
Response
Activated: Phone
Call with Utility
Operator

Problem
Diagnosed by
AEA

Then the Utilities,
AEA Personnel
and/or Contractor
Engaged for
repairs

Power
Restored,
***"Imminent
Danger"*** is
Over

Then it is the
utility's
responsibility,
after the
emergency
response, to
complete the
permanent fix, if
required

Regular
Utility
Operations

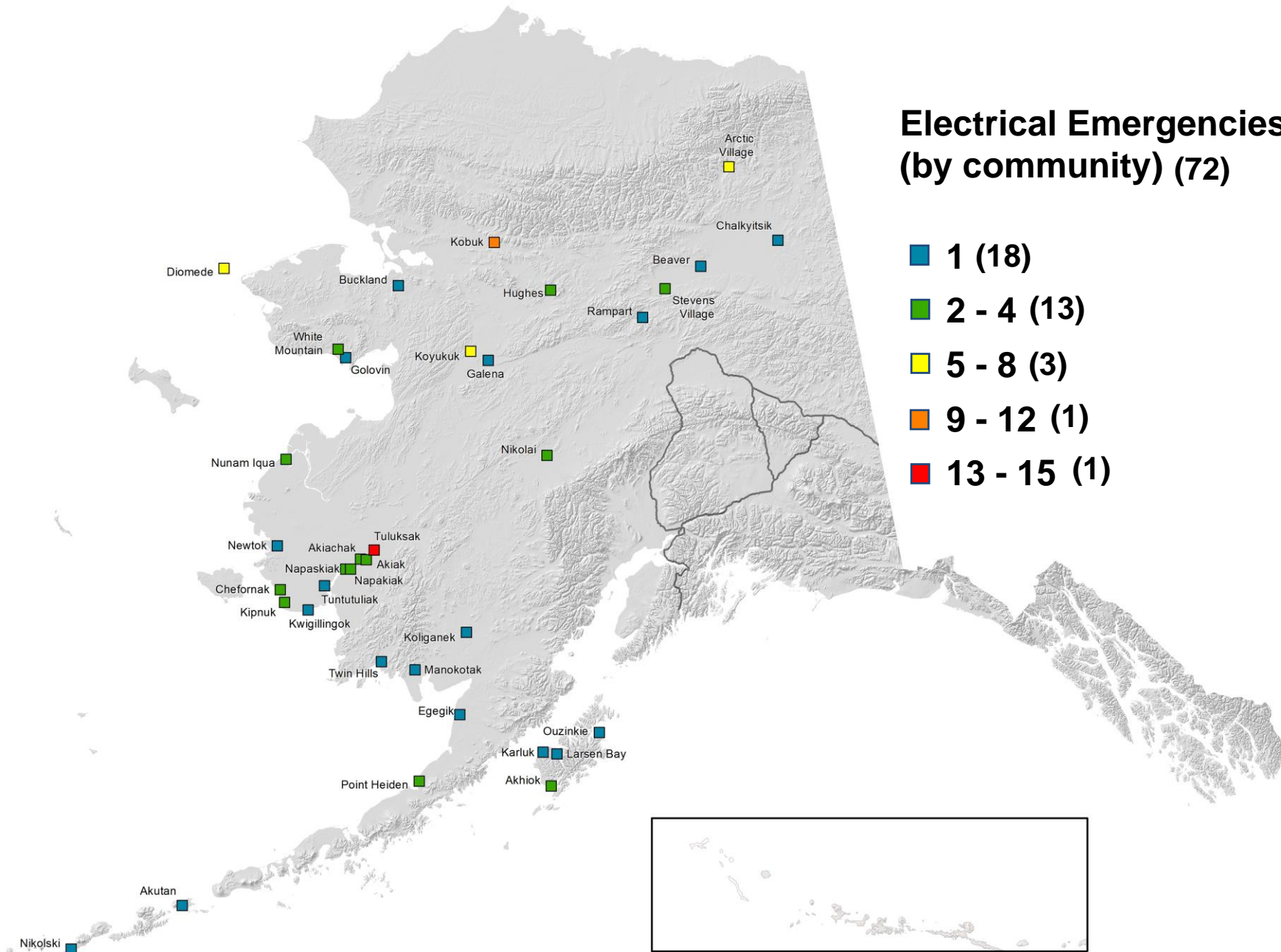
**Most Emergency Response Calls
are resolved within 12 - 48 Hours**

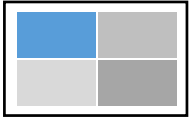
**Arctic Village: PPF \$
& Diomedes: CDQ \$**



Electrical Emergencies FY 06-16 (by community) (72)

- 1 (18)
- 2 - 4 (13)
- 5 - 8 (3)
- 9 - 12 (1)
- 13 - 15 (1)





Ten Year Average for Emergency Response

Type	Cost	Percentage
State Labor & Travel	\$525,190	18%
Contractors	\$1,233,744	43%
Freight	\$302,855	11%
Materials & Supplies	<u>\$786,043</u>	28%
Total	<u><u>\$2,847,832</u></u>	
Per year average	<u><u>\$284,783</u></u>	
72 Community Emergency Responses		

RPSU Emergencies -vs- Replacement Cost:
\$285k Assistance/\$975M Rural Utility Assets -vs-
= 0.00029 = .029%

Car Analogy:
\$100 Roadside Tire Assistance/\$30,000 Car
= 0.003 = .3% (10x cost)



- Completed (81)

- In Progress (18)

Completed (111)

■ In Progress (20)





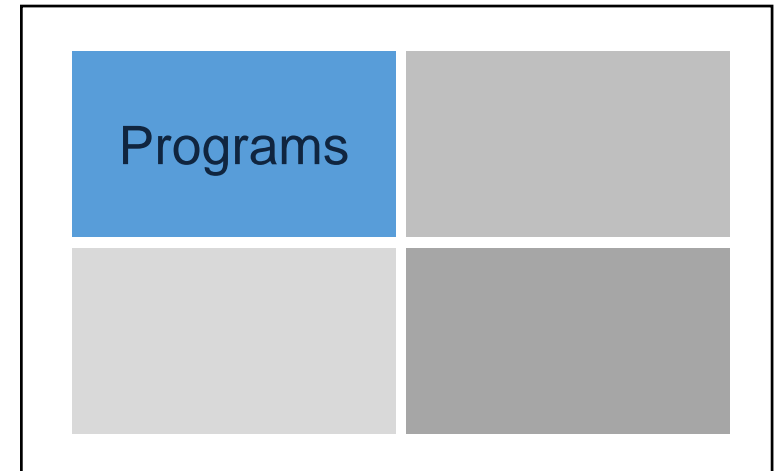
Investing in rural energy projects brings benefits to communities

Rural Power System Upgrades (RPSU) Program

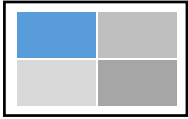
- Builds code compliant facilities providing stable and reliable power
- ~10% to 20% efficiency improvement in diesel generation
- Value of grant funds between \$0.12 and \$0.89/kWh

Bulk Fuel Tank Farm Upgrades Program

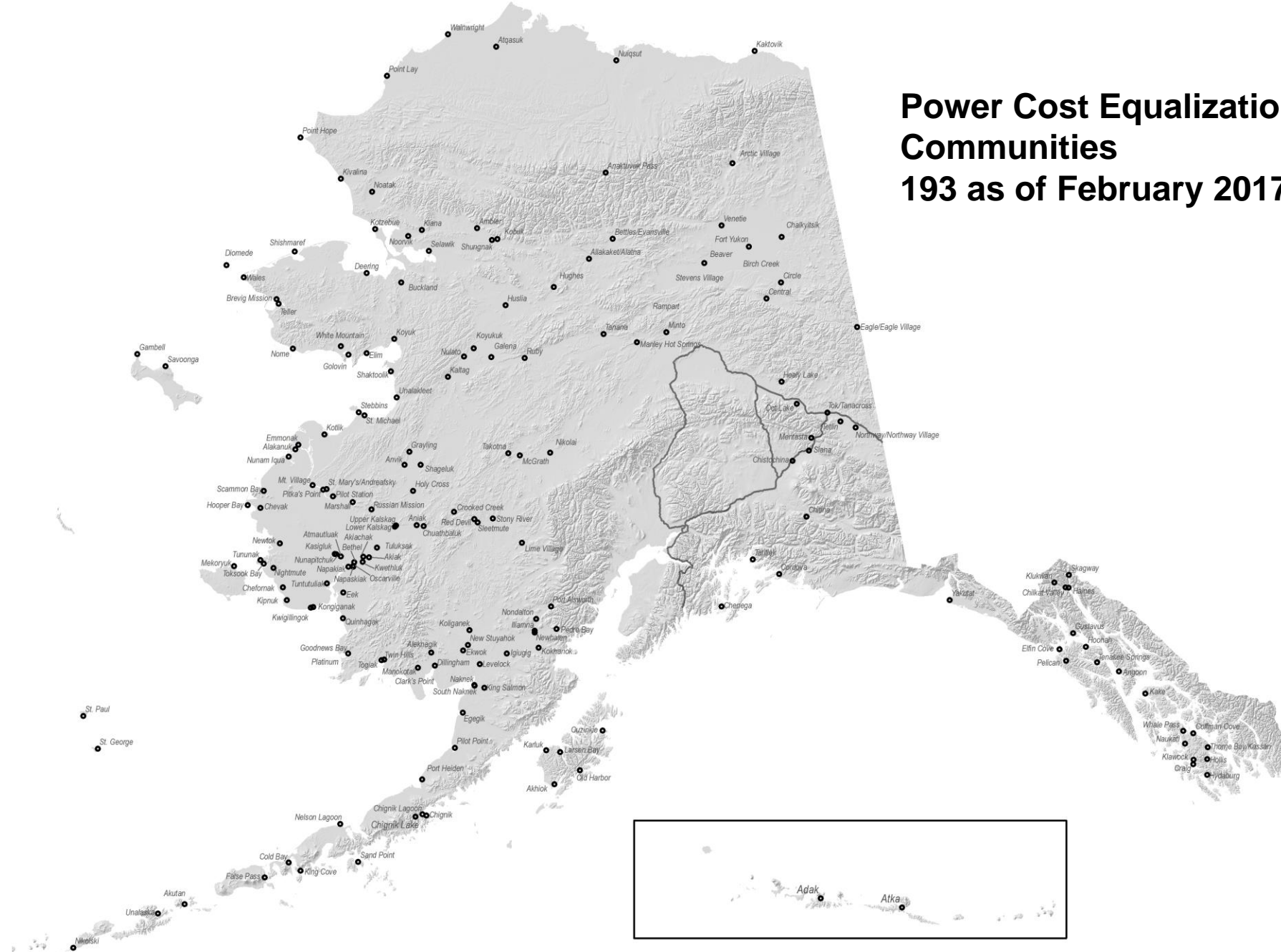
- Builds code compliant fuel storage facilities
- preventing spills and contamination
- decreasing the per unit cost of fuel by allowing the community to purchase bulk quantities



2. Power Cost Equalization Overview



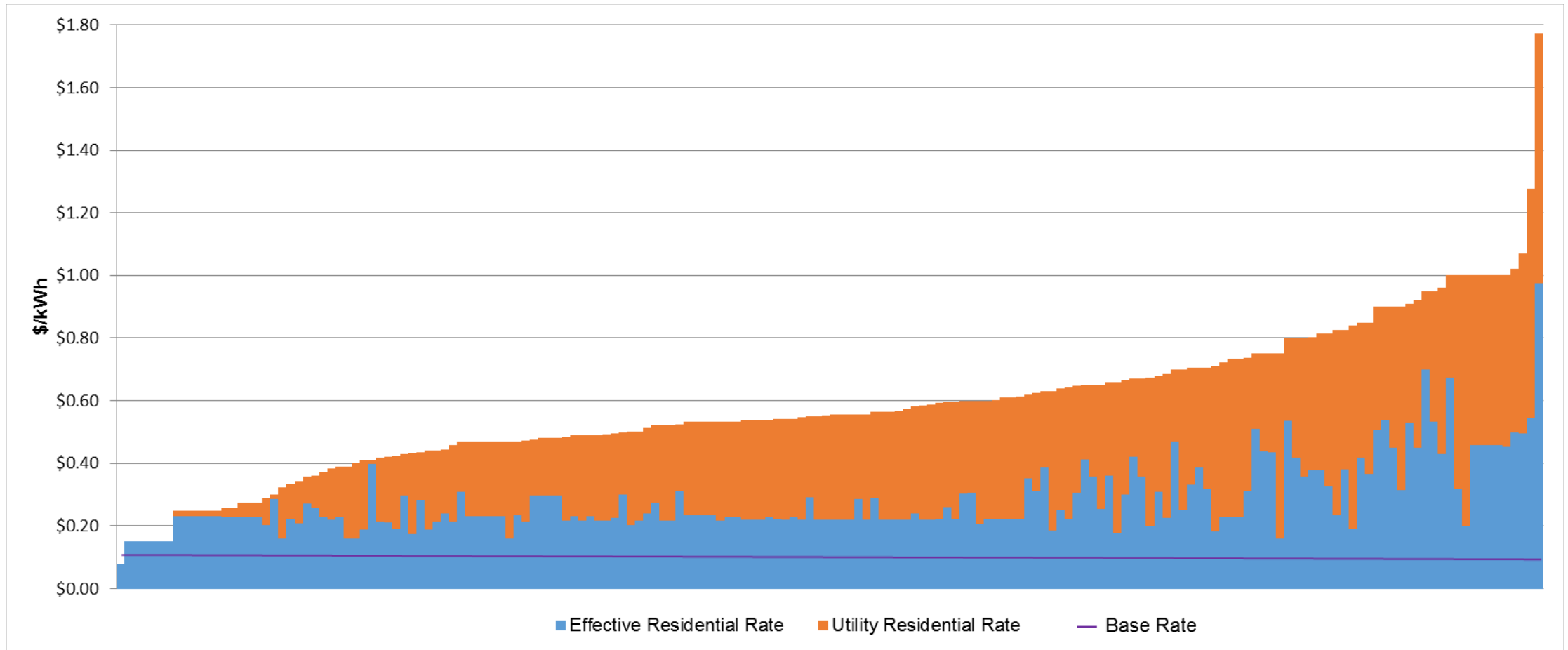
Power Cost Equalization (PCE) Communities 193 as of February 2017

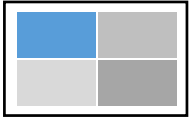




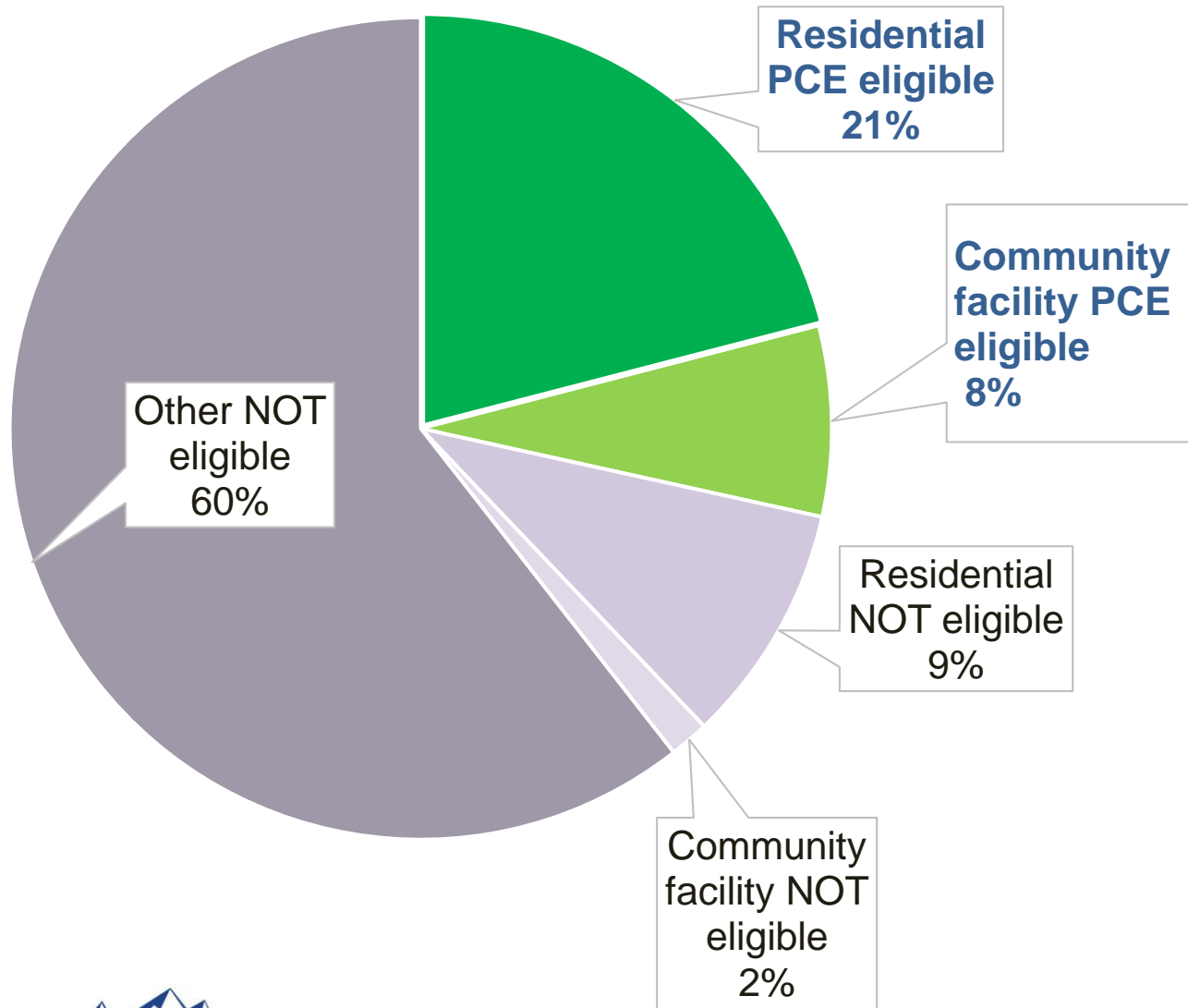
Stabilizing Power Rates

Power Cost Equalization Communities



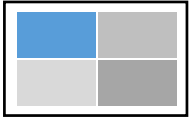


Electric Sales in PCE Communities (kWh)



Percent of kWhs that are PCE eligible varies by community.

- Across all PCE communities 29% of all kWhs sold are eligible.
- Eligible PCE sales range from 5% to 72% of total sales.
- In a typical (un-weighted average) PCE community, 40% of all kWhs sold are eligible.



Q: Are PCE recipients penalized by REF projects or REF project energy savings?

A: No. In fact, all ratepayers in the PCE community share the benefit

Hypothetical
example: an REF
project saves \$100
in a community...



\$60.00

Savings to community PCE-eligible kWhs

- Private businesses
- Schools
- Residential kWhs over 500/month
- Government buildings

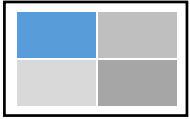
\$38.00

Savings to the PCE program through
reduced disbursements

\$2.00

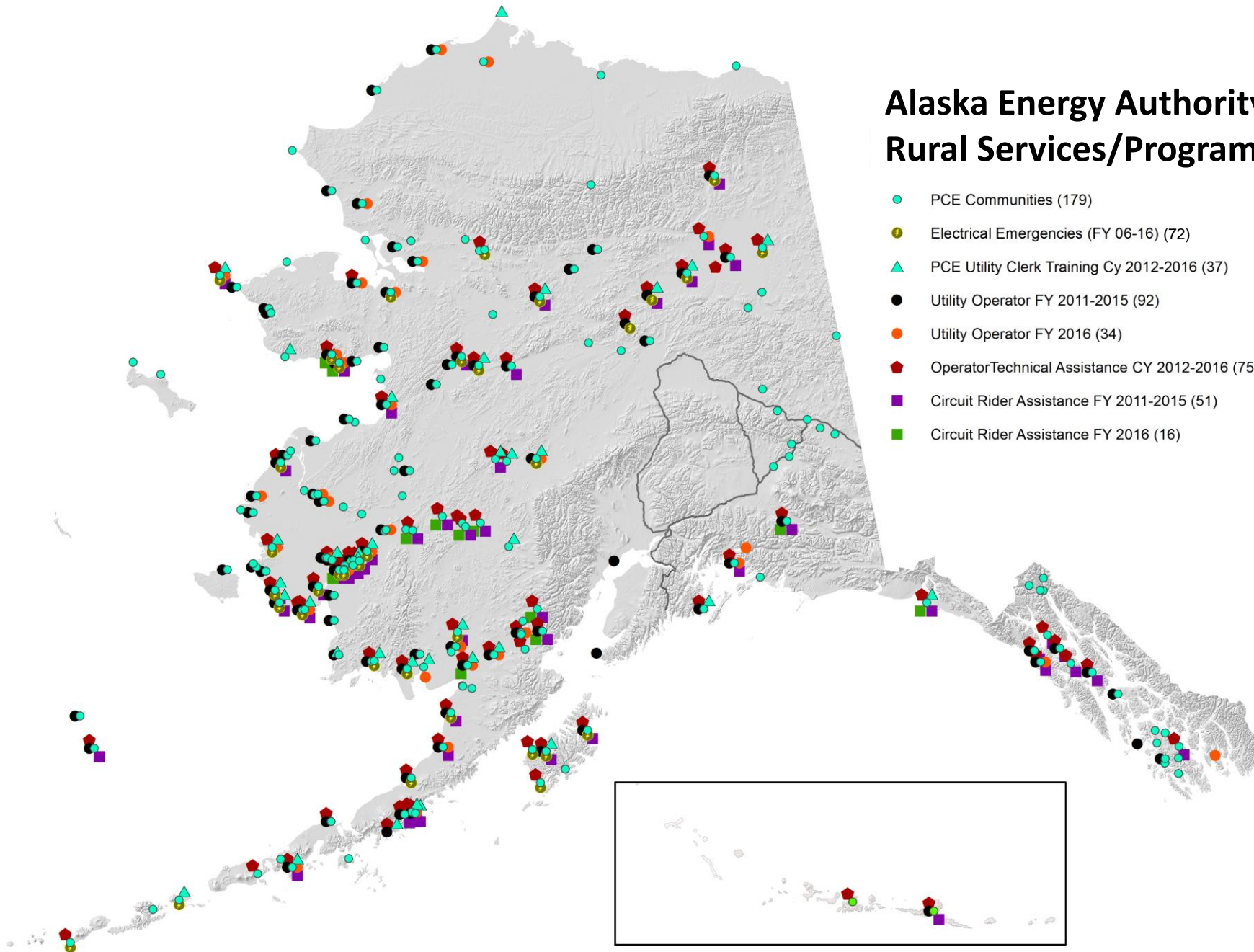
Savings to kWhs already subsidized through PCE

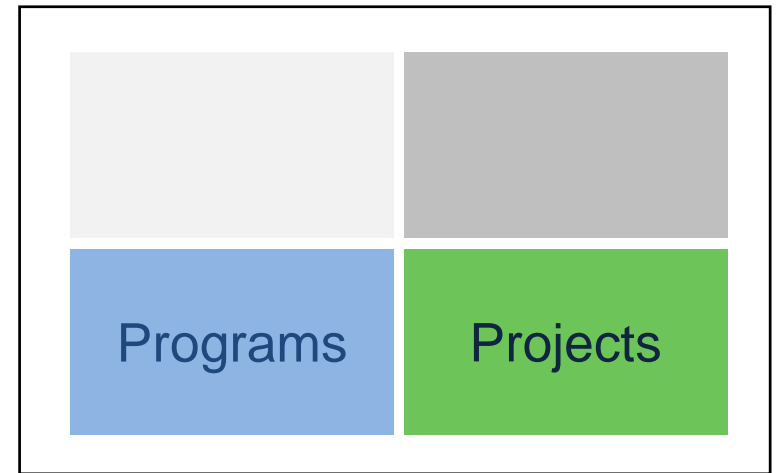
Assuming cost based rate in a typical PCE community: 40% kWhs sold are subsidized by PCE, 60% are not.



Alaska Energy Authority Rural Services/Programs

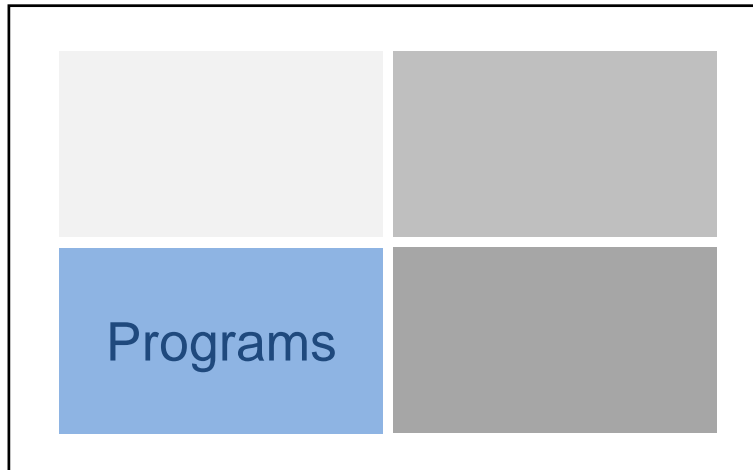
- PCE Communities (179)
- Electrical Emergencies (FY 06-16) (72)
- PCE Utility Clerk Training Cy 2012-2016 (37)
- Utility Operator FY 2011-2015 (92)
- Utility Operator FY 2016 (34)
- Operator Technical Assistance CY 2012-2016 (75)
- Circuit Rider Assistance FY 2011-2015 (51)
- Circuit Rider Assistance FY 2016 (16)





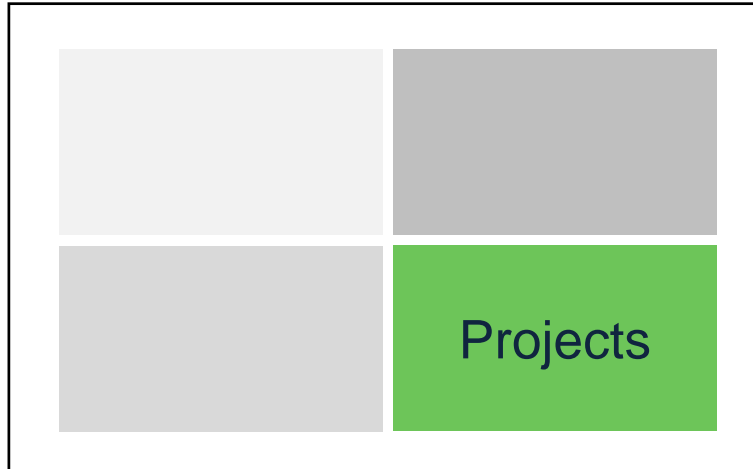
3. Urban/Statewide Programs and Projects

Urban/Statewide Programs/Services



- Technical Assistance – technology areas
- Energy Policy Lead
- Bradley Project Management Committee (BPMC)
- Intertie Management Committee (IMC)

Urban/Statewide Projects/Infrastructure



- Bradley Lake Hydroelectric
- Alaska Intertie
- Project Development & Finance Assistance (biomass, wind, hydro, end-use efficiency, diesel)
- Energy Planning
- Renewable Energy Grant Fund
- Emerging Energy Technology Grant Fund



Technical Assistance – energy technologies

5 Critical Technology Areas:

1. End-use Efficiency
2. Hydro
3. Biomass
4. Wind
5. Heat Recovery

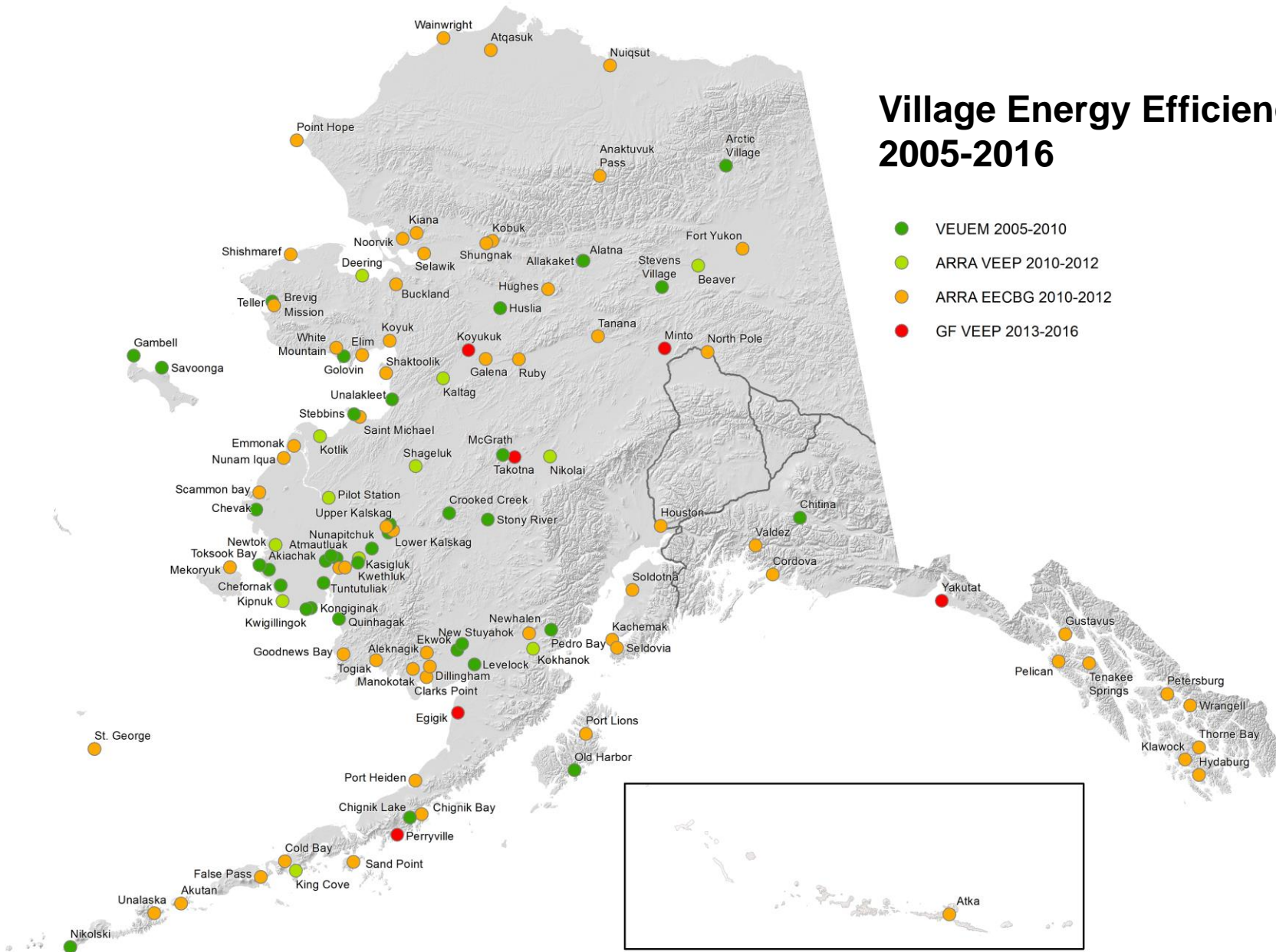
6 “Lighter Touch” Technology Areas:

1. Energy Storage
2. Heat Pumps
3. Solar PV
4. Transmission
5. Solar Thermal
6. Advanced Grid



Village Energy Efficiency Program 2005-2016

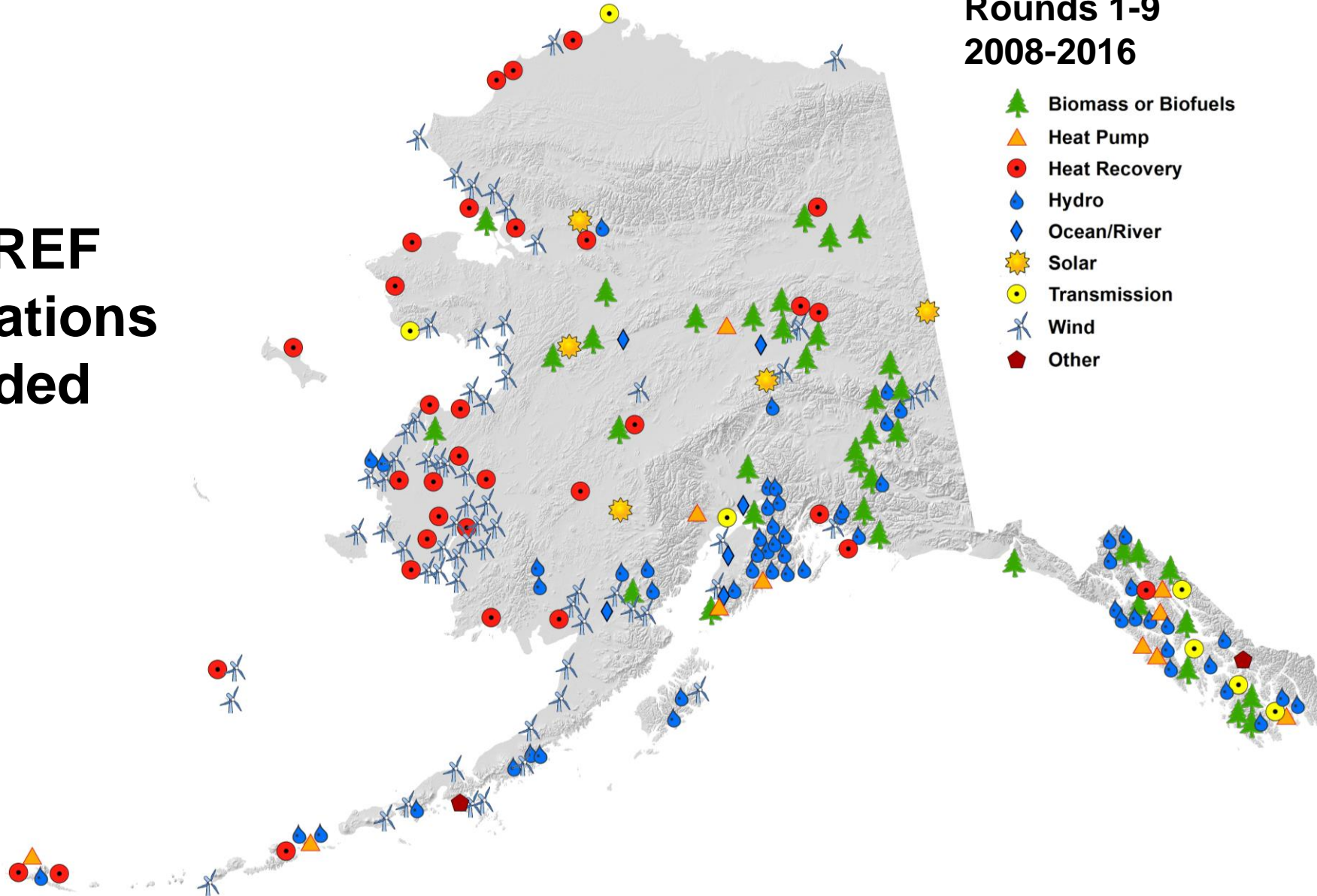
- VEUEM 2005-2010
- ARRA VEEP 2010-2012
- ARRA EECBG 2010-2012
- GF VEEP 2013-2016





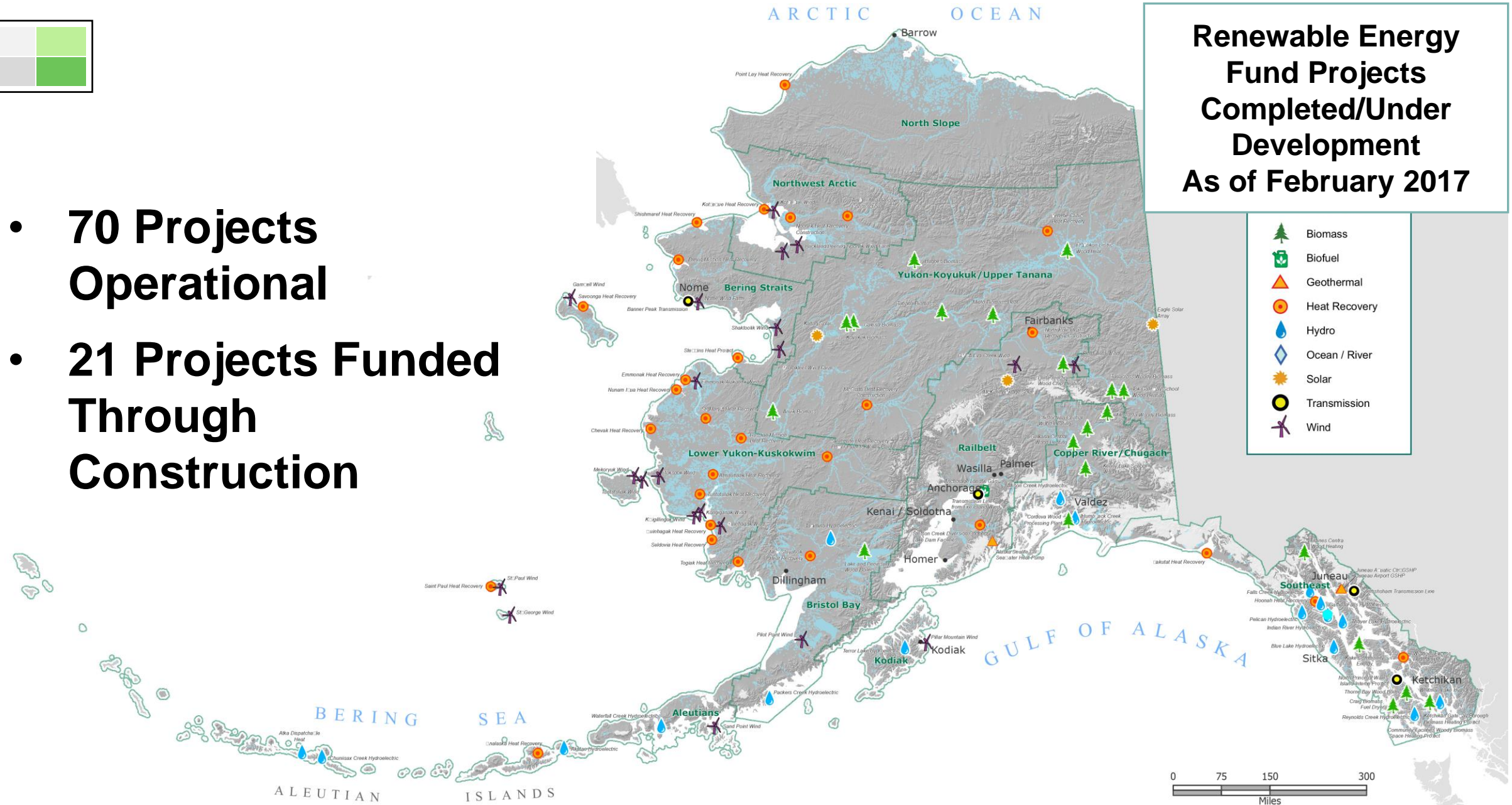
Renewable Energy Fund Grants Rounds 1-9 2008-2016

**287 REF
Applications
Funded**





- 70 Projects Operational
- 21 Projects Funded Through Construction





AEA Energy Projects are Effective

Renewable Energy Fund

- \$257 million since 2008
- Jumpstarted renewable energy market in Alaska
- Leveraged hundreds of millions of federal and private dollars
- Displacing ~31 million diesel equivalent gallons annually
- Which equates to ~\$63 million in 2016



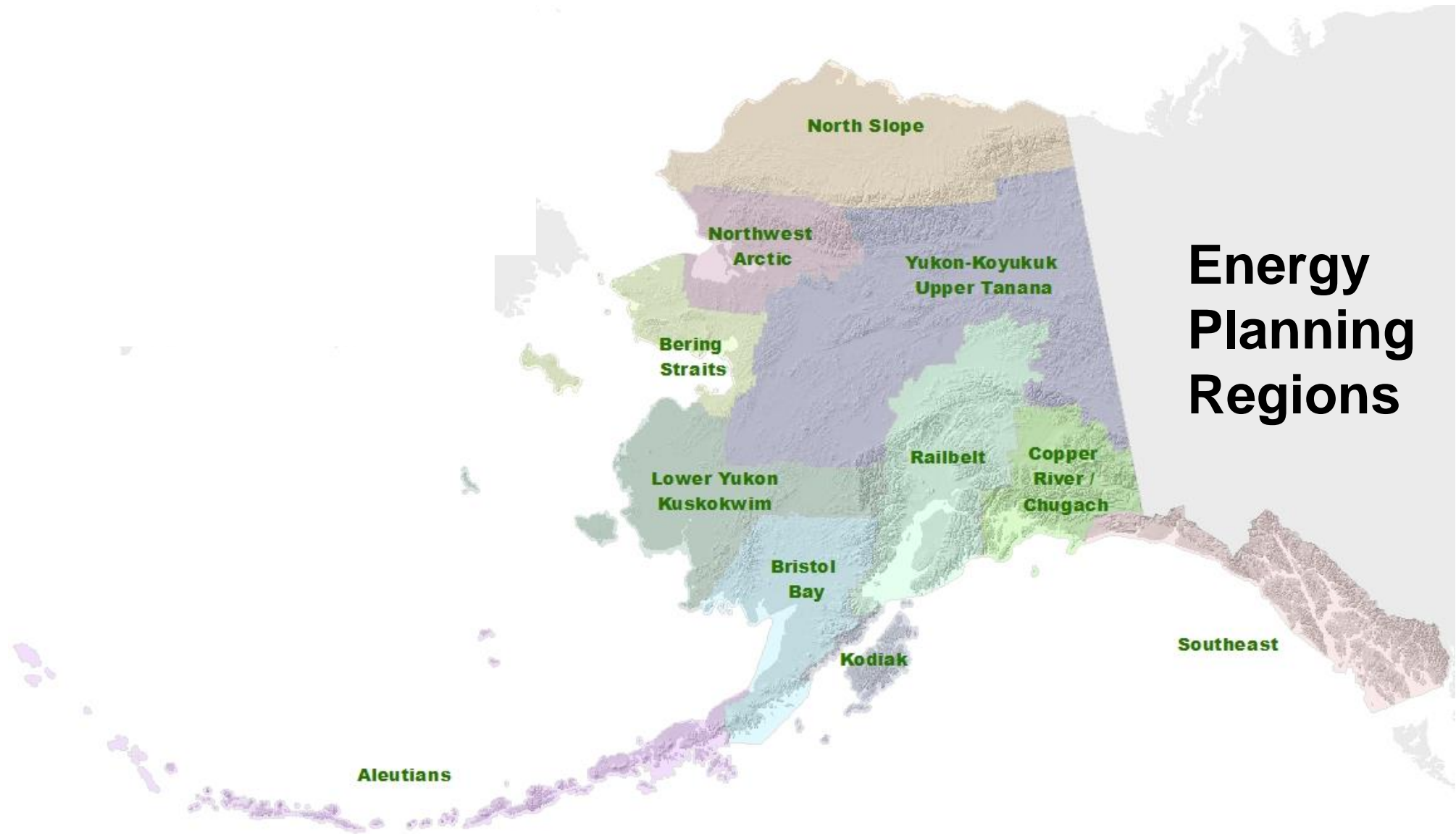
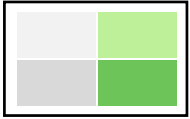
Eva Creek Wind (Golden Valley Electric)



Benefits and costs perspectives differ

- The State takes a universal approach: counting all costs and all benefits regardless of who pays costs or receives benefits
- A community or project developer will likely not include the value of grant funds in their calculation of cost or the reduction in PCE payments from the State as a benefit

	State perspective	Community perspective
Grant dollars	\$75	\$0
Community match	\$50	\$50
Total cost	\$125	\$50
Reduced fuel \$ that stays in community	\$70	\$70
Reduced fuel \$ that lowers PCE payment	\$30	\$0
Total benefit	\$100	\$70
Benefit cost ratio	0.8	1.4



Energy Planning Regions



Alaska Affordable Energy Strategy





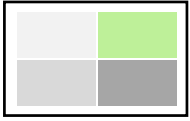
AkAES: Targeted Review

B2: One-stop-shop Community Energy Fund for Alaska (CEFA)

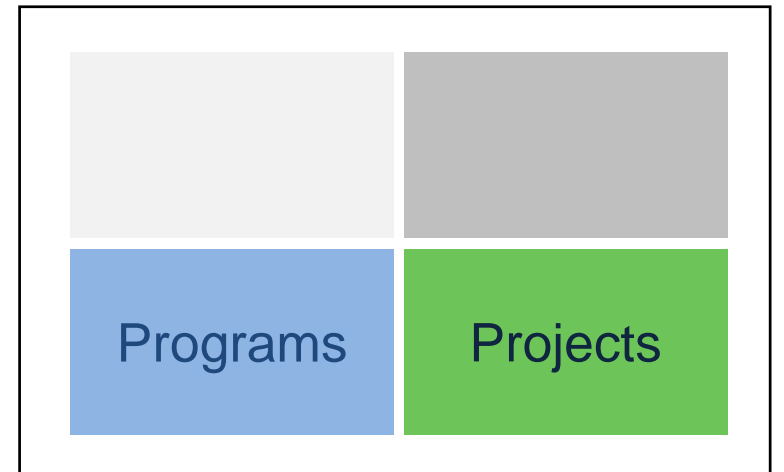
B4: On-bill financing

C5: Empower the RCA to have siting authority over economically regulated utilities

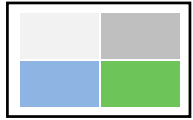
D3: Establish a universal service charge



The AkAES reaffirms differing perspectives related to energy issues



4. Railbelt Assets, Management & Planning

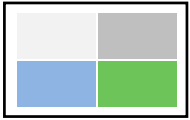


AEA-Owned Energy Infrastructure

Alaska Intertie



- 173 miles from Willow to Healy
- Allows GVEA to connect to and benefit from lower cost power
- \$40 million average annual avoided cost to Golden Valley Electric Association
- 2017 Railbelt Transmission Plan completed

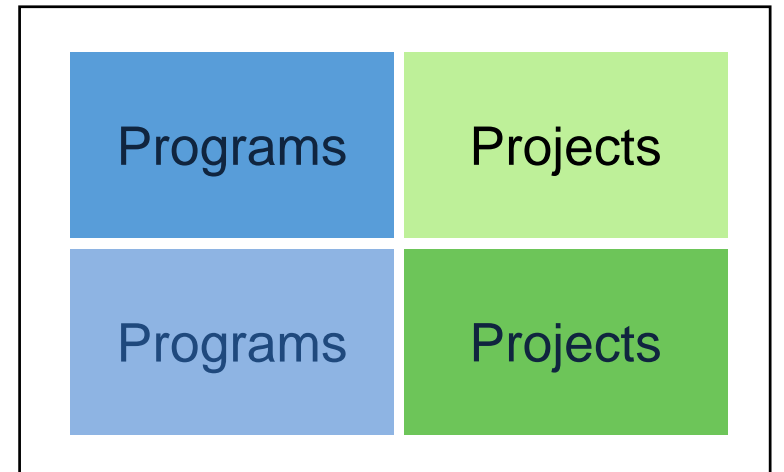


AEA-Owned Energy Infrastructure

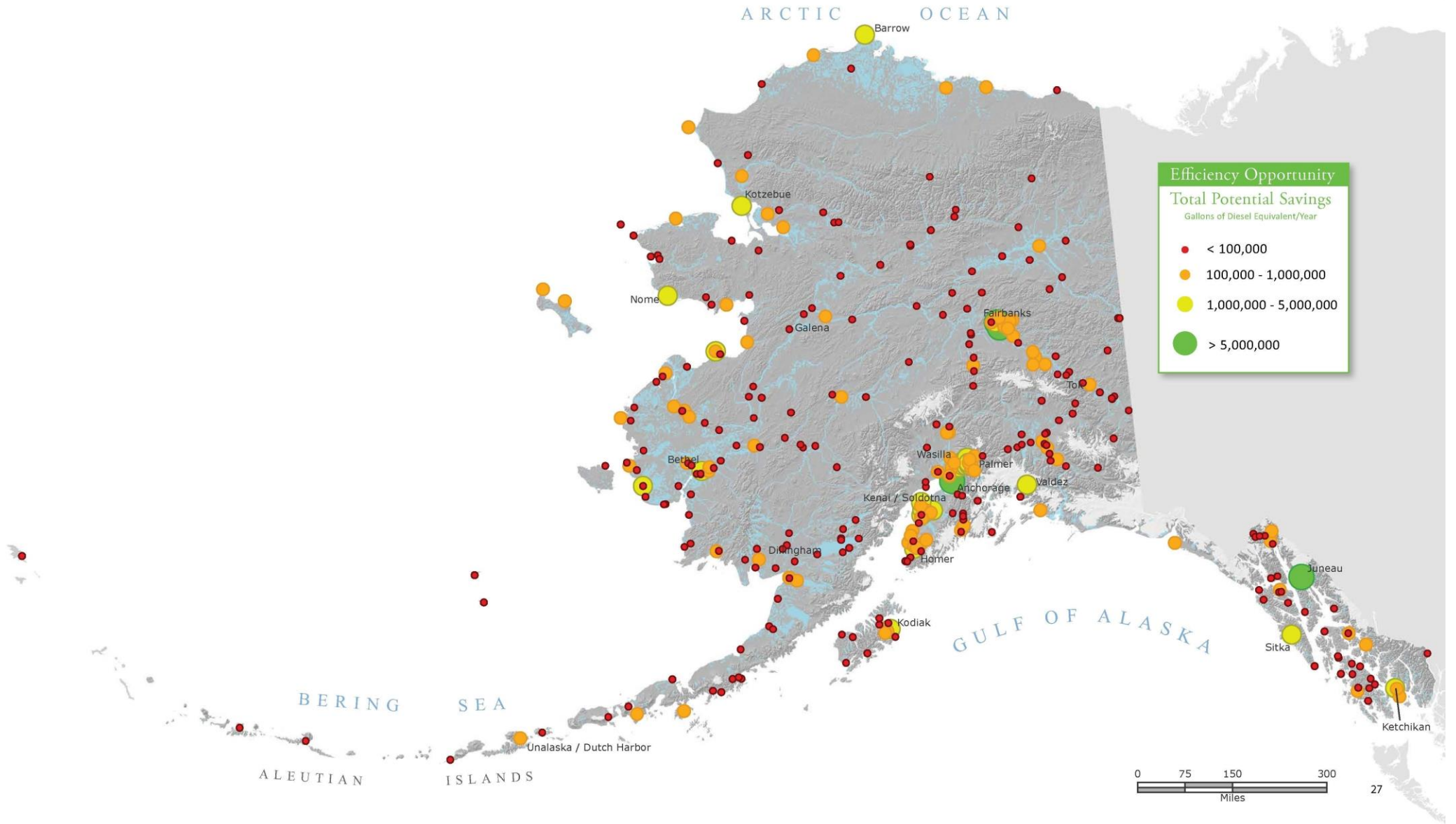
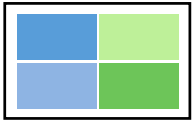
Bradley Lake Hydro

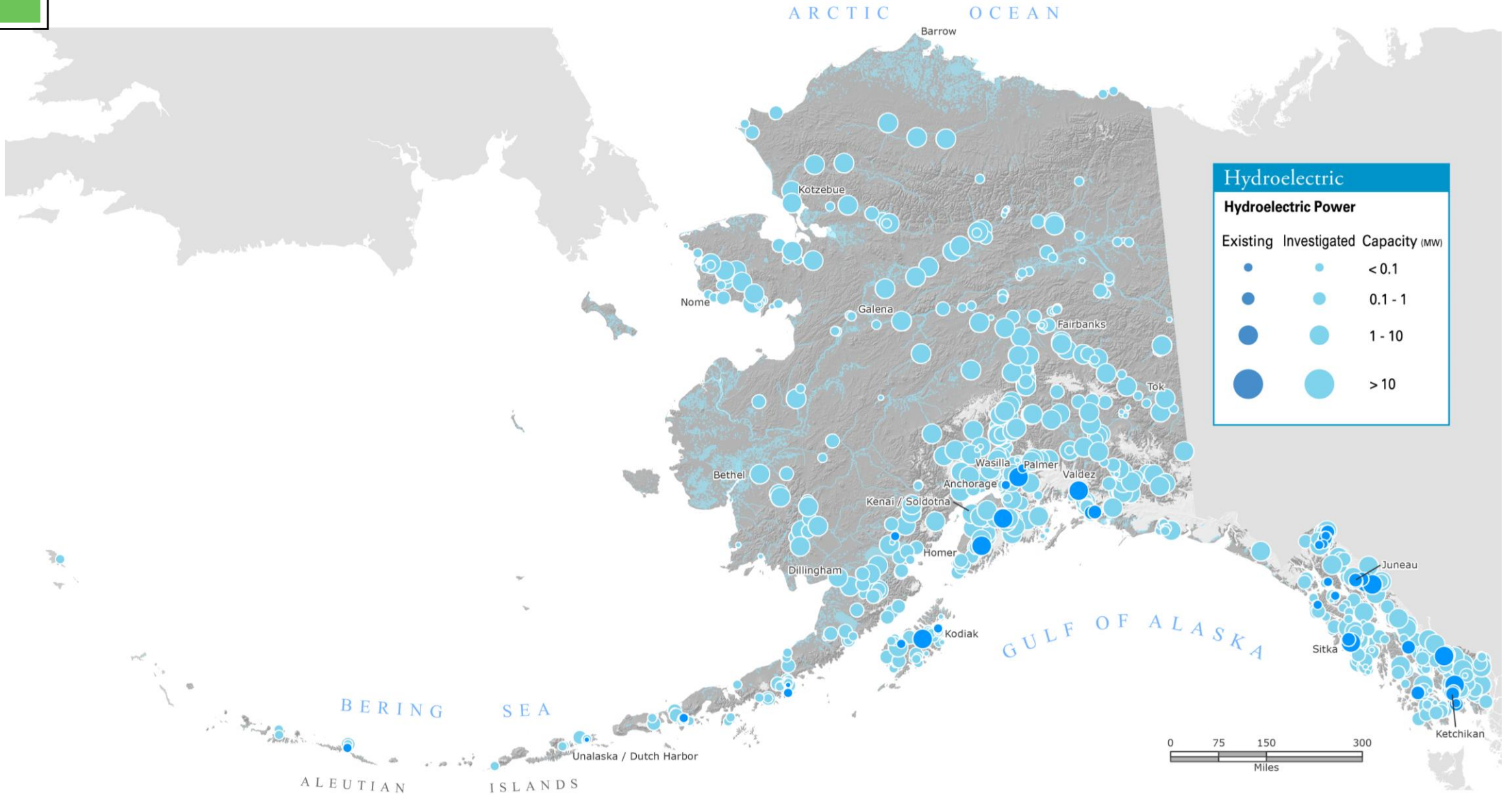
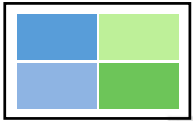


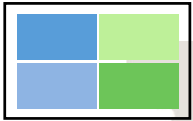
- Provides the Railbelt with low cost power
- All six Railbelt utilities benefit
- State entitled to receive and appropriate ~\$12.5M/yr starting ~2020/2021 as repayment from its original \$165M investment
- State investment and ratepayers protected through AEA role in BPMC (and IMC)

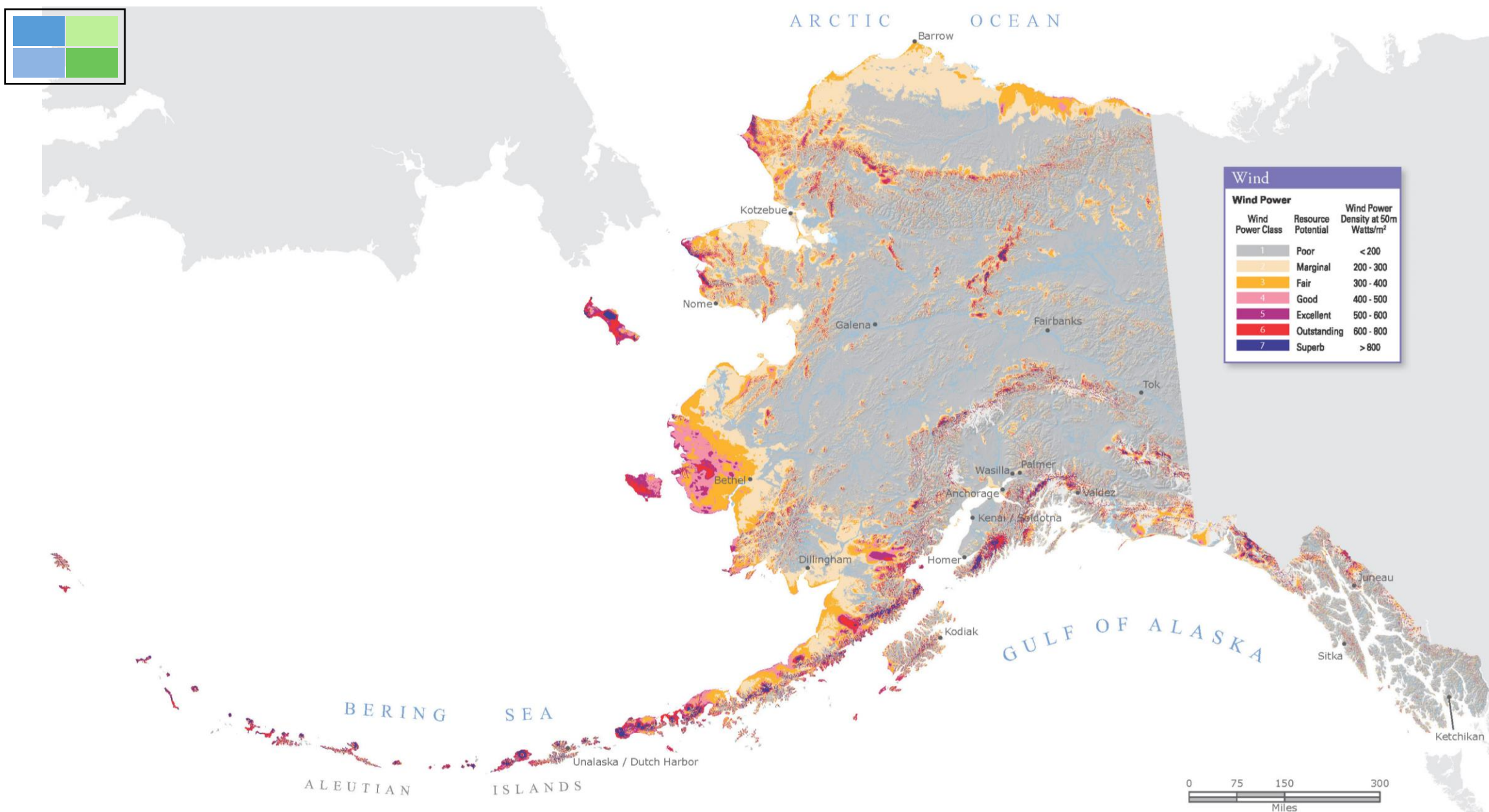
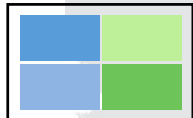


A Project Development & Finance Future

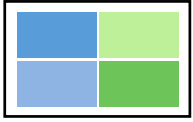






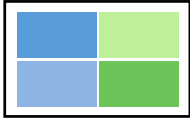


Wind		
Wind Power Class	Resource Potential	Wind Power Density at 50m Watts/m ²
1	Poor	< 200
2	Marginal	200 - 300
3	Fair	300 - 400
4	Good	400 - 500
5	Excellent	500 - 600
6	Outstanding	600 - 800
7	Superb	> 800



The Power Project Fund

- Flexible loan program to meet community need
- Covers all aspects of supply side energy system
- Available for all phases of project development
- Technically, economically and financially viable
- Increased interest and activity in recent years
- Anticipate activity will continue to grow



ENERGY PROJECT FINANCE SEMINAR AND DEAL ROOM

Thursday, March 2, 2017
Fairbanks
8:30 AM to 4:30 PM
Wedgewood Resort

Alaska Energy Authority is proud to host the second **Alaska Energy Project Finance Seminar**. This event will bring project developers together with lenders from both the public and private sectors to learn about financing for building efficiency and energy generation projects, with the intention of sparking new investment in projects around the state.

The last part of the day is reserved for the **Energy Project Deal Room**.

FOR AGENDA and REGISTRATION, please see:
akenergyauthority.org



ACEP
Alaska Center for Energy and Power

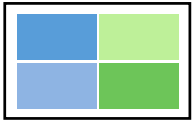


COLD CLIMATE HOUSING RESEARCH CENTER
CCHRC



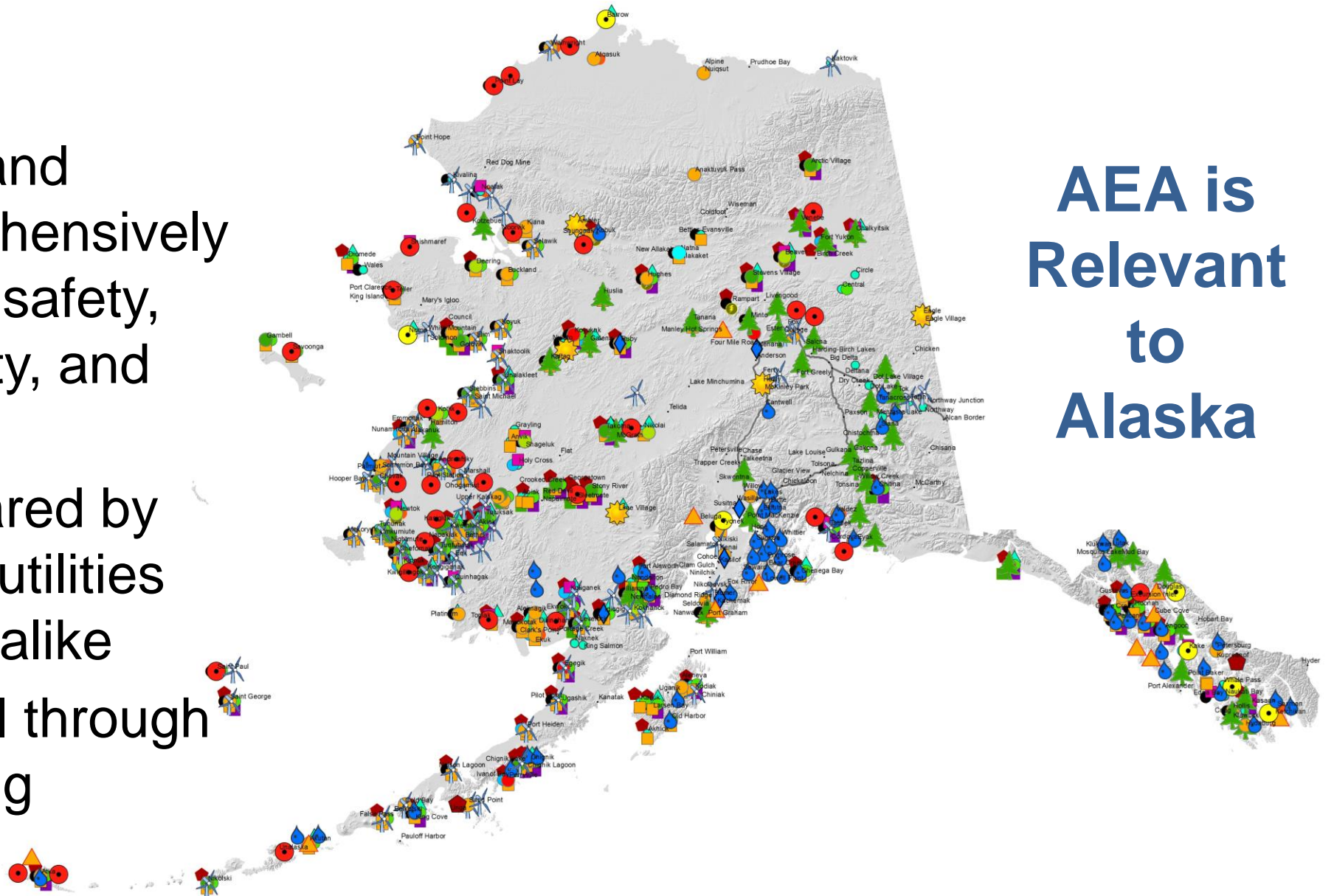
Fairbanks
Economic Development Corporation





- AEA programs and projects comprehensively improve energy safety, stability, reliability, and affordability
- Benefits are shared by rural and urban utilities and consumers alike
- Growth potential through non-state funding

**AEA is
Relevant
to
Alaska**





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



www.akenergyauthority.org