Alaska Hydropower

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Community and Regional Affairs Committee
January 30, 2020
Who We Are

Created in 1976 by the Alaska Legislature, the Alaska Energy Authority (AEA) is a public corporation of the State of Alaska governed by a board of directors with the mission to “reduce the cost of energy in Alaska.” AEA is the state's energy office and lead agency for statewide energy policy and program development.
What We Do

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

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

Railbelt Energy – AEA owns the Bradley Lake Hydroelectric Project and the Alaska Intertie. These assets benefit Railbelt consumers by reducing the cost of power.

Renewable Energy – AEA provides renewable energy and energy efficiency grants, analysis, and expertise to benefit Alaskans. These include hydro, biomass, wind, solar, and others.


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.
Our Projects

AEA works with its Alaska partners and stakeholders to provide reliable and affordable energy solutions.
Programs and Projects

- Bradley Lake Hydroelectric Project
- Alaska Intertie
- Bulk Fuel Upgrades
- Rural Power System Upgrades
- Rural Utility Assistance
- Power Cost Equalization
- Renewable Energy Fund Grants
- Power Project Fund Loans
- Alaska C-PACE
- Alternative Energy
- Energy Efficiency
- Energy Project Development
Hydropower Projects in Alaska

- 3 Projects in Construction
- 6 Projects in Design
- 51 Projects in Operation

Coal
Natural gas
Oil
Wind
Hydro


18% 27%
Two Types of Hydropower Projects
Traditional Storage

- Traditional Storage projects tend to be more expensive, require terrain chokepoints, and require more time for permitting and construction.

  - Bradley Lake
  - Snettisham
  - Susitna-Watana
  - Swan Lake
  - Sweetheart Lake
  - Terror Lake
Run of River

Run of River projects are lower cost and tend to be permitted and constructed quicker.

- Delta Creek
- Five Mile Creek
- Gartina Falls
- Humpback Creek
- Knutson Creek
- Nuyakuk River
- Thayer Creek
**Important Terms**

- **Capacity of a generator** is measured in megawatts (MW) or kilowatts (kW) at a single point in time.

- **Project Energy** is power over time. Commonly measured as Megawatt-hours (MWh) or kilowatt-hours (kWh).

- **House on the Alaska Railbelt** may use 500-600 kWh per month energy.

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**1 watt =**

- a single LED

**1 kilowatt =**

- (1,000 watts)

**1 megawatt =**

- (1,000,000 watts)

**1 gigawatt =**

- (1,000,000,000 watts)
Alaska Hydropower Projects in Operation
Alaska Hydropower Projects in Operation

- 51 operational hydropower projects in Alaska
- Three projects under construction to increase Statewide capacity by 5.5 MW to be completed in 2020
- Projects in design/funding to increase capacity by nearly 491 MW
State Involvement in Hydropower Projects

- State of Alaska owns over 40% of Statewide hydropower capacity
  - Bradley Lake (AEA)
  - Snettisham (AIDEA)
- State of Alaska through AEA/AIDEA has supported the development of more than two thirds of Statewide hydropower capacity
Bradley Lake

- Located 25 miles northeast of Homer and serves Railbelt
- Capacity of 120 MW
- Completed in 1991
- Funding by State of Alaska and Railbelt utilities
- Owned by AEA and managed to maximum extent by Railbelt utilities
Snellisham

- Located 30 miles southeast of Juneau and serves Juneau
- Capacity of 78 MW
- Initial completion of 1973
- Funded by Federal Government
- Owned by AIDEA, managed by AEA, and operated by Alaska Electric Light & Power
Four Dam Pool Power Authority

- AEA sold to local utilities in 2002
  - Solomon Gulch
  - Swan Lake
  - Terror Lake
  - Tyee Lake

- Proceeds helped establish Power Cost Equalization Program Endowment
Alaska Hydropower Projects in Construction
Alaska Hydropower Projects in Construction

- Four projects under construction to increase Statewide energy by 5.5 MW to be completed in 2020.
  - Gunnuk Creek
  - Hidden Basin
  - Hiilangaay
  - West Fork Upper Battle Creek
Gunnuk Creek

- Located in Kake, Alaska
- Capacity 0.5 MW
- Completion 2020
- Funded by AEA grant and Inside Passage Electric Cooperative financing
- Owned by Inside Passage Electric Coop
Located 22 miles southeast of Kodiak, and serves City of Kodiak and surrounding communities

Capacity zero

Completed December 2019

Financed and owned by Kodiak Electric Association
Hiilangaay

- Located 8 miles East of Hydaburg and serve Prince of Wales Island
- Capacity 5 MW
- Completion 2020
- Funded by AEA, grants, loans and Alaska Power & Telephone
- Owned by Haida Energy
West Fork Upper Battle Creek

- Located 2 miles southwest of Bradley Lake dam
- Capacity zero
- Completion 2020
- Funded by AEA grant and Railbelt utilities
- Owned by AEA
Alaska Hydropower Projects in Design
Alaska Hydropower Projects in Design

- Projects in design/funding to increase Statewide energy by greater than 491 MW hours
  - Nuyakuk River
  - Susitna-Watana
  - Sweetheart Lake
  - Thayer Creek
Nuyakuk River

- Located 50 miles north of Dillingham and would serve regional communities
- Capacity ~12 MW
- Completion date: TBD
- Funding: TBD
- Owned by Nushagak Electric & Telephone Cooperative
- 2019 Senate Bill 91 passed and allows for the development and operation of a hydro facility in the State Park
Susitna-Watana

- Located ~125 miles northeast of Anchorage and serve Railbelt
- Average capacity 459 MW
  Average annual energy 2,800,000 MWh
- Completion Date: TBD
- Funding: TBD
- Owned by: TBD
Sweetheart Lake

- Located 33 miles southeast of Juneau and serve region
- Capacity 19.9 MW
- Completion Date: TBD
- Funding: TBD
- Juneau Hydropower Inc.
Thayer Creek

- Located 6 miles north of Angoon and serve Angoon
- Capacity 0.85 MW
- Completion Date: TBD
- Funding by AEA, Kootznoowoo Inc. and Inside Passage Electric Cooperative
- Owned by Kootznoowoo Inc.
AEA provides energy solutions to meet the unique needs and opportunities of Alaska’s rural and urban communities.
REDUCING THE COST OF ENERGY IN ALASKA

SAFE, RELIABLE, & AFFORDABLE ENERGY SOLUTIONS

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