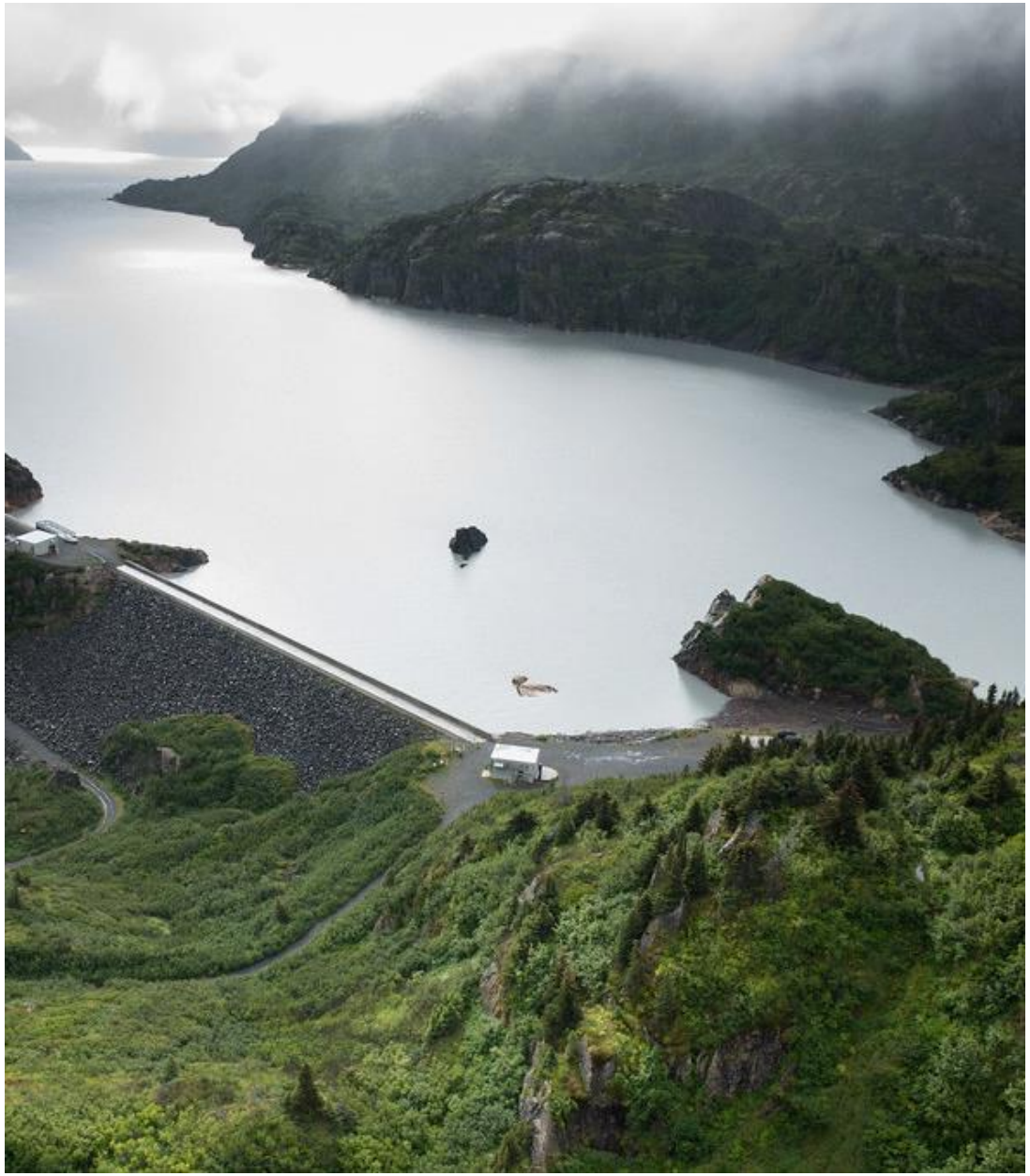
# Bradley Lake Operations and Governance



# The Bradley Lake Hydroelectric Project

- Net 120 MVA hydroelectric project
  - Limited to 90MW during normal operation due to transmission constraints
- Vertical shaft high-head Pelton Turbine
  - 1100 feet of head pressure
- Lake and Penstock
  - 125-foot dam
  - 3.5 Mile tunnel mostly rock and in some cases steel lined
  - 11 feet in diameter
  - ~ 400 GWH annual energy
- Transmission assets
  - Static VAR Compensators- Soldotna and Cooper Landing
  - Transmission lines -Bradley to Bradley Junction and Soldotna to Quartz Creek,
  - Batteries- Southern, Central, and Northern Regions
- Due to tunnel pressure constraints, the project exhibits a very slow response rate to underfrequency events
  - Zero to full output; theoretical response is 90 sec, but is more typically measured in minutes
- However, when considering divider performance (excluding batteries), it is the fastest responding machine in the Railbelt to overfrequency events
  - Full out put to zero in ~2 seconds

# Contractual Framework

The Bradley Lake Hydroelectric Project (the Project) is organized through a single primary agreement

- The Agreement for the Sale and Purchase of Electric Power (Power Sales Agreement (PSA))
- Includes Power revenue bond resolutions

  The Project was 50% State funded and 50 % Bond funded, with a mechanism to pay the State back for its funding after paying off the Projects bonds at zero interest

Two secondary agreements forming "a paper intertie"

- The Amendment to Agreement for Sale of Transmission Capability (the Capability Agreement)
  - Terms and conditions for the pledge of the Homer transmission system for Project use
- The Agreement for the Wheeling of Electric Power and for Related Services (the Services Agreement)
  - Terms and conditions for the pledge of the Chugach transmission system for Project use

And several sub-agreements governing system operations, field operations, maintenance, and control

Key stakeholders include utilities, and the State via AEA (Alaska Energy Authority)

- The Project and the related transmission agreements are exempt from RCA regulation under AS 42.05.431 (c) (1)

The PSA requires the creation of the Project Management Committee (BPMC) and tasks the committee with

- creating rules of procedure (bylaws)
- And, subject to AEA approval, delegates operations and maintenance responsibility to the BPMC

# Roles and Responsibilities

Utilities: known as the “Participants” and are power purchasers via a “take or pay” contract (the PSA) and are members of the BPMC

State via AEA: As owner of the Project provides oversight and support for the Project's operations and is a member of the BPMC

The BPMC is made up of the participants and AEA

- Responsible for Improvement, Operations and Maintenance of the Project
- Decisions are made based on majority plus 50% of load voting mechanism
- AEA has a unique role, most topics require the affirmative vote of AEA

Public: Project meetings are open to the public and subject to AS 44.62.310 - AS 44.62.312.meetings act.

# Power Delivery and Transmission

- The Services and Capability agreements formed a back stop “paper intertie” to deliver Project power to the participants
  - It became apparent that lack of funding for interties might delay or kill the project
- The Capability Agreement outlines the performance and operational aspects of the Project's utilization of the HEA system to transmit Project power from Bradley Junction to Quartz Creek (formerly Soldotna).
  - This includes the capacity purchase terms for the Bradley Junction to Soldotna 115 Line, which was constructed and is owned by HEA. The participants contributed funds based on their Project shares, and in return, they obtained proportional capability rights.
- The Services Agreement outlines the performance and operational aspects of the Project's utilization of the HEA system to transmit Project power from Quartz Creek (formerly Soldotna) to various delivery points north of Quartz creek.
  - Includes calculation of firm and non firm wheeling with a 15 year phase in, capped at 90% of the Chugach fully allocated rate less the Beluga Point Mackenzie costs
  - Names Chugach as the Project dispatcher subject to review of performance by the BPMC
- AEA is not signatory to either of these agreements

# Energy Pricing

- The Project's energy is priced based on cost and energy generated during the year
    - Budgeted in advance with a  true-up mechanism