ALASKA ENERGY AUTHORITY

MODERNIZING THE RAILBELT GRID

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Executive Director

Anchorage Chamber of Commerce
"Make it Monday" Forum
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ALASKA
ENERGY
AUTHORITY

About AEA

AEA's mission is to reduce the cost of energy in Alaska. To achieve this mission, AEA strives to diversify Alaska's energy portfolio – increasing resiliency, reliability, and redundancy.

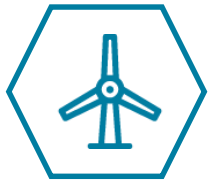
Railbelt Energy – AEA owns the Bradley Lake Hydroelectric Project, the Alaska Intertie, and the Sterling to Quartz Creek Transmission Line – all of which benefit Railbelt consumers by reducing the cost of power.

Power Cost Equalization (PCE) – In rural Alaska, PCE reduces the cost of electricity for residential customers as well as community facilities, thus ensuring its sustainability.

Rural Energy – AEA constructs bulk fuel tank farms, diesel powerhouses, and electrical distribution grids in rural villages. AEA supports the operation of these facilities through circuit rider and emergency response programs.

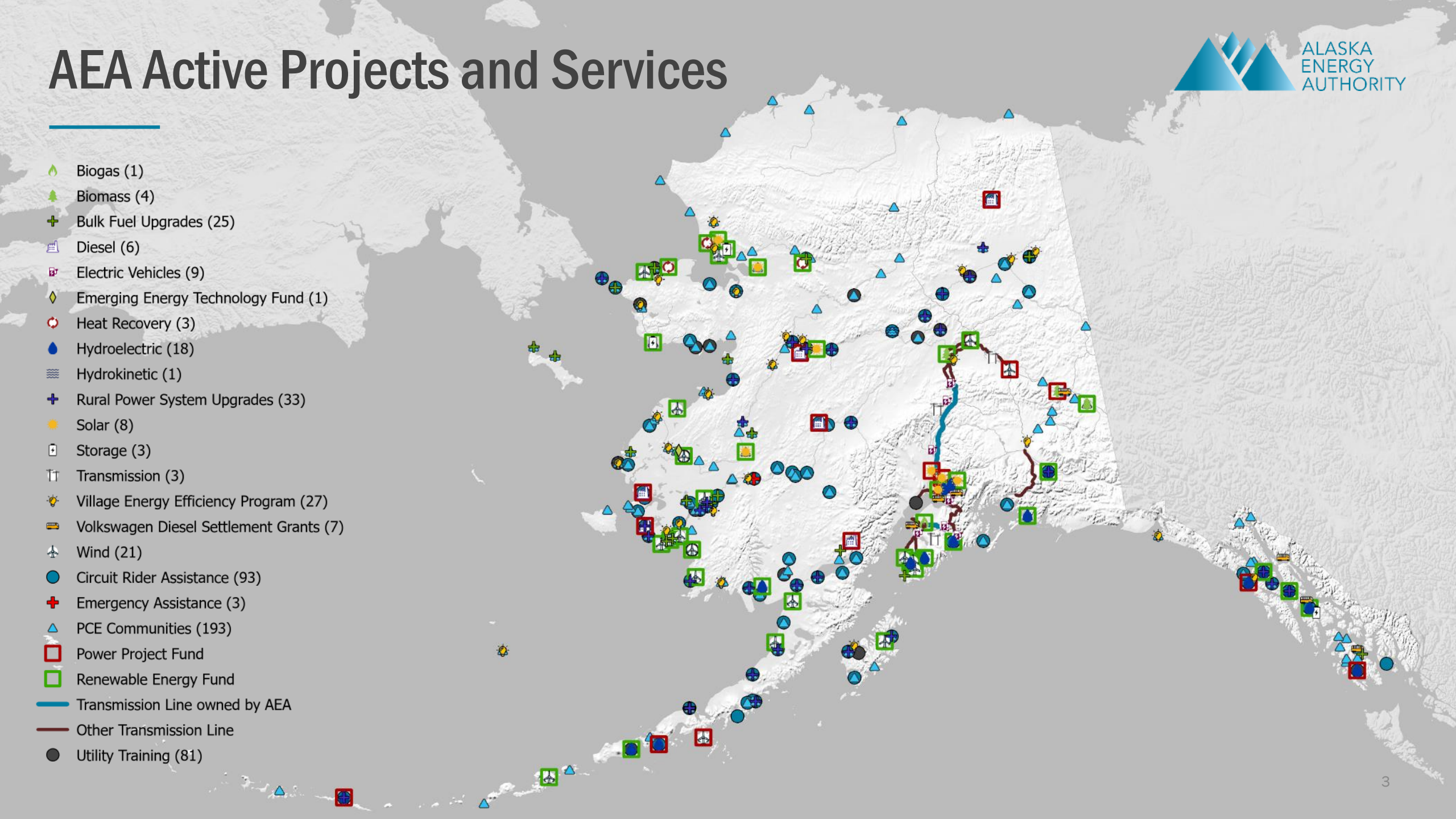
Renewable Energy and Energy Efficiency – AEA provides funding, technical assistance, and analysis of renewable energy technologies such as biomass, electric vehicles, geothermal, hydroelectric, solar, and wind.

Grants and Loans – AEA offers loans to local utilities, local governments, and independent power producers for the construction or upgrade of power generation and other energy facilities.

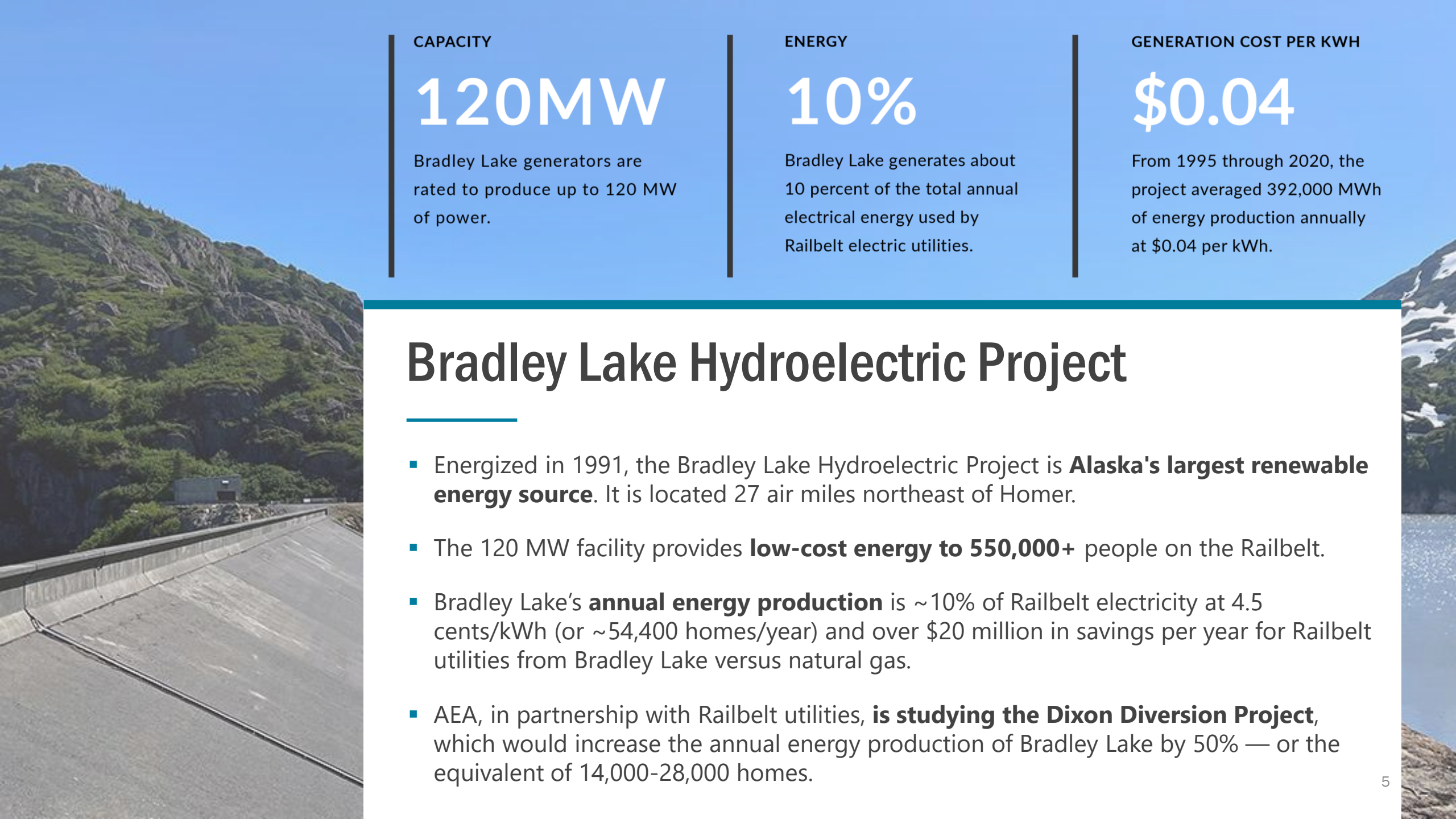


Energy Planning – In collaboration with local and regional partners, AEA provides economic and engineering analysis to plan the development of cost-effective energy infrastructure.

AEA Active Projects and Services




URBAN ENERGY



CAPACITY

120MW

Bradley Lake generators are rated to produce up to 120 MW of power.

ENERGY

10%

Bradley Lake generates about 10 percent of the total annual electrical energy used by Railbelt electric utilities.

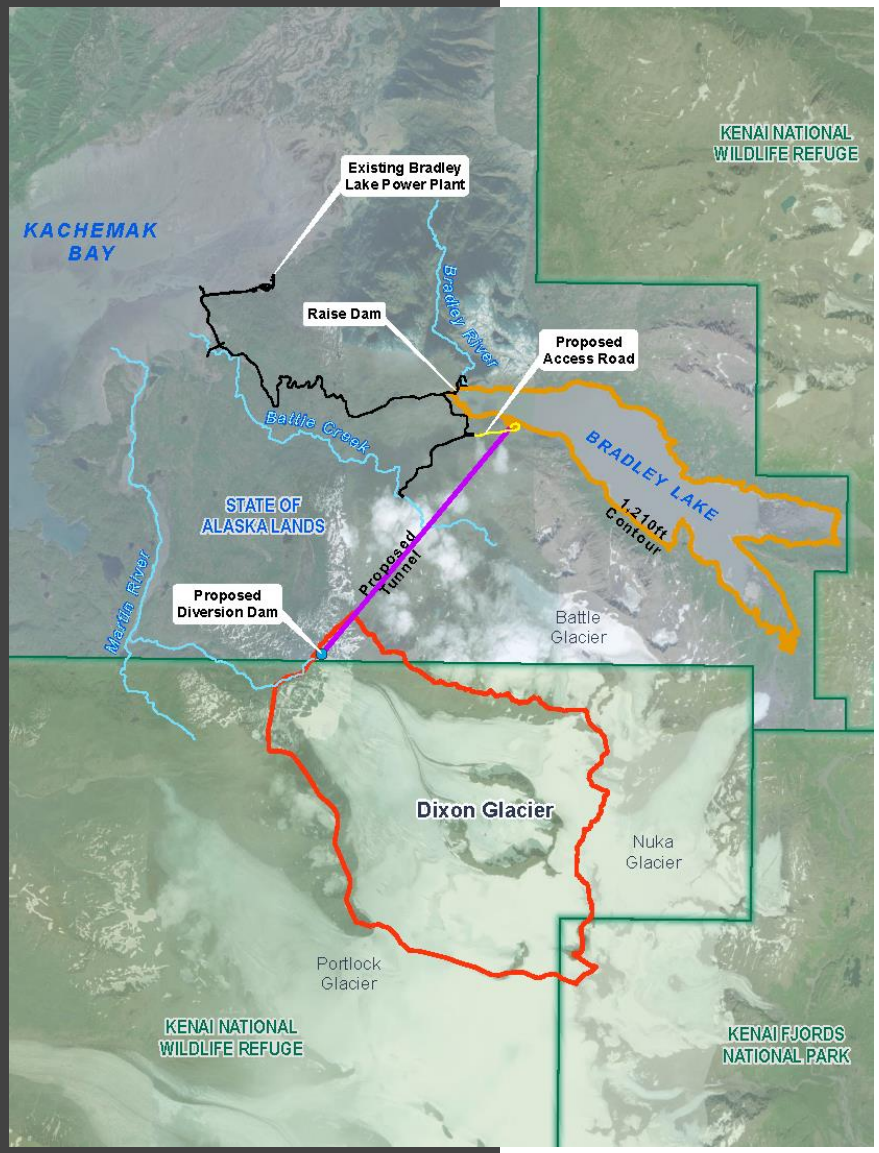
GENERATION COST PER KWH

$0.04

From 1995 through 2020, the project averaged 392,000 MWh of energy production annually at $0.04 per kWh.

Bradley Lake Hydroelectric Project

- Energized in 1991, the Bradley Lake Hydroelectric Project is **Alaska's largest renewable energy source**. It is located 27 air miles northeast of Homer.
- The 120 MW facility provides **low-cost energy to 550,000+** people on the Railbelt.
- Bradley Lake's **annual energy production** is ~10% of Railbelt electricity at 4.5 cents/kWh (or ~54,400 homes/year) and over $20 million in savings per year for Railbelt utilities from Bradley Lake versus natural gas.
- AEA, in partnership with Railbelt utilities, **is studying the Dixon Diversion Project**, which would increase the annual energy production of Bradley Lake by 50% — or the equivalent of 14,000-28,000 homes.

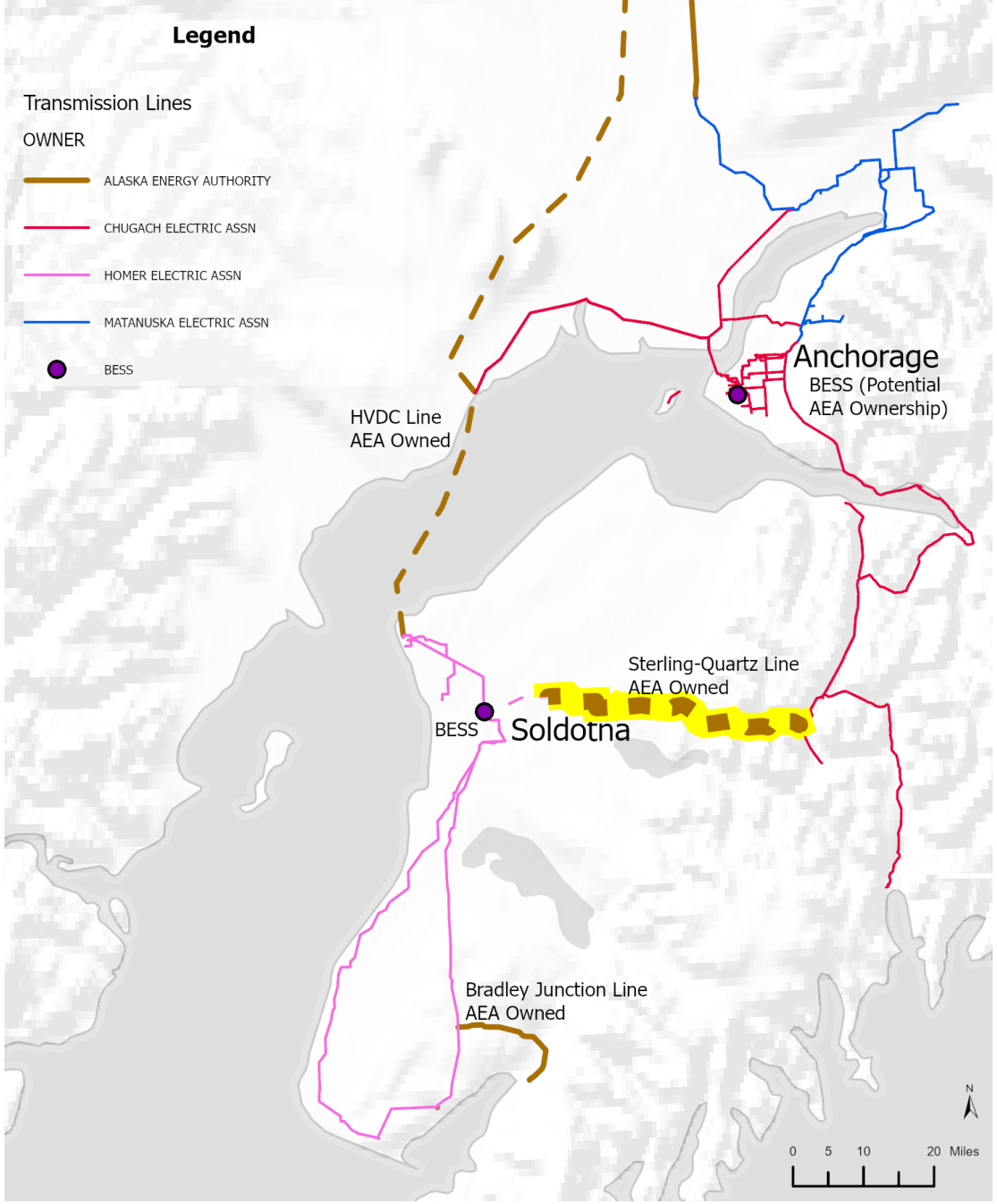


$342 Million

Dixon Diversion Project

AEA is studying the Dixon Diversion Project to maximize the Bradley Lake Hydroelectric Project's energy potential. Much like the West Fork Upper Battle Creek Diversion Project, the Dixon Diversion Project would divert water from Dixon Glacier to increase Bradley Lake's annual energy production by 50 percent.

- Located five miles from Bradley Lake and would utilize existing powerhouse at Bradley Lake
- Estimated annual energy 100,000-200,000 MWh (~24,000-30,000 homes)
- Estimated to offset 1.5-1.6 billion cubic feet of natural gas per year in Railbelt power generation (equal to 7.5% of Alaska's unmet natural gas demand projected for 2030)
- Estimated completion is 2030



$90 Million (Under Construction; AEA Bonds Existing)

Sterling to Quartz (SSQ) and Soldotna to Sterling Transmission Lines

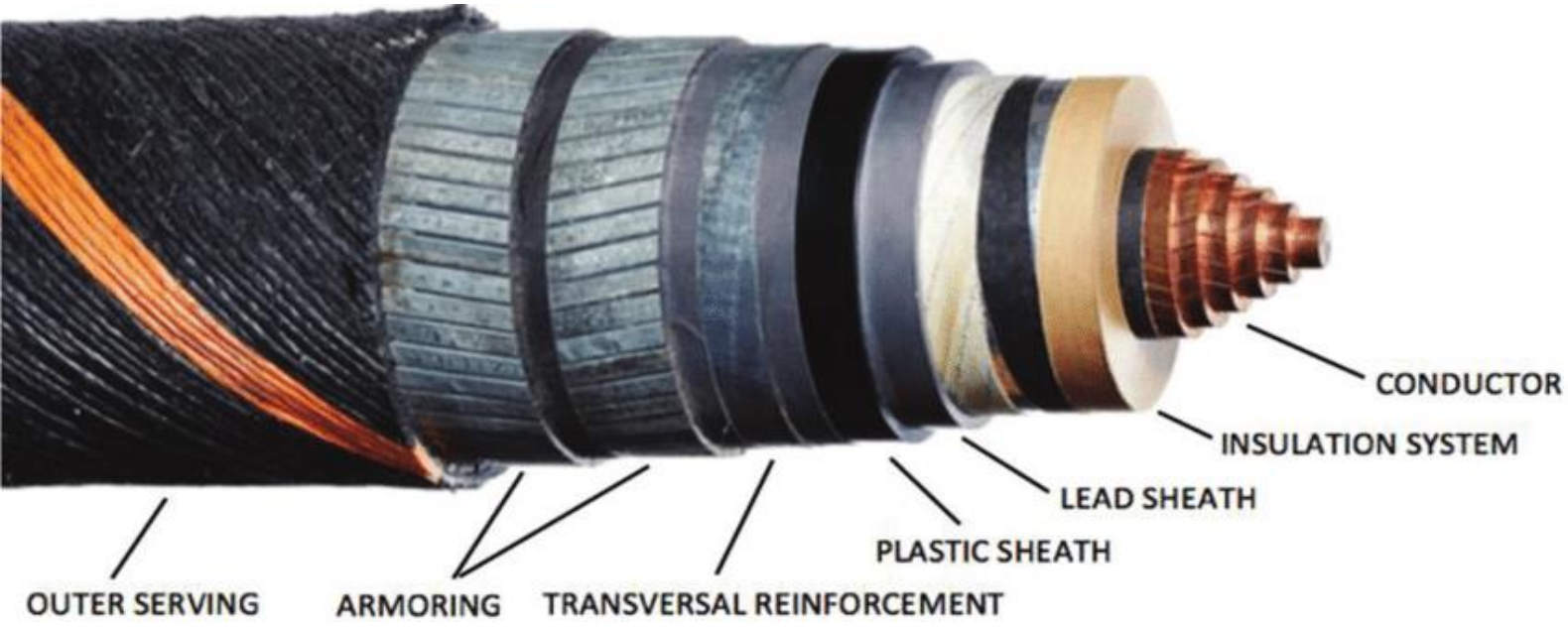
In 2020, AEA acquired the SSQ Transmission Line, a critical component of the interconnected Railbelt transmission system on the Kenai Peninsula, as part of the Bradley Lake Hydroelectric Project.

- **Location –** 39.4 miles of 115 kilovolt (kV) transmission and out of use 69 kV transmission from Sterling to Quartz substation (Kenai Lake).
- **Benefits –** AEA ownership ensures better cost alignment, increased reliability, and more timely repairs and upgrades.
- **Status –** 69 kV line decommissioned and removed. Engineers are designing and procuring equipment for the upgrade of the existing 115 kV line to 230 kV. Upgrade will reduce line losses, increase line reliability, and system resiliency.
- **Cost –** $90 million to upgrade the transmission line between Sterling Substation and Quartz Creek Substation to 230 kV.

$413 Million (206.5 Million Federal and $206.5 Million Alaska Match)

GRIP 3, Round 1 - Railbelt Innovation Resiliency Project: HVDC Submarine Cable

- The RIR project encompasses several projects — one of them being the installation of **a new submarine high-voltage direct current (HVDC)** transmission line from the Kenai Peninsula across Cook Inlet to the existing Beluga Power Plant — and, if feasible, **one or two battery energy storage systems (BESS)** in the Central (Anchorage) and Northern (Fairbanks) regions.



Antipcated outcomes and benefits:

- Increases transfer capacity between regions that enables higher renewable energy integration into the electricity system.
- Improves resilience and reliability for tribal and disadvantaged communities in the Railbelt region, and a reduction in reliance on fossil fuel generation and associated emissions.
- Supports the retention of high-quality jobs in the region, including 650 highly paid jobs with competitive employer-sponsored benefits.
- Creates apprenticeship and internship programs to train a new generation of lineworkers and wireworkers to reinvigorate Alaska's energy workforce.

Alaska Intertie

Constructed in the mid-1980s with $124 million in State of Alaska appropriations, there is no debt associated with the Alaska Intertie.

- AEA owns the **170-mile Alaska Intertie transmission line that runs between Willow and Healy**. The line operates at 138 kV (it was designed to operate at 345 kV) and includes 850 structures.
- A **vital section of the Railbelt transmission system**, the Intertie is the only link for transferring power between northern and southern utilities.
- The Intertie transmits power north into the Golden Valley Electric Association (GVEA) system and provides Interior customers with low-cost, reliable power — between 2008 and 2021, the Intertie **saved GVEA customers an average of $37 million annually**.
- The Intertie provides benefits to Southcentral customers as well through **cost savings and resilience to unexpected events**.

RURAL ENERGY

Power Cost Equalization (PCE)

The PCE program was established in 1985 as one of the components of a statewide energy plan.

192
RURAL COMMUNITIES

91
ELECTRIC UTILITIES

81,700
ALASKANS

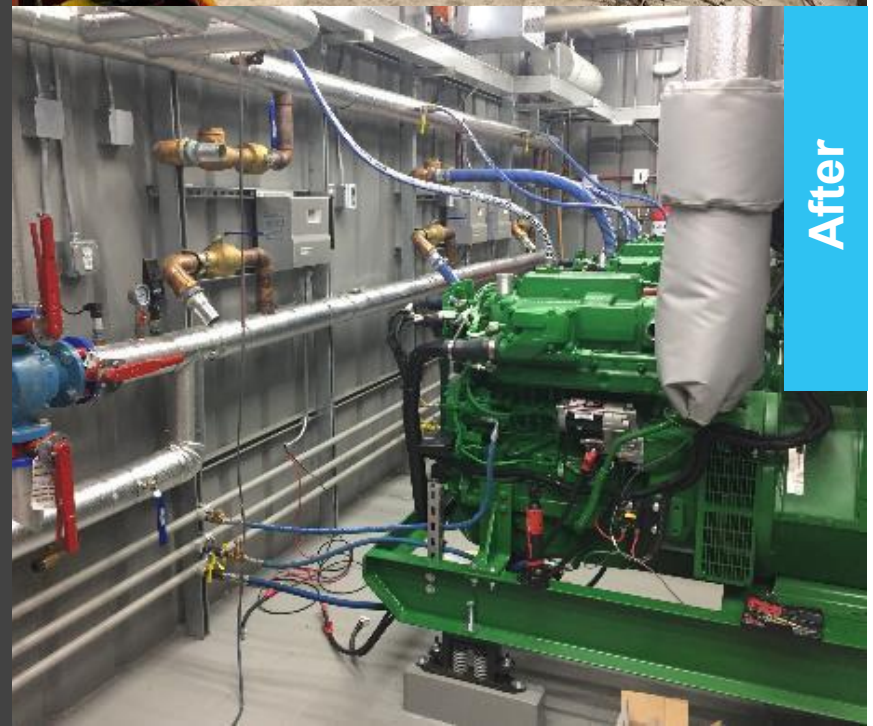
750 kWh
RESIDENTIAL
Residential customers are eligible for PCE credit up to 750 kWhs per month.

70 kWh
PUBLIC FACILITIES
Community facilities can receive PCE credit for up to 70 kWhs per month multiplied by the number of residents in a community.

$48M
FUNDS BUDGETED
In Fiscal Year 2024, AEA disbersed $48 million to rural electric utilities for the benefit of our rural communities.

The cost of electricity for Alaska's rural residents is notably higher than for urban residents. PCE lowers the cost of electric service paid by rural residents. Ultimately ensuring the viability of rural utilities and the availability of reliable, centralized power.

Rural Power System Upgrades



- AEA's **Rural Power Systems Upgrade program** improves power generation in Alaska villages with less than 2,000 people.
- Approximately **170 communities** are eligible for the program, which replaces outdated, inefficient mechanical systems with new electronically controlled generator sets.
- Due to declining funds, rural **power systems aren't upgraded timely**, and communities are left with aging systems at risk of failure.
- AEA evaluates **several factors** when prioritizing projects for funding – at this time **deferred maintenance is estimated at $300 million**.

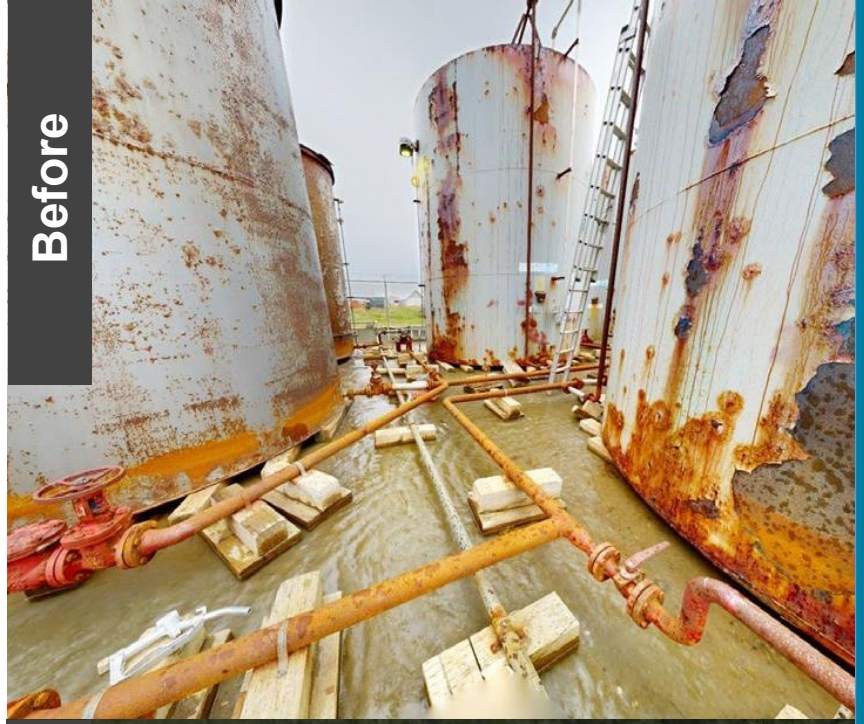
Rural Power System Upgrade Prioritization List

Of the more than **170 communities** eligible for the power system program, AEA has upgraded more than **one-third of** them over the years. The list of communities below is **limited to 25**, as AEA only has the financial and technical resources to manage a half dozen new projects each year. Each power system upgrade is expected to cost between **$5-7 million**. To complete all 25 on the list below, **$175 million** is estimated to be needed.

1. Red Devil
2. Nelson Lagoon
3. Chalkyitsik
4. False Pass
5. Manokotak
6. Tuluksak
7. Atka
8. Birch Creek
9. Hughes
10. Kokhanok
11. Newtok
12. Saint Paul
13. Chignik Bay
14. Levelock
15. Galena
16. Saint George
17. Chignik Lagoon
18. Chuathbaluk
19. Elfin Cove
20. Karluk
21. Pedro Bay
22. Diomede
23. Mertarvik
24. Ruby
25. Stony River

Bulk Fuel Upgrades

- AEA designs and builds modern, code-compliant bulk fuel facilities through our **Bulk Fuel Upgrade program**.
- In Alaska, there are over **400 bulk fuel facilities** — each sized to support the village.
- Most of the facilities are older than 40 years, **with many exceeding 50 years**, and they average **100,000 gallons** in size.
- However, **aging infrastructure poses several safety risks for rural communities**, e.g. corrosion, erosion, and environmental.
- AEA maintains an inventory and assessment priority need-based list — so far **deferred maintenance is estimated at $1.5 billion**.



Bulk Fuel Upgrade Prioritization List

Of the state's **400 bulk fuel facilities**, **60%** have been assessed by AEA. Initial data collection to establish a baseline will be completed by December 2024. The active list is re-rankable based on specific concerns, e.g. **environmental**, **dispenser**, **tank health**. As AEA gathers additional data, the list is re-ranked accordingly. Each bulk fuel upgrade is expected to cost between **$10-12 million**. To complete all 25 items on the list, **$300 million** is estimated to be needed.

1. Shageluk*
2. Newtok
3. **Eek***
4. Kivalina
5. Kobuk
6. **Chefornak***
7. Metlakatla
8. Whale Pass
9. Noatak
10. Wales*
11. Allakaket*
12. Kasaan*
13. Coffman Cove
14. Naukati Bay
15. Nulato
16. Huslia
17. Ambler*
18. Manokotak
19. Goodnews Bay
20. Shungnak*
21. Kwigillingok*
22. Tuluksak*
23. Teller
24. Galena
25. Kongiganak

*AEA active projects or projects in development. Several of these projects were identified in previous inventories and assessments.

GRANTS AND LOANS

Renewable Energy Fund (REF)

With Senate Bill 187, the Legislature and Governor appropriated $10.5 million for five projects in June 2024. The appropriation is double the initial REF budget of $5 million. In light of the numerous federal funding opportunities available and the limited community resources available, AEA and the REF Advisory Committee will seek fiscal year 2026 funds from the Legislature for the 19 projects not funded in Round 16.

REF Highlights
Round 13: 11 Projects – $4.75M
Round 14: 27 Projects – $15M
Round 15: 18 Projects – $17M
Round 16: 5 Projects – $10.5M


Kongiganak, Alaska

- $327 million invested in the REF by the State since its inception
- 100+ operational projects and 60 are under development
- $10.5 million was appropriated for fiscal year 2025 by the 33rd Alaska State Legislature for five projects recommended by AEA and approved by the REF Advisory Committee

Power Project Fund (PPF) Loan Program

The PPF loan program continues to see an increase in applications due to federal matching fund requirements and other incentives. The Inflation Reduction Act provides tax credits of up to 60% for clean energy projects. Capitalization of the fund would allow for additional loans to be issued to support the increased demand.

Outstanding Loans
$31 Million
15 Loans

Pending Applications
$755,500
Loans Under Review

Uncommitted Cash Balance
Program in abeyance until additional capital is secured

Competitive Rates
Current PPF Interest Rate
5.54% as of July 2024

INFRASTRUCTURE INVESTMENT AND JOBS ACT

$413 Million (206.5 Million Federal and $206.5 Million Alaska Match)

Grid Resilience and Innovation Partnerships (GRIP)

AEA secured $206.5 million for GRIP Topic Area 3: Grid Innovation through the United States Department of Energy's Grid Deployment Office. A cost share of 100 percent, or $206.5 million, is required for a total project amount of $413 million. The Railbelt Innovation Resiliency project will construct a high-voltage direct current submarine cable to serve as a parallel transmission route from the Kenai Peninsula to Anchorage, creating a much-needed redundant system in case of disruptive events.

Antipcated outcomes and benefits include:

- Increases transfer capacity between regions that enables higher renewable energy integration into the electricity system.
- Improves resilience and reliability for tribal and disadvantaged communities in the Railbelt region, and a reduction in reliance on fossil fuel generation and associated emissions.
- Supports the retention of high-quality jobs in the region, including 650 highly paid jobs with competitive employer-sponsored benefits.
- Creates apprenticeship and internship programs to train a new generation of lineworkers and wireworkers to reinvigorate Alaska's energy workforce.

$60 Million (Over Five Years)

Grid Resilience Formula Grant Program, IIJA 40101(d)

Per IIJA section 40101(a)(1),8 a disruptive event is defined as "an event in which operations of the electric grid are disrupted, preventively shut off, or cannot operate safely due to extreme weather, wildfire, or a natural disaster."

- Over the next five years, Alaska will receive **$60 million in federal formula grants** to catalyze projects that increase grid resilience against disruptive events. In August 2023, **the first two years of allocations, $22.2 million**, was awarded to AEA. AEA's competitive solicitation for these funds closed in February 2024. Notification of sub-awards are expected 2nd QTR 2024, pending DOE approval. For fiscal year 2025, AEA requested **$17,627,018**, Alaska's formula allocation for year 3, in Federal Receipt Authority and **$1,816,579 in matching funds**.
- Resilience measures include but are not limited to:
  - Relocating or reconductoring powerlines
  - Improvements to make the grid resistant to extreme weather
  - Increasing fire resistant components
  - Integrating distributed energy resources like microgrids and energy storage
- Formula-based funding requires a **15% state match** and a **33% small utility match**.

$52 Million (Over Five Years)

State of Alaska Electric Vehicle (EV) Infrastructure Implementation Plan

- AEA and the Alaska Department of Transportation & Public Facilities (DOT&PF), continue to deploy the **State of Alaska NEVI Plan (The Plan)**.
- On **September 25, 2023**, the **first round of Alaska NEVI awards were announced**. AEA and DOT&PF selected projects in nine communities for a total investment of $8 million. The $6.4 million in NEVI funding will be matched with $1.6 million from private entities selected to install, own, and operate the new EV charging stations.
- **On September 29, 2023**, the Federal Highway Administration approved the fiscal year 2024 plan. This **unlocked $11 million in addition to $19 million** available in the fiscal years 2022 and 2023.
- **Phase 2** will develop charging infrastructure in more than 30 communities along Alaska's Highway System and the **Marine Highway System**.

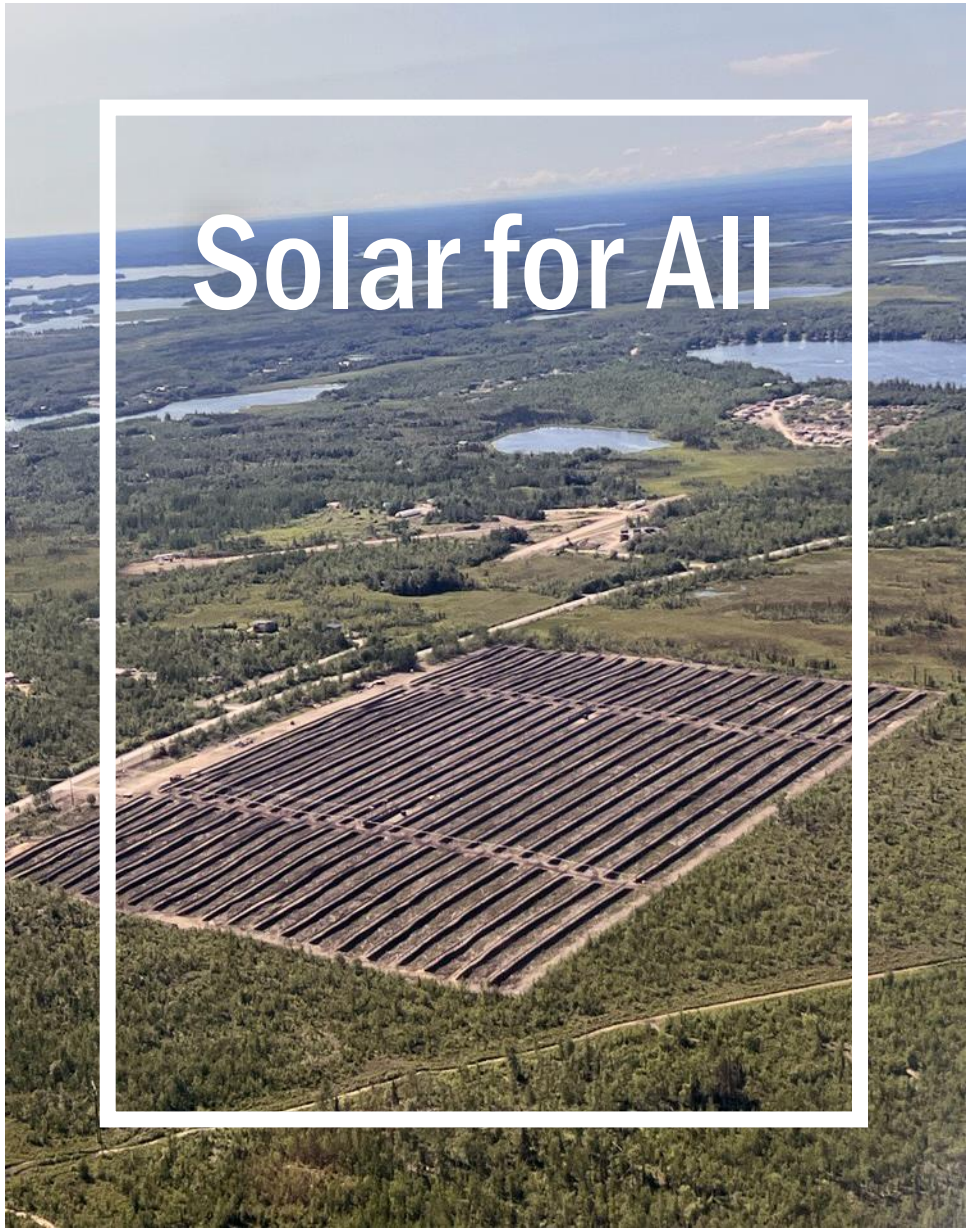
State of Alaska

DRAFT

Electric Vehicle Infrastructure Implementation Plan FY25

ALASKA ENERGY AUTHORITY

TRANSPORTATION & PUBLIC FACILITIES • STATE OF ALASKA •



$62.5 Million (Shared with AHFC)

- **In April 2024, AEA and the Alaska Housing Finance Corporation (AHFC) were selected for a $62.5 million grant from the Environmental Protection Agency's Solar for All program.**
  - AEA will develop community solar in disadvantaged communities.
  - AHFC will develop residential rooftop solar for low income households.
- **Program benefits:**
  - Energy cost savings,
  - Increased resiliency,
  - Equitable access to solar,
  - Asset ownership benefits low income and disadvantaged communities,
  - Workforce development, and
  - Reduction in greenhouse gas emissions.
- **No match required for this competitive grant.**

Home Energy and High Efficiency Rebate Allocations

AEA is collaborating with AHFC to distribute Alaska's allocation of $74 Million

Home Efficiency Rebates

- Rebates for energy efficiency retrofits range from $2,000-$4,000 for individual households and up to $400,000 for multifamily buildings.
- Grants to states to provide rebates for home retrofits.
- Up to $2,000 for retrofits reducing energy use by 20% or more, and up to $4,000 for retrofits saving 35% or more.
- Maximum rebates amounts are doubled for retrofits of low-and moderate-income homes.
- **Alaska's Allocation is $37.4 million**
- **No State match is required.**
- **Funding is estimated to be available between fall/winter 2025.**

Home Electrification and Appliance Rebates

- Develop a high efficiency electric home rebate program.
- Inclusive of means testing and will provide 50% of the project cost for incomes ranging from 80% to 150% of area median income. Rebates to cover 100% of the proposed cost for incomes 80% of area medium income and below, with similar tiers applied for multifamily buildings.
- Includes a $14,000 cap per household, with an $8,000 cap for heat pump costs, $1,750 for a heat pump water heater, and $4,000 for electrical panel/service upgrade.
- Other eligible rebates include electric stoves, clothes dryers, and insulation/air sealing measures.
- **Alaska's Allocation is $37.1 million .**
- **No State match is required.**
- **Funding is estimated to be available between fall/winter 2025.**

$15.7 Million

Black Rapids Training Site (BRTS) Defense Community Infrastructure Pilot Program

AEA partnered with Golden Valley Electric Cooperative (GVEA) was awarded this grant from the Office of Local Defense Community Cooperation under the Defense Community Infrastructure Pilot Program. **Federal Receipt Authority of $12.7 Million received in fiscal year 2024. A $3 million supplemental budget request was submitted by AEA to complete additional work requested by the Department of Defense. No State match is required**.

GVEA will use the funds to extend an transmission line 34 miles along the Richardson Highway to BTRS. Currently, BTRS is powered by three diesel generators that are nearing the end of their useful lives. This extension will improve long-term sustainability and reliability for BRTS by tying them into GVEA's power grid.

IRA/IIJA Federal Funding — Awards and Pending Applications

#	Awarded and Conditional Awards	Alaska Grant $	Match $
1	Grid Resilience and Innovation Partnerships Topic 3 Phase 1	$ 206,500,000	$ 206,500,000
2	Preventing Outages and Enhancing the Resilience of the Electric Grid (40101d)	$ 64,022,556	$ 9,603,383
3	Solar For All Competition	$ 62,450,000	$ -
4	National Electric Vehicle Infrastructure Program (NEVI)	$ 52,415,020	$ 10,483,004
5	Home Efficiency Rebates Program	$ 37,368,480	$ -
6	Home Electrification and Appliance Rebates Program	$ 37,150,940	$ -
7	Defense Community Infrastructure Pilot - Black Rapids Training Site	$ 15,602,648	$ -
8	Energy Efficiency Revolving Loan Capitalization	$ 4,782,480	$ -
9	State Energy Program Funding	$ 3,661,930	$ -
10	High Energy Cost Grants - USDA RUS	$ 2,000,000	$ -
11	Vehicle Technology Office Competition FFY 2022	$ 1,670,000	$ 417,500
12	Energy Efficiency and Conservation Block Grant	$ 1,627,450	$ -
13	Training for Residential Energy Contractors	$ 1,293,870	$ -
14	Energy Future Grant	$ 496,725	$ -
15	Energy Innovator Fellowship Program	NA	NA
	Total Awards = $718,045,986	**$ 491,042,099**	**$227,003,887**

#	Application Submitted– Status Pending	Alaska Grant $	Match $
1	Grid Resilience and Innovation Partnerships Topic 3 Phase 2	$ 365,000,000	$ 365,000,000
2	Charging and Fueling Infrastructure Discretionary Grants	$ 12,000,000	$ 3,000,000
3	Defense Community Infrastructure Pilot - Eielson Upgrades	$ 10,106,603	$ -
4	MARAD Port Infrastructure Development Program	$ 8,958,431	$ -
5	Waste to Energy Technical Assistance	NA	NA
	Total Pending = $764,065,034	**$ 396,065,034**	**$ 368,000,000**

Thank You

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