ALASKA ENERGY AUTHORITY

# BRADLEY LAKE HYDROELECTRIC PROJECT

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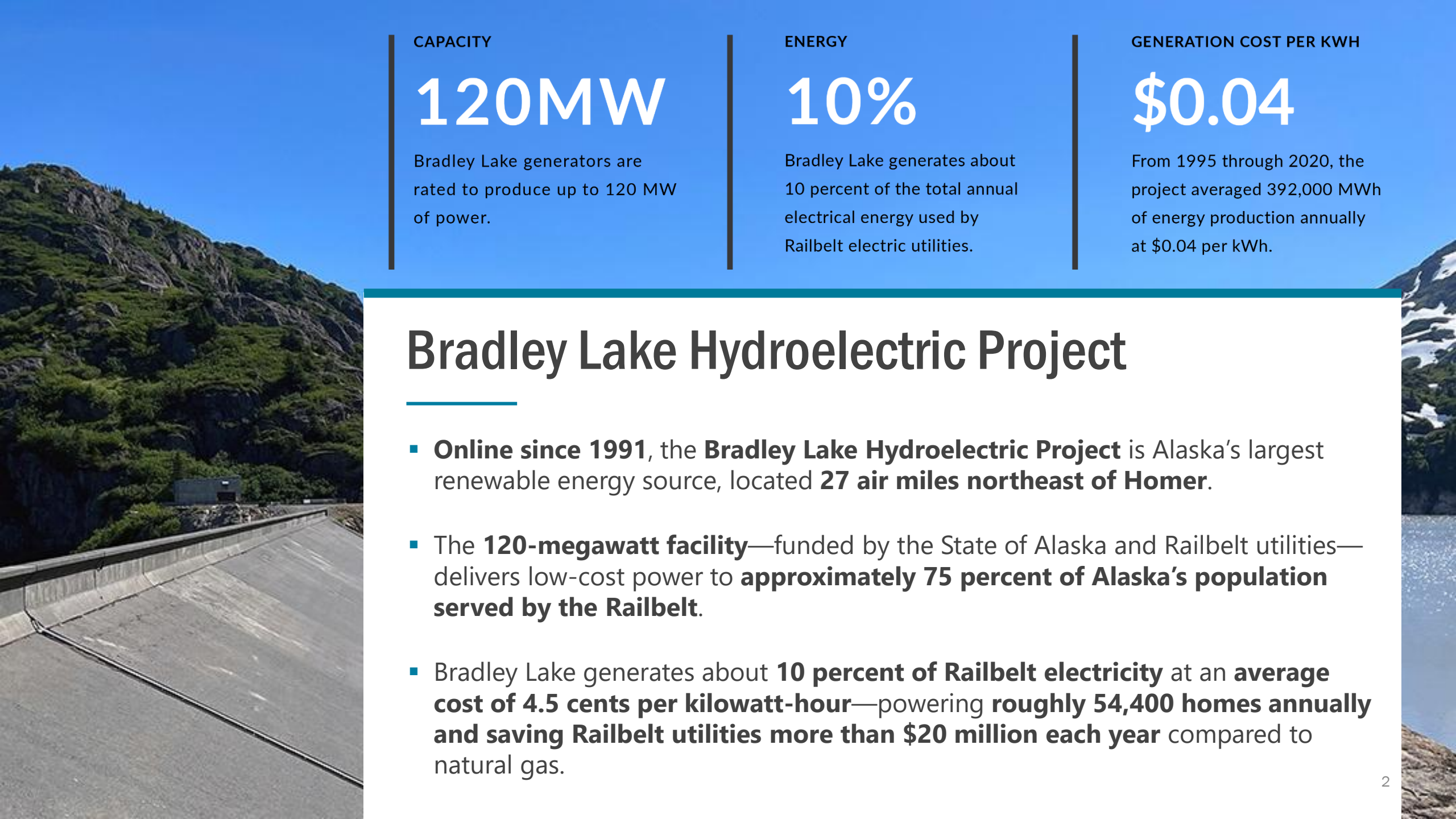
Alaska Forum
February 5, 2026

ALASKA ENERGY AUTHORITY
50 YEARS OF SERVICE



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.

# West Fork Upper Battle Creek Diversion Project

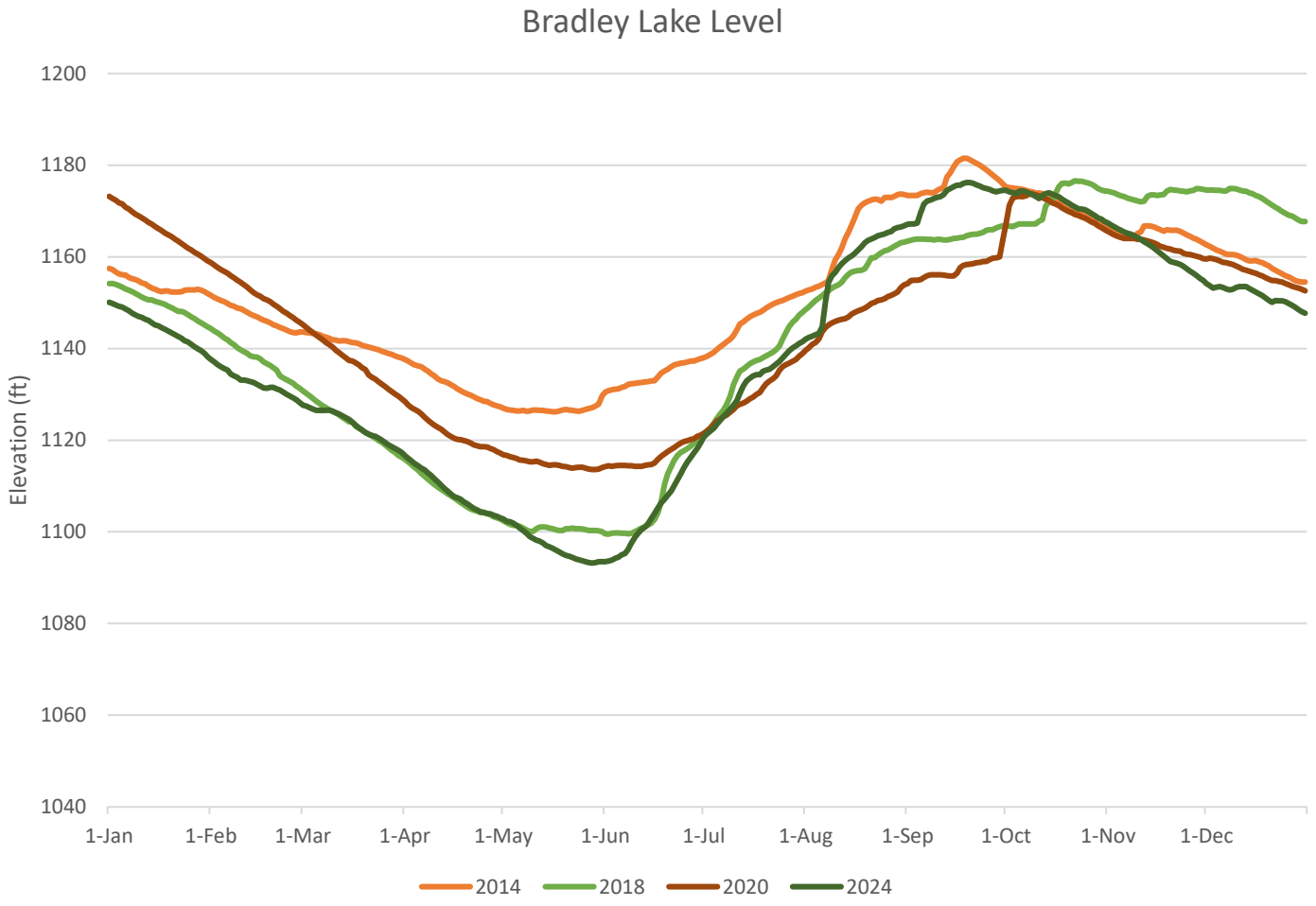
The project diverts glacial water from the West Fork of Upper Battle Creek into Bradley Lake—expanding Alaska's largest hydroelectric facility.

- Includes three miles of road, a concrete diversion dam, and a **five-foot-diameter pipeline** conveying water to Bradley Lake
- Delivers **about 10% more energy**—enough to power **approximately 5,100 homes annually**—at **lower cost** to ratepayers
- **Completed in 2020** at a cost of **$47 million**

# Bradley Lake Hydroelectric Project Components

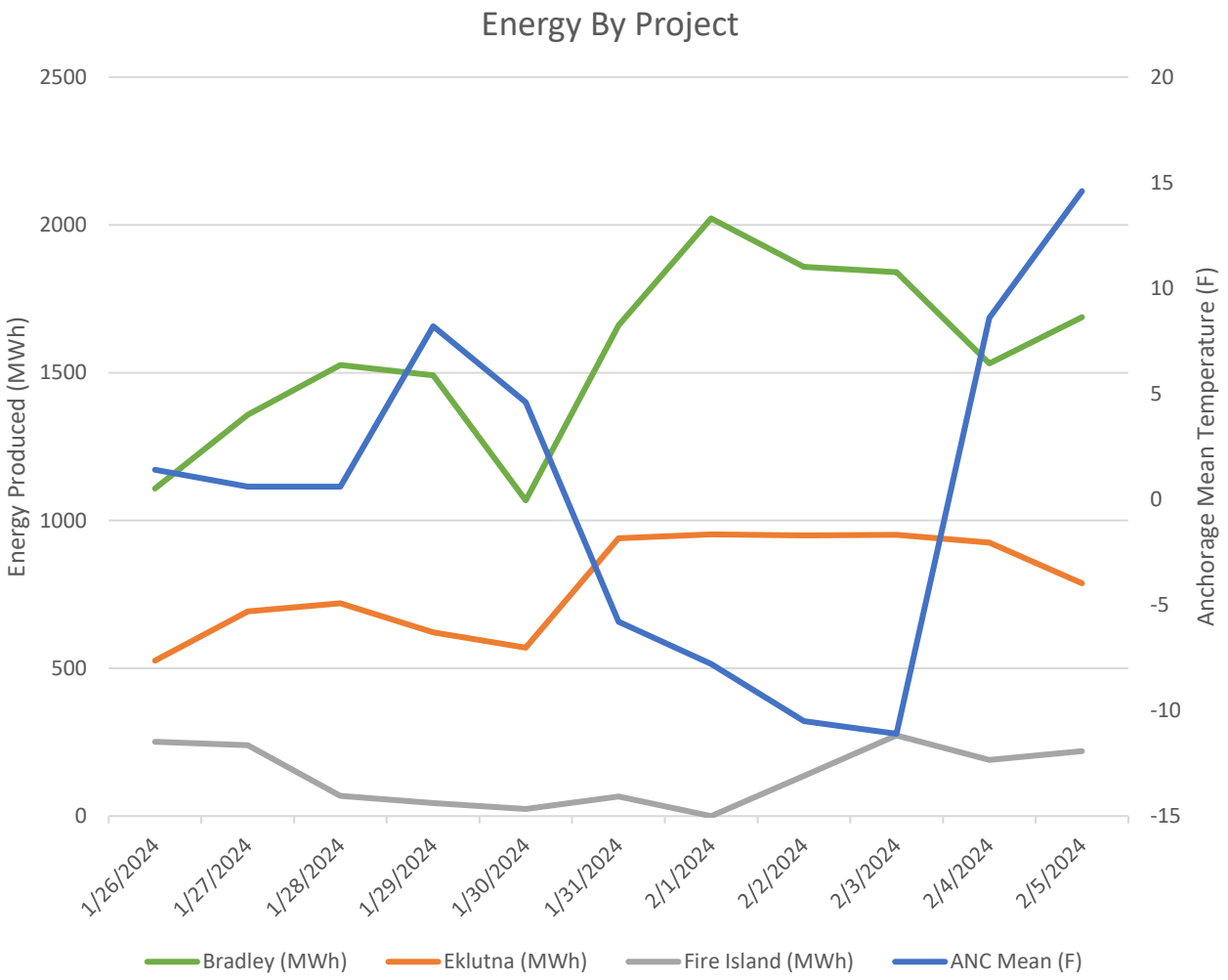

- **Original dam**, **power tunnel**, **and power plant**
- **Bradley to Bradley Junction** and **Sterling to Kenai Lake** transmission lines
- **West Fork Upper Battle Creek Diversion** (completed)
- **Dixon Diversion Project** (future)
- **Cook Inlet PowerLink** (future)

# The Value of Traditional Hydropower




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

# The Value of Traditional Hydropower




- During a cold snap in early 2024, **natural gas supplies for heat and power were constrained**.
- **Peak electricity demand** occurs during calm, cold periods, typically in January.
- **Wind and solar generation is often limited** during these conditions.
- **Traditional and stored hydro can increase output** to meet demand.

# Bradley Lake: Ownership, Operations, and Governance

- Owned by **the Alaska Energy Authority**
- Operated by **Homer Electric Association**
- Energy dispatched by **Chugach Electric Association**
- **Utilities** manage the project to the maximum extent practicable
- The **Bradley Lake Project Management Committee** provides overall project governance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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

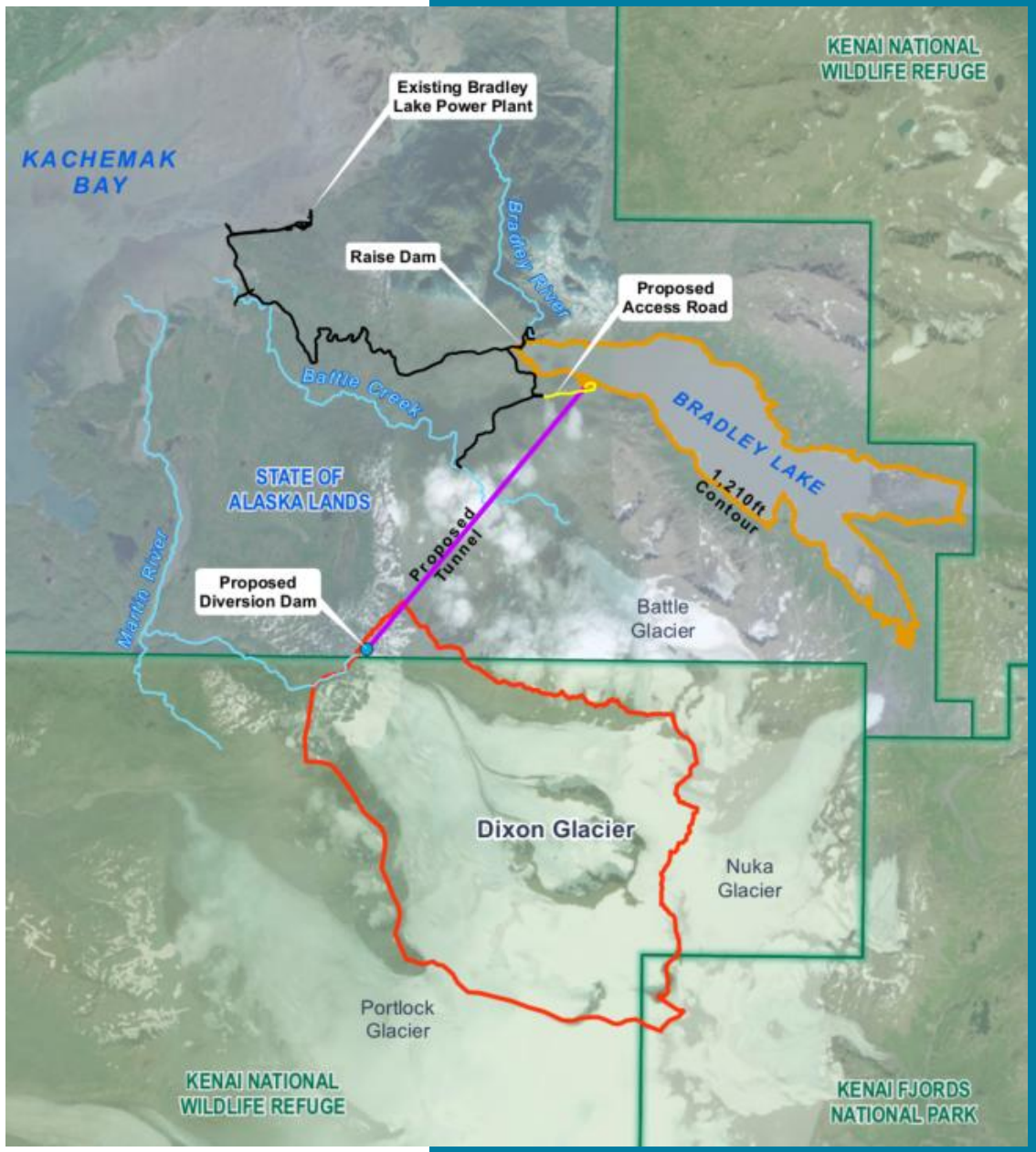

BRADLEY LAKE
EXPANSION PROJECT

# Dixon Diversion

The **Dixon Diversion** 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
- 4.7 mile tunnel (~14-foot diameter) conveying water to Bradley Lake
- Bradley Pool Raise up to 16'
- Approximately one mile of new access road



# Bradley Lake Expansion Project Timeline

## 2027

### Anticipate Bidding

Initiation of the formal bidding process for construction contracts.

## 2028

### Construction Starts

Breaking ground and commencement of Major civil works.

## 2031

### Project Completion

Finalization of all construction phases and systems testing.

## Target

### New Annual Output

**>600K**

MWh Annual Output

# Dixon Glacier

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

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