Modernizing the Railbelt Grid

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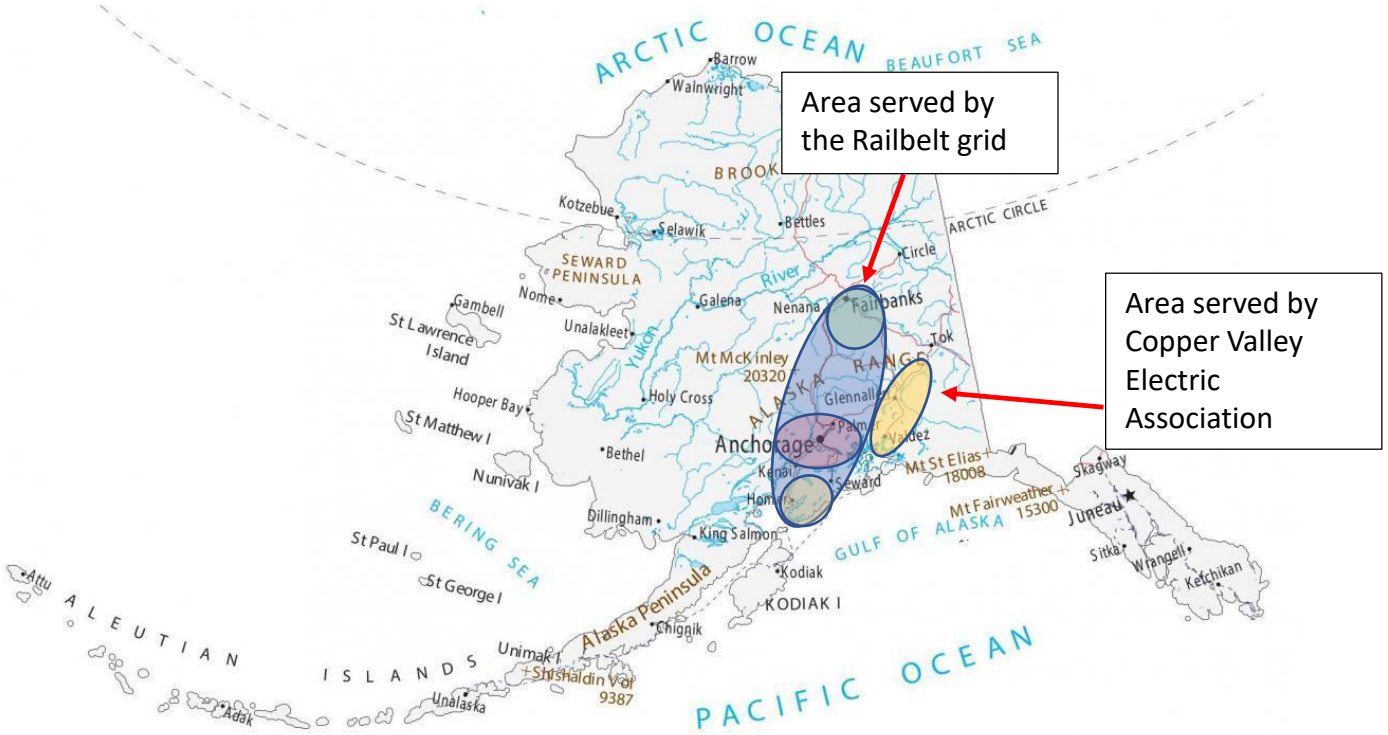
June 27th, 2023

Overview of Presentation

- The Railbelt Vision and Alignment
- Why it Matters
- The Grid Modernization and Resiliency Plan (GMRP)
- US DOE -Grid Resiliency and Innovation Partnership (GRIP)
- USDA -Next ERA and Pace programs and US Treasury Direct Pay

Alaska Railbelt and the Copper Valley



- The area originally served by the Alaska Railroad
- 75% of Alaska's population
- 80% of the electricity generated in Alaska
- Three regions, 700 miles end-to-end, roughly the distance from Washington DC to Atlanta, Georgia
- Virtually no federal investment in transmission to date
- Single transmission lines between the three Railbelt regions (Southern Central and Northern)
- Interregional power transfer capability is less than 10% of combined peak load
- Currently not electrically interconnected with the Copper Valley region

Historic Railbelt Alignment

The State and Federal governments have long encouraged teaming arrangements, and the Railbelt alignment on this transformational infrastructure project is historic.

There is unprecedented alignment among this diverse team consisting of all Railbelt electric utilities, transmission owners, and operators and their regulator:

- *The Alaska Energy Authority*
- *The Regulatory Commission Of Alaska*
- *Chugach Electric Association Inc.*
- *Golden Valley Electric Association Inc.*
- *Homer Electric Association Inc.*
- *Matanuska Electric Association Inc.*
- *Seward Electric Systems (City of Seward)*
- *We are seeking State legislative leadership and support for this transmission infrastructure upgrade*

The Railbelt Vision –
A "once in a generation" opportunity

- A 12-to-15-year plan consisting of a transformational series of transmission infrastructure improvements estimated to cost approximately $2.9B
- Depending on federal grant funding Phase one will require up to $250M per year for five years
- Is essential to the Railbelt grid for a clean and fuel-diverse future
- Can serve as a model for the rest of the United States and the world
- The five Railbelt Electric Utilities, and the Alaska Energy Authority, are pursuing funding from the State of Alaska, supplemented by Infrastructure Investment and Jobs Act (IIJA), other Federal programs, and traditional utility funding sources

Why it matters

- Significant gains in reliability and resiliency for the Railbelt
- Prepares the Railbelt for a fuel diverse, low-carbon future
- Increases effective integration of renewables and low-carbon generation across the Railbelt
- Gains in efficiency will lower the cost of energy, helping to attract industry and drive the economy
- Lower Railbelt energy costs contribute to lower energy costs for all Alaskan rural communities through the Power Cost Equalization (PCE) program

Why it matters

- Small scale operating grid to serve as a model that can provide cost-effective grid modernization and decarbonization lessons to the US and world
- Serves many tribes as well as diverse and disadvantaged communities (Under both DOE and USDA definitions)
- Strategic location in the new geopolitical climate
  - Decarbonizing the 3rd largest air cargo airport in the world
  - 5 critical Military bases
  - Supports mining critical minerals
  - Federally designated Strategic Seaport

Background

In September of 2022, the Governor challenged us to articulate a vison and plan that would transform the Railbelt transmission system and prepare it for a fuel diverse clean energy future

Building on the Bipartisan Infrastructure law (BIL), the US DOE issued the Grid Resiliency and Innovation Partnership Funding Opportunity Announcement 10.8 B over five Years

The Inflation Recovery Act included among other things, approximately $ 9.7B to the USDA for clean energy projects including energy storage and transmission interconnections

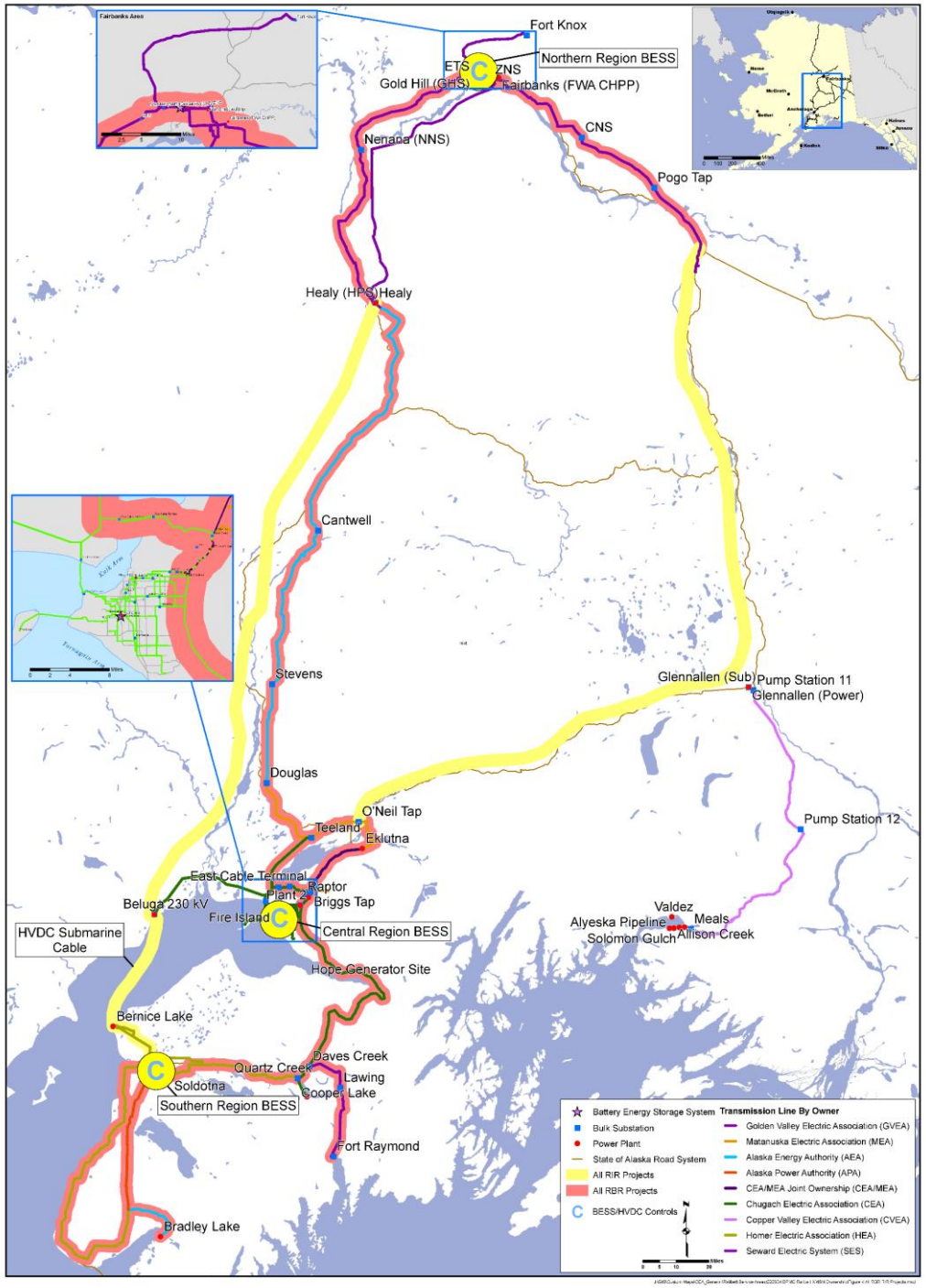
We developed the GMRP a plan to provide a transmission system with adequate transfer capability and resiliency to facilitate and fuel diverse clean energy future

The GMRP allows electric utilities from Fairbanks to Homer and Valdez to participate in fuel diverse inter regional clean energy projects irrespective of geographic location

Drive down costs with economies of scale– the Grid Modernization and Resiliency Plan (GMRP)

Includes energy storage to stabilize grid increase resiliency and integrate renewables

Grid Modernization and Resiliency Plan



Legend

RIR Transmission

RBR Transmission

Battery Energy Storage System

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Battery Energy Storage system /HVDC Interregional Control Scheme

GRIP Federal Opportunities for Modernizing the Railbelt Grid

The GMRP was broken down into three projects to meet the requirements of the Funding Opportunity Announcement

Topic 1 concept paper –Grid resilience

The Railbelt Backbone Reconstruction project (RBR) will reconstruct the backbone transmission lines and stations from Bradley Lake to Delta Junction to harden these lines to resist natural disasters, and to increase transfer capability and resiliency. 30% reserved for Small Utililtes, 30% match, $100 M requested in funding cycle 1

Topic 2 concept paper –Smart Grid

The BESS/HVDC Coordinated Control System. This system will develop a Railbelt-wide control system that controls the three BESS systems and the HVDC submarine cable in an integrated fashion to maximize transfer capability and minimize spinning reserve requirements increasing resilience and lowering carbon emissions. 50% match, $16M requested in funding cycle 1

Topic 3 concept paper –Grid Innovation

The Railbelt Innovative Resiliency project (RIR) will construct the regional BESS systems in the central and northern regions and interregional interties; one from Soldotna to Healy, and the second from Wasilla to Glenallen and Fort Greely, integrating Copper Valley into the Railbelt Grid. This project provides increased transfer capability, resilience and access to renewables. 50% match, $411M requested in funding cycle 1

The Railbelt Plan *must be* the State's Plan

Building out the Railbelt grid will benefit all Alaskan's and *must be a State priority*

PCE *shares the benefit of lower Railbelt electric rates* throughout the State

Economies of scale *are necessary* to hold down projects costs and minimize the impact of diversification and decarbonization on the State's economy

Access to federal funding *is contingent* on the catalyzation and deployment of additional capital

Transmission upgrades are required to maintain and advance reliability, resiliency, fuel diversification, and carbon reduction… irrespective of the generation solutions

GRIP and USDA Federal Opportunities for Modernizing the Railbelt Grid

DOE Grants are competitive and USDA grant and loan program is based on tons of carbon reduced per $ funded

In GRIP over 700 concept papers were submitted over the three topic areas

On Topic 1 Grid Resiliency

- 289 concept papers were submitted
- 144 proposers were encouraged to submit full applications
- DOE anticipates awarding 10 grants in this category

On Topic 2 Smart Grid

- 326 concept papers were submitted
- 157 proposers were encouraged to submit full applications
- DOE anticipated 25 to 40 awards in this category

On Topic 3 Grid Innovation

- 135 concept papers were submitted
- We do not have Stats. but we were asked to complete a full application
- DOE anticipated 4 to 40 awards in this category

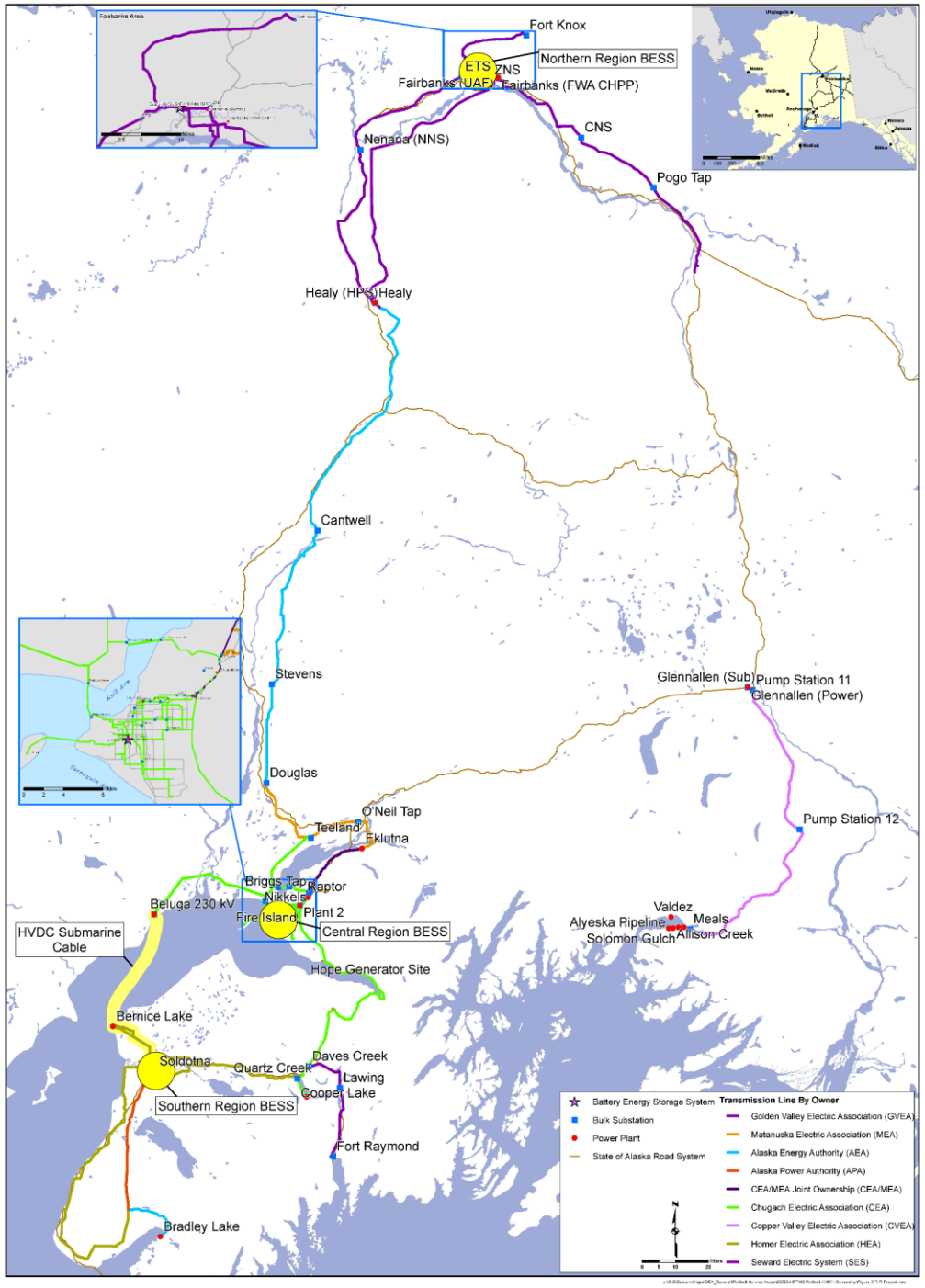
Under the Inflation Recovery Act (IRA) we are investigating

- USDA- PACE funding
- USDA NEXT ERA funding
- US Treasury ITC direct pay

GRIP Topic Concept Papers 1,2,& 3

Current Funding Cycle

RBR, BESS/HVDC Control, and RIR



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Community Benefit and Justice 40

The Railbelt is essential to the broader state economy.

- The Port of Alaska, a federally designated Strategic Seaport in Anchorage, serves as the primary point of entry for virtually all cargo, building material, fuel, and food for most of the state's population
- The Ted Stevens Anchorage International Airport is the third largest international airport in the world for cargo (approximately 50% of the air cargo between North America and Asia), making its decarbonization of global importance
- Alaska is home to significant mining operations including for rare earth metals critical to national security and other strategic imperatives

With this socially and economically diverse makeup, the Railbelt is the ideal area for the federal government to demonstrate how the benefits of the IIJA can be maximized, These assets are vital to the economy and security of both Alaska and the nation.

Importantly, by statute and formula, Alaska's unique PCE energy subsidy program ensures that the benefits of lower Railbelt energy costs are shared with all rural village within the state.

Community Benefit and Justice 40

The Railbelt serves five military base each with a vital strategic importance to U.S. national security. These critical bases contribute to the national defense through

- Airborne infantry, military intelligence, northern warfare training
- Mid-course missile defense
- Long Range Discrimination Radar (LRDR)
- F-16, F-22, and F-35 high-speed intercept capability
- Coast Guard

The Railbelt region is home to numerous federally recognized tribes and disadvantaged and underserved communities.

- There are over 200 federally recognized tribes in Alaska, many in the Railbelt region
- Based on the 2010 census Anchorage was home to the three most culturally diverse census tracts in the U.S. (followed closely by Queens, New York)
- Over 110 languages are spoken in the Anchorage School District
- 39.8 percent of Railbelt residents live in disadvantaged communities or Alaska Native village statistical areas.

GRIP Longer Term Grant Selection Process and Timing

Submit Concept Paper for each Topic Area-

- Topic 1 & 2 due 12/16/22 - complete
- Topic 3 due 01/13/23 - complete

DOE selects concept papers and Team submits full application(s)

- Topic 1 due 04/06/23- We have been selected to apply; application has been submitted
- Topic 2 due 03/17/23- We have been selected to apply; application has been submitted
- Topic 3 due 5/19/23- We have been selected to apply;, application has been submitted

Selection notification

- Topic 1 - Summer 2023
- Topic 2 – Summer- Fall 2023
- Topic 3 - Fall 2023 Winter 2024

If DOE selects our application

- Topic 1 Award negotiations - Fall –Winter 2023
- Topic 2 Award negotiations - Fall-Winter 2023
- Topic 3 Award negotiations – Winter- Spring 2024

For the Railbelt, Topic 3 is the most important award

Questions