

ALASKA ENERGY AUTHORITY

# BRADLEY LAKE EXPANSION PROJECT

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ARISE Alaska  
April 27, 2026



50 YEARS OF SERVICE



# AEA Programs and Services Overview



## Owned Assets

- Bradley Lake Hydroelectric Project
- Alaska Intertie
- Sterling to Quartz Creek Transmission Line
- Cook Inlet PowerLink



## Power Cost Equalization

- \$46 Million Program
- 188 Rural Communities
- 81 Electric Utilities
- Benefits 81,000+ Alaskans  
(All figures reflect FY2025)



## Rural Energy

- Bulk Fuel Upgrades
- Rural Power System Upgrades
- Circuit Rider Program
- Electrical Emergency Assistance



## Renewable Energy and Energy Efficiency

- Renewable projects; biomass, electric vehicles, hydroelectric, solar, and wind
- Federal programs: National Electric Vehicle Infrastructure and Home Energy and High Efficiency Rebate Allocation



## Grants and Loans

- Renewable Energy Fund
- Power Project Fund
- Federal Grants



## Energy Planning

- Alaska Energy Security Task Force
- State Energy Security Profile
- Electronic Library
- Energy Data Resources
- 40101(d) Grid Resilience

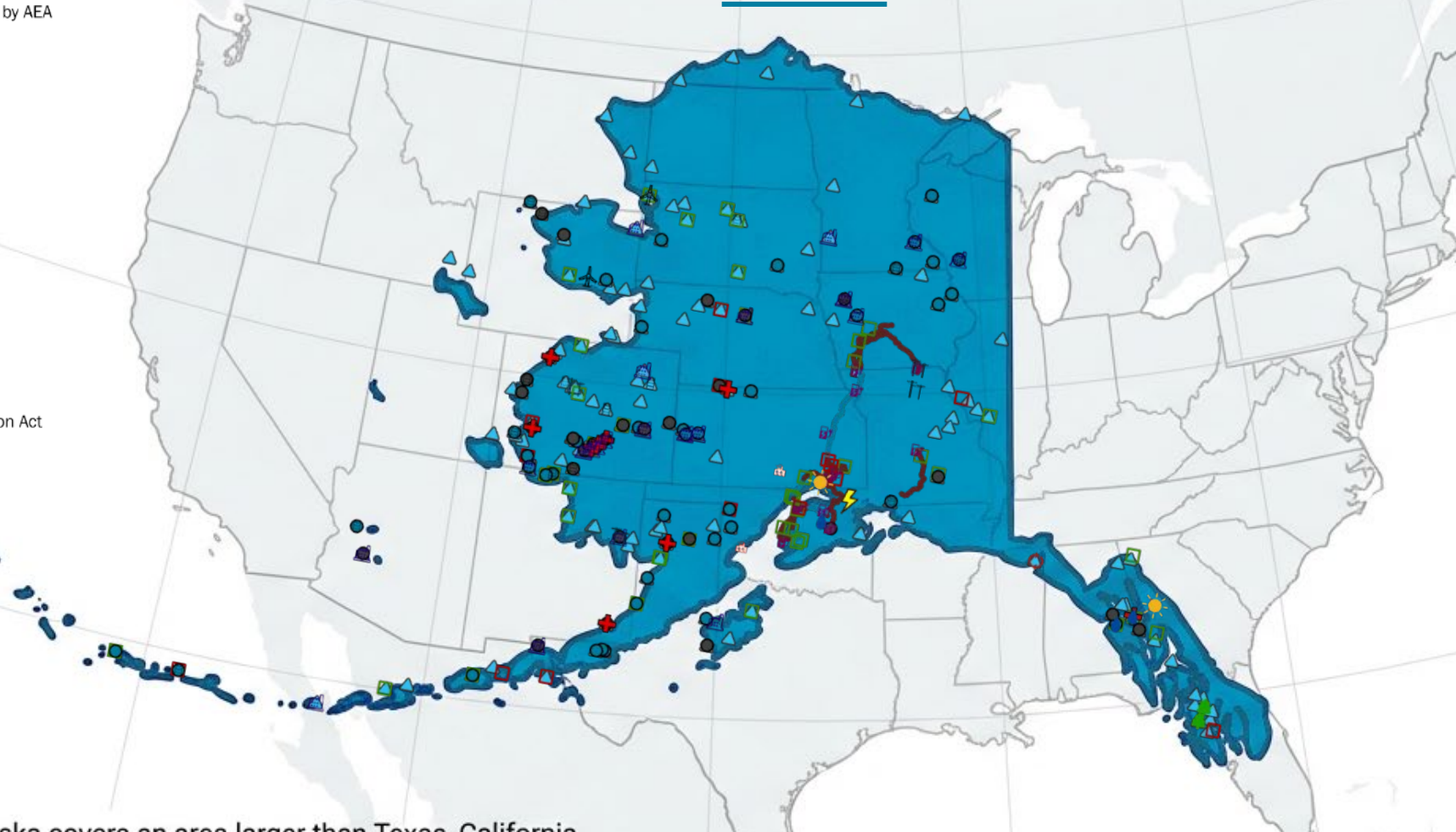


## Railbelt Transmission Organization

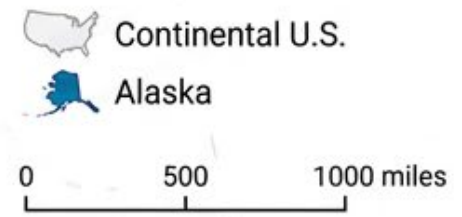
- AEA, Railbelt Reliability Council, and Utility Governance
- Certificate of Public Convenience and Necessity
- Tariff Under Regulatory Review

# AEA Active Projects and Services

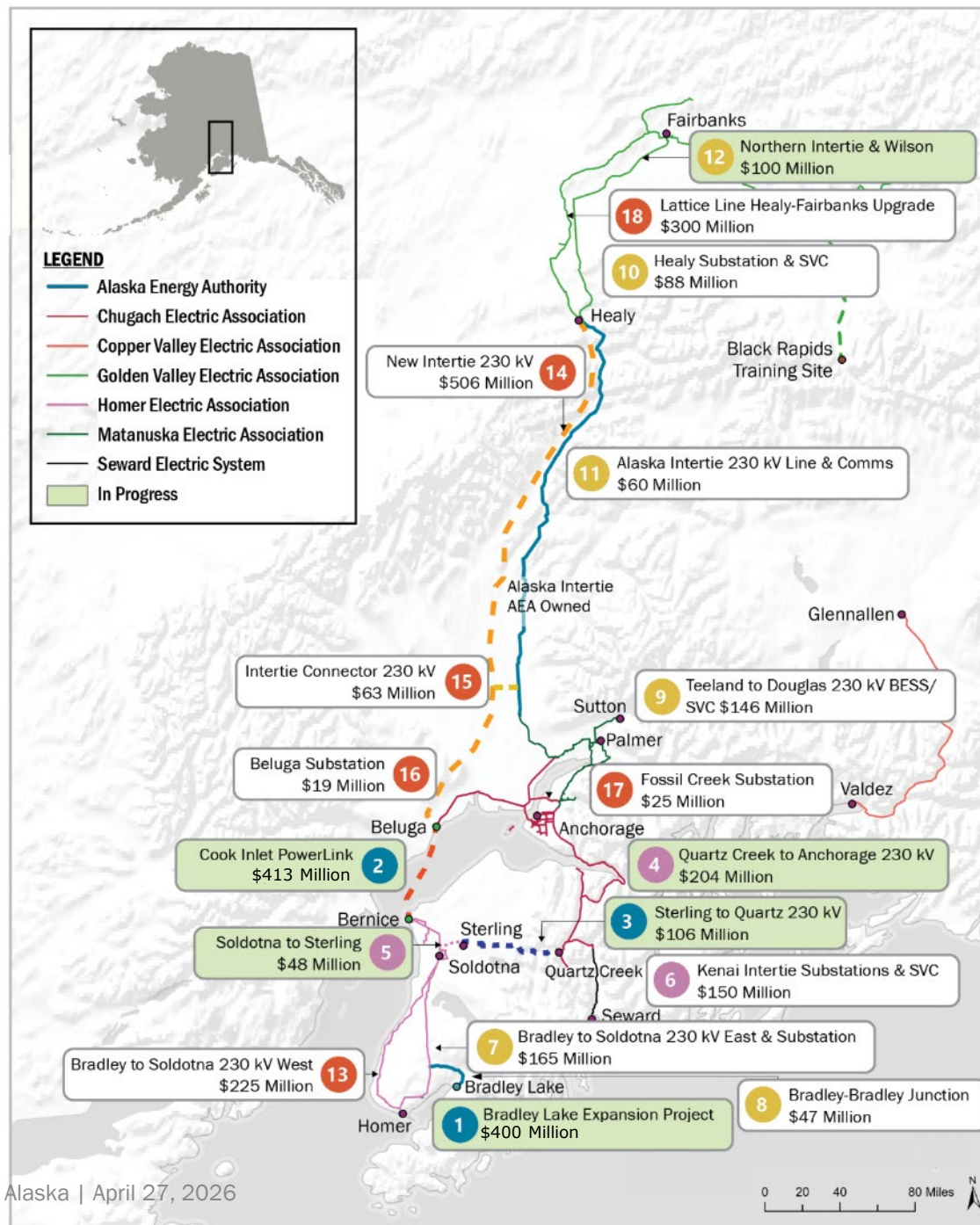
- Grants and Loans
  - Power Project Fund
  - Renewable Energy Fund
- Owned Assets
  - Other Transmission Lines
  - TT Transmission
  - Transmission Lines Owned by AEA
- Power Cost Equalization
  - ▲ PCE Communities
- Renewable Energy
  - 🌳 Biomass
  - 🚗 Electric Vehicles
  - ⚡ Port Electrification
  - 🔄 Heat Recovery
  - 💧 Hydroelectric
  - ☀️ Solar
  - 🔋 Storage
  - 🌬️ Wind
- Rural Energy
  - 🚚 Bulk Fuel
  - 🚛 Diesel Emissions Reduction Act
  - 👤 Circuit Rider Assistance
  - + Emergency Assistance
  - Utility Training



The state of Alaska covers an area larger than Texas, California, and Montana combined, spanning a distance from east to west that would stretch from coast to coast across the lower 48 states.



# Alaska Railbelt Construction Priorities



- 1 PHASE 1: AEA PROJECTS UNDERWAY – \$590 MILLION**
  - 1. Bradley Lake Expansion Project: AEA-unfunded (FERC January 2026)\*\*
  - 2. Cook Inlet PowerLink: AEA-partially funded, Target 2032\*\*
  - 3. Sterling-Quartz Creek: AEA-funded, target 2028\*
- 2 Phase 2: 2nd 230 kV Kenai Intertie – \$402 Million**
  - 4. Quartz Creek-Anchorage: CEA-Funded, Target 2032\*
  - 5. Soldotna-Sterling: HEA/AEA-partially funded\*
  - 6. Kenai Intertie Substations & SVC Upgrades: AEA/CEA (funds required)\*
- 3 Phase 3: Complete 230 kV Bradley-Fairbanks – \$606 Million**
  - 7. Bradley-Soldotna East & Substation: AEA/HEA (funds required)\*
  - 8. Bradley-Bradley Junction: AEA-unfunded\*
  - 9. Teeland-Douglas & SVC Upgrade: MEA/AEA (funds required)\*
  - 10. Healy Substation & SVC Upgrade: AEA/GVEA (funds required)\*
  - 11. Alaska Intertie 230 kV & Comms: AEA (funds required)\*
  - 12. Northern Intertie & Wilson SVC/BESS: GVEA (partially funded)\*
- 4 Phase 4: 2nd 230 kV Anchorage to Fairbanks – \$1138 Million**
  - 13. Bradley-Soldotna West: HEA (funds required)\*
  - 14. New Intertie Beluga-Healy & Substation: AEA (funds required) \*\*
  - 15. Intertie Connector: AEA (funds required)\*\*
  - 16. Beluga Substation: AEA (funds required)\*\*
  - 17. Fossil Creek Substation: CEA/MEA (funds required)\*
  - 18. Lattice Line Healy-Fairbanks Upgrade: GVEA (funds required)\*

\*Expansion or upgrade  
 \*\* New project

**Acronyms**  
 BESS: Battery Energy Storage System  
 SVC: Static Var Compensator

#### 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

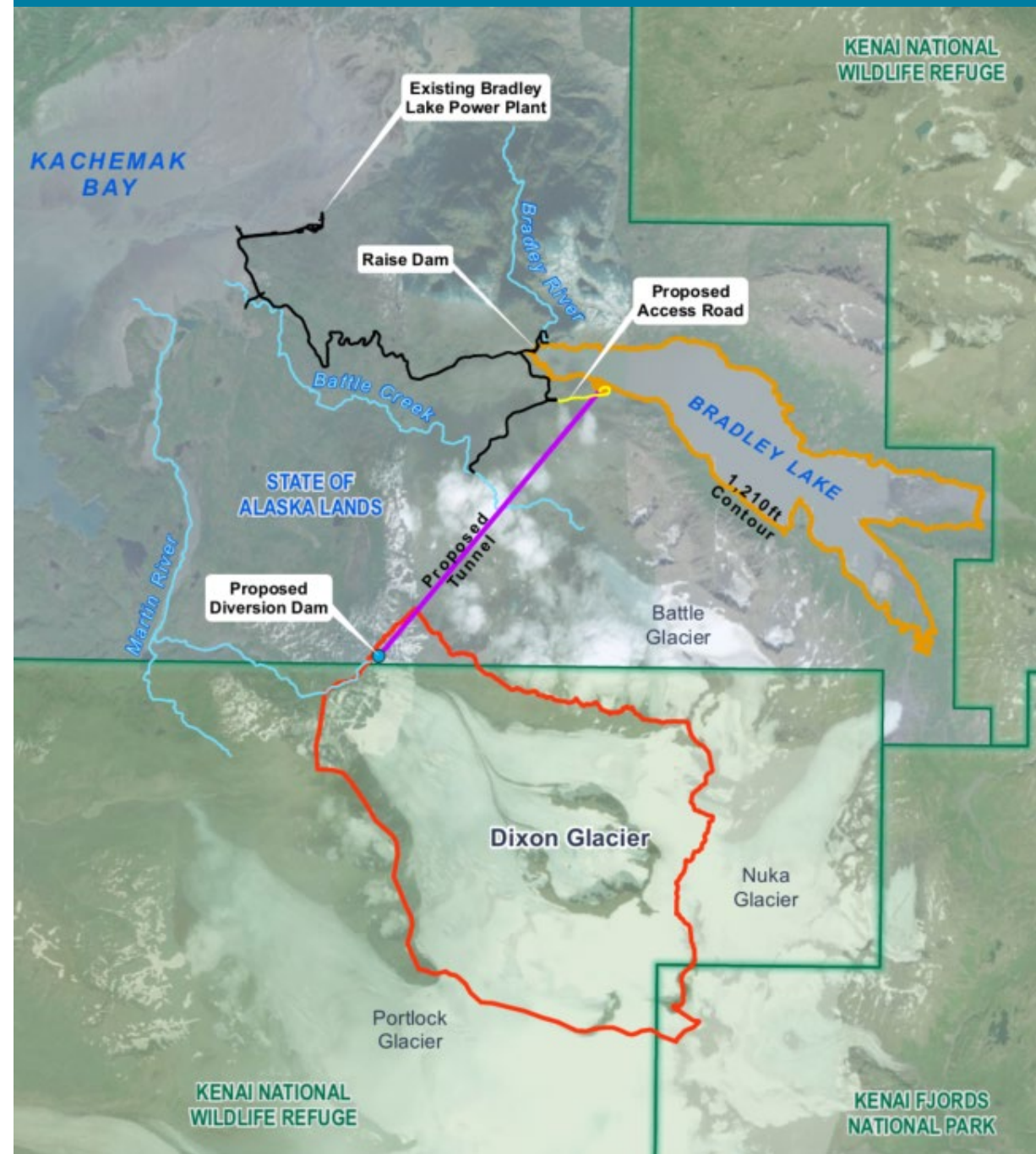
- **Online since 1991**, the **Bradley Lake Hydroelectric Project** is Alaska's largest renewable energy source, located **27 air miles northeast of Homer**.
- The **120-megawatt facility**—funded by the State of Alaska and Railbelt utilities—delivers low-cost power to **approximately 75 percent of Alaska's population served by the Railbelt**.
- Bradley Lake generates about **10 percent of Railbelt electricity** at an **average cost of 4.5 cents per kilowatt-hour**—powering **roughly 54,400 homes annually and saving Railbelt utilities more than \$20 million each year** compared to natural gas.

# Bradley Lake Expansion Project

The **Bradley Lake Expansion** represents Alaska's largest new renewable energy development since the Bradley Lake Hydroelectric Project was completed in 1991.

## Major Infrastructure Elements:

- Diversion dam at the toe of Dixon Glacier
- 4.6 mile tunnel (~14-foot diameter) conveying water to Bradley Lake
- Bradley Pool Raise up to 16'
- Approximately one mile of new access road



# Dixon Glacier

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# Bradley Lake Expansion Project

AEA is advancing the Bradley Lake Expansion Project, which includes the **Dixon Diversion** and **Bradley Pool Raise** sub-projects. This project will divert water from Dixon Glacier to increase Bradley Lake's annual energy production by **50 percent**.



ESTIMATED ANNUAL  
OUTPUT  
**180,000 MWh**  
*≈ 30,000 homes powered*



NATURAL GAS OFFSET  
**1.5 Billion cu ft**  
*7.5% of unmet demand (2030)*



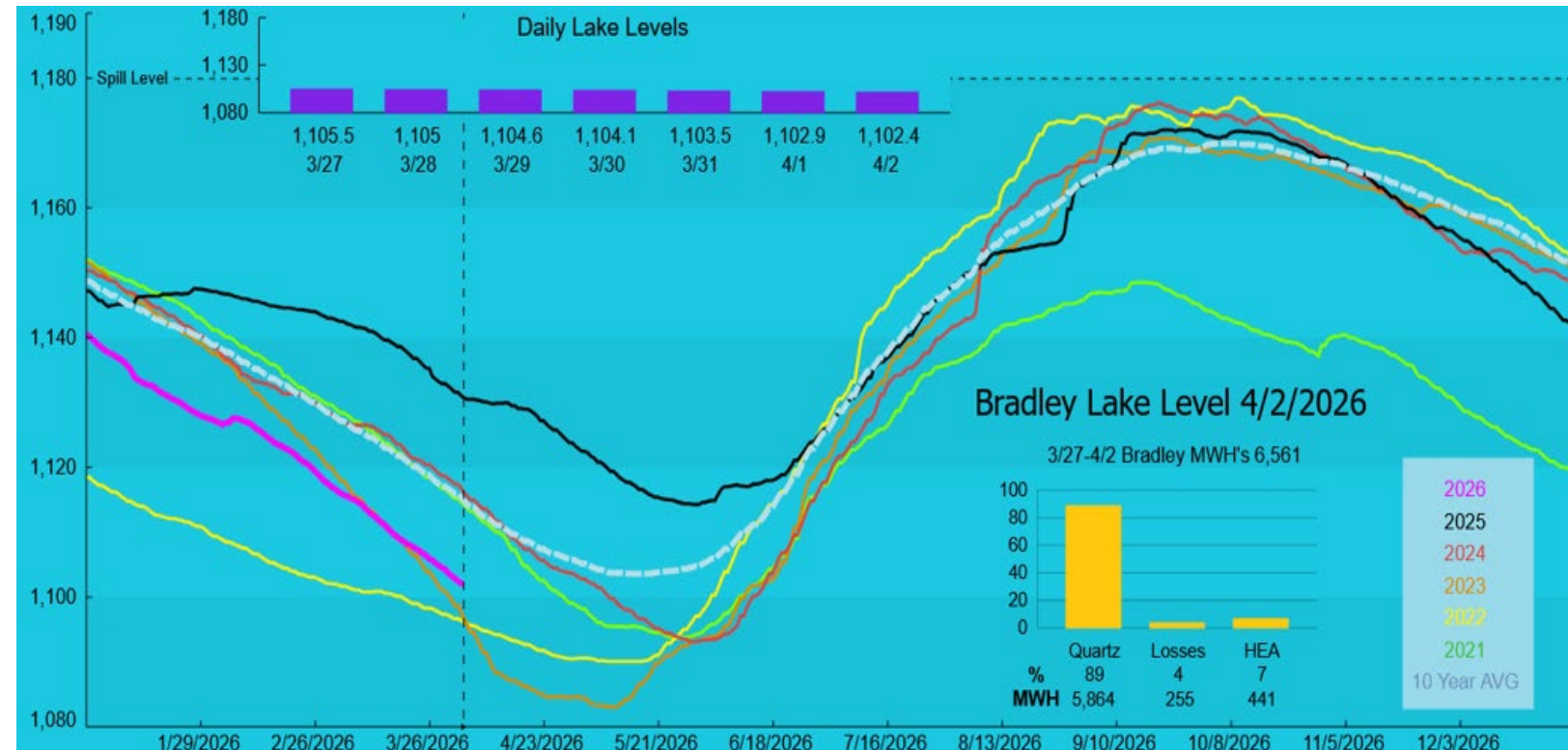
TARGET COMPLETION  
**2031**  
*Shovel-ready status*



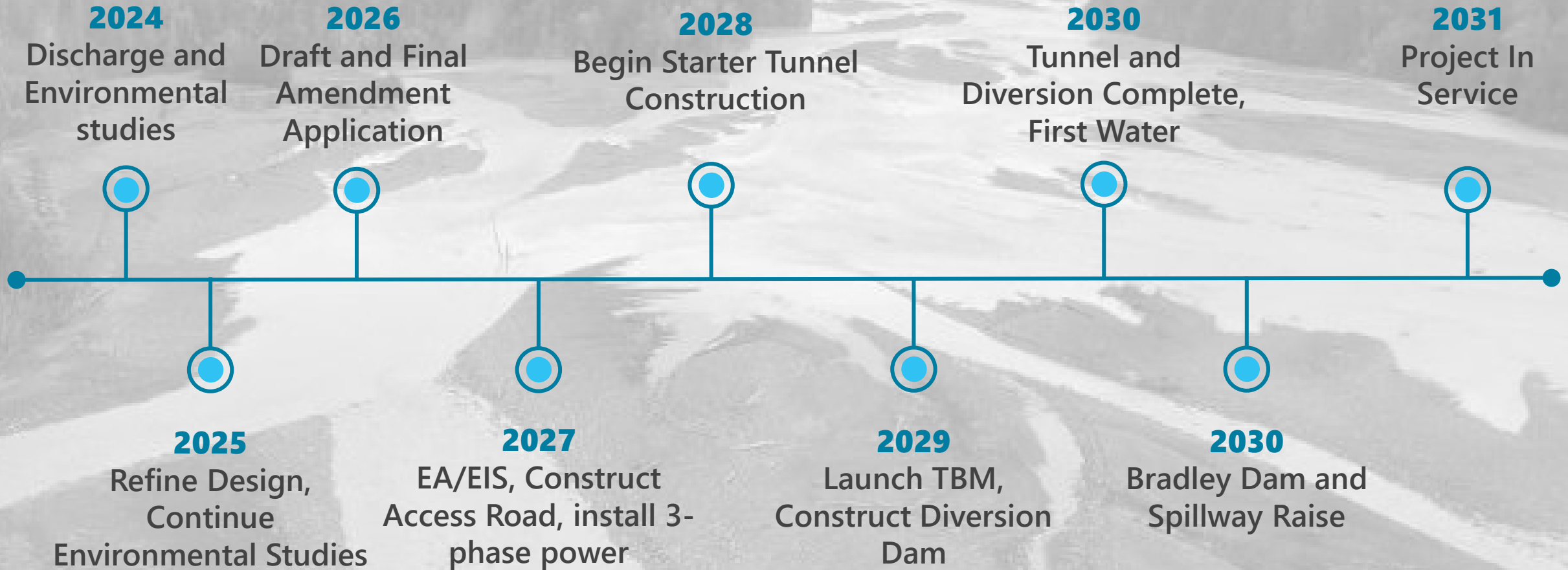
ESTIMATED COST  
**\$400 Million**  
*Class IV Estimate*

# The Value of Traditional Hydropower

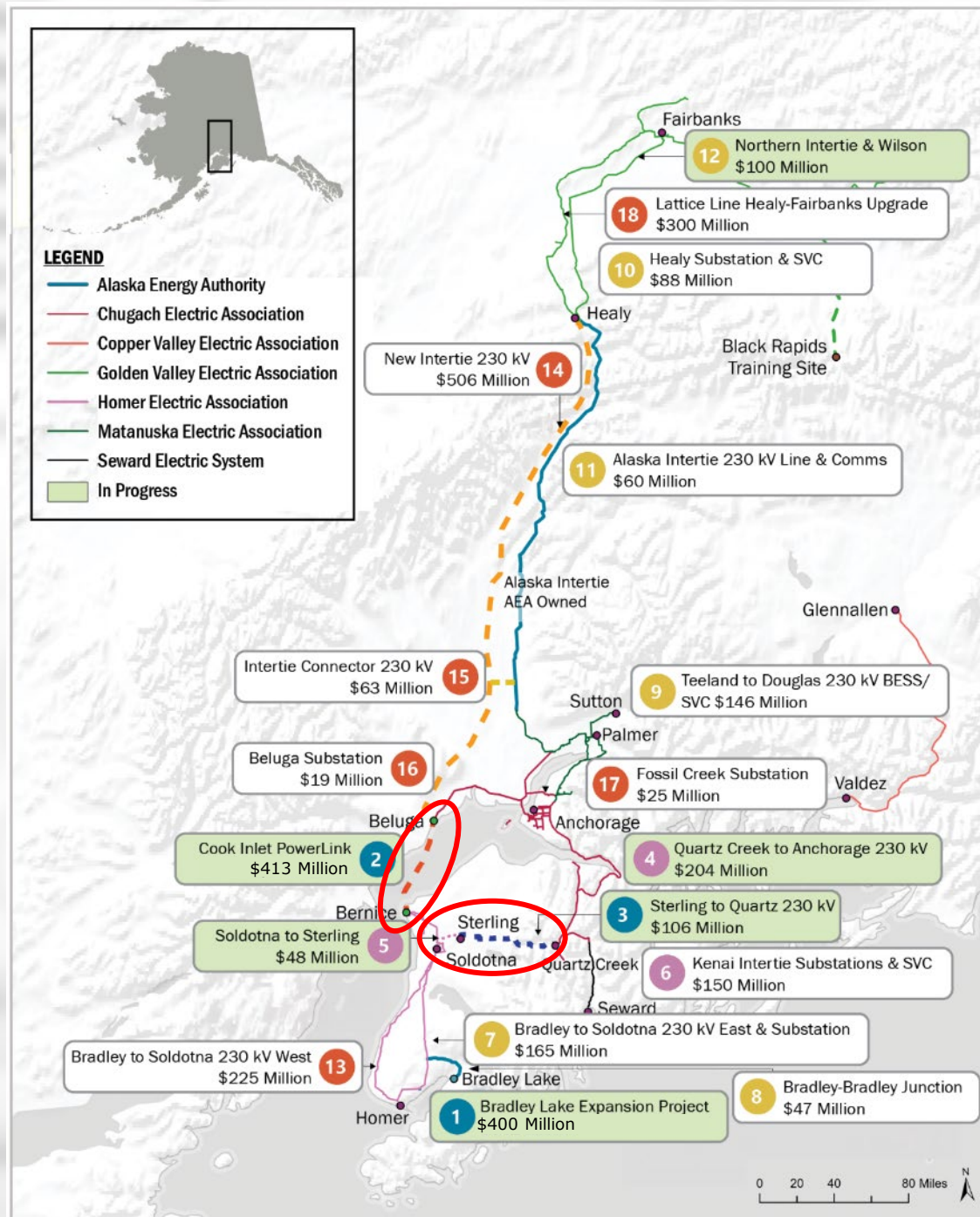
- Lake level lowest in **early May**.
- The lake refills from **May through October**, driven by snowmelt, glacier melt, and storm events.
- Water is stored in lake and drawn down **during winter and spring** to meet peak energy demand.



# Licensing and Construction Schedule



# Alaska Railbelt Construction Priorities




# Cook Inlet PowerLink (CIPLink)

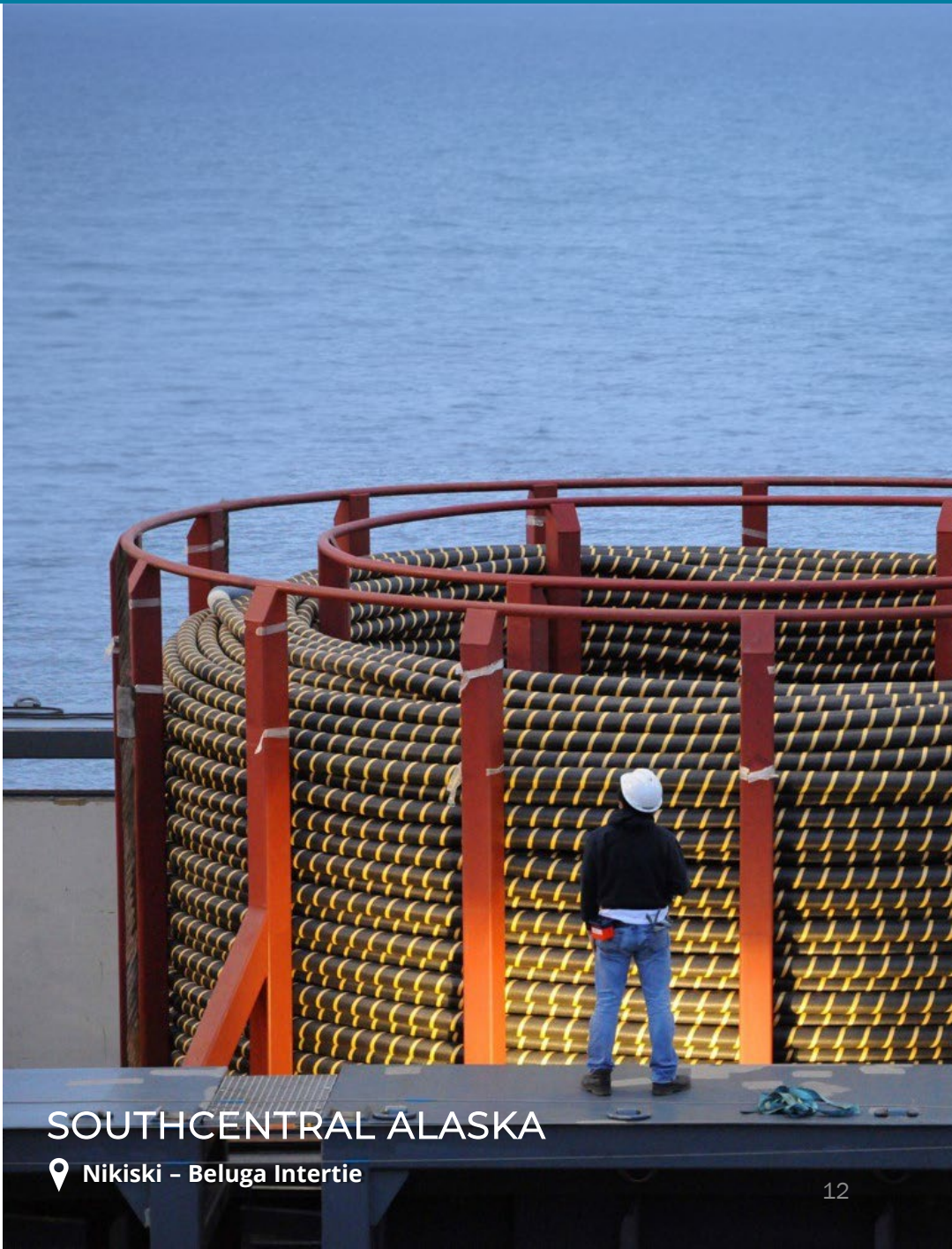
CIPLink is a high-voltage direct current (HVDC) transmission system connecting Southern and Central Railbelt regions. It features a **38-mile subsea cable** and overland routes to deliver **up to 200 MW** of bidirectional power flow.

 CAPACITY  
**200 MW**  
*Bidirectional Flow*

 CONNECTIVITY  
**Railbelt Link**  
*Connects South & Central Regions*

 TARGET COMPLETION  
**2032**  
*Shovel-ready status*

 ESTIMATED COST  
**\$413 Million**  
*Preliminary Engineering Done*



SOUTHCENTRAL ALASKA

 Nikiski - Beluga Intertie

\$106 Million (Under Construction; AEA Bonds Existing)

# Sterling to Quartz Creek (SQ) Transmission Lines

AEA acquired the SQ line following the Swan Lake fire in 2020 and is now upgrading the existing 115 kV line to 230 kV standards.

- **Location** – ~39 miles of 115 kV transmission between Sterling and Quartz Creek substations (Kenai Lake).
- **Benefits** – AEA ownership ensures better cost alignment, reduces line loss, increases reliability, and ensures more timely repairs and upgrades.
- **Status** – Engineers are designing and are procuring equipment for the upgrade of the existing 115 kV line to 230 kV standards. Construction has started on the first phase of the project.
- **Cost** – Estimated cost to upgrade the line is \$106 million.



AEA provides  
**energy solutions** to  
meet the unique  
needs of Alaska's  
rural and urban  
communities.



## Alaska Energy Authority

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