

Alaska Hydropower

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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.

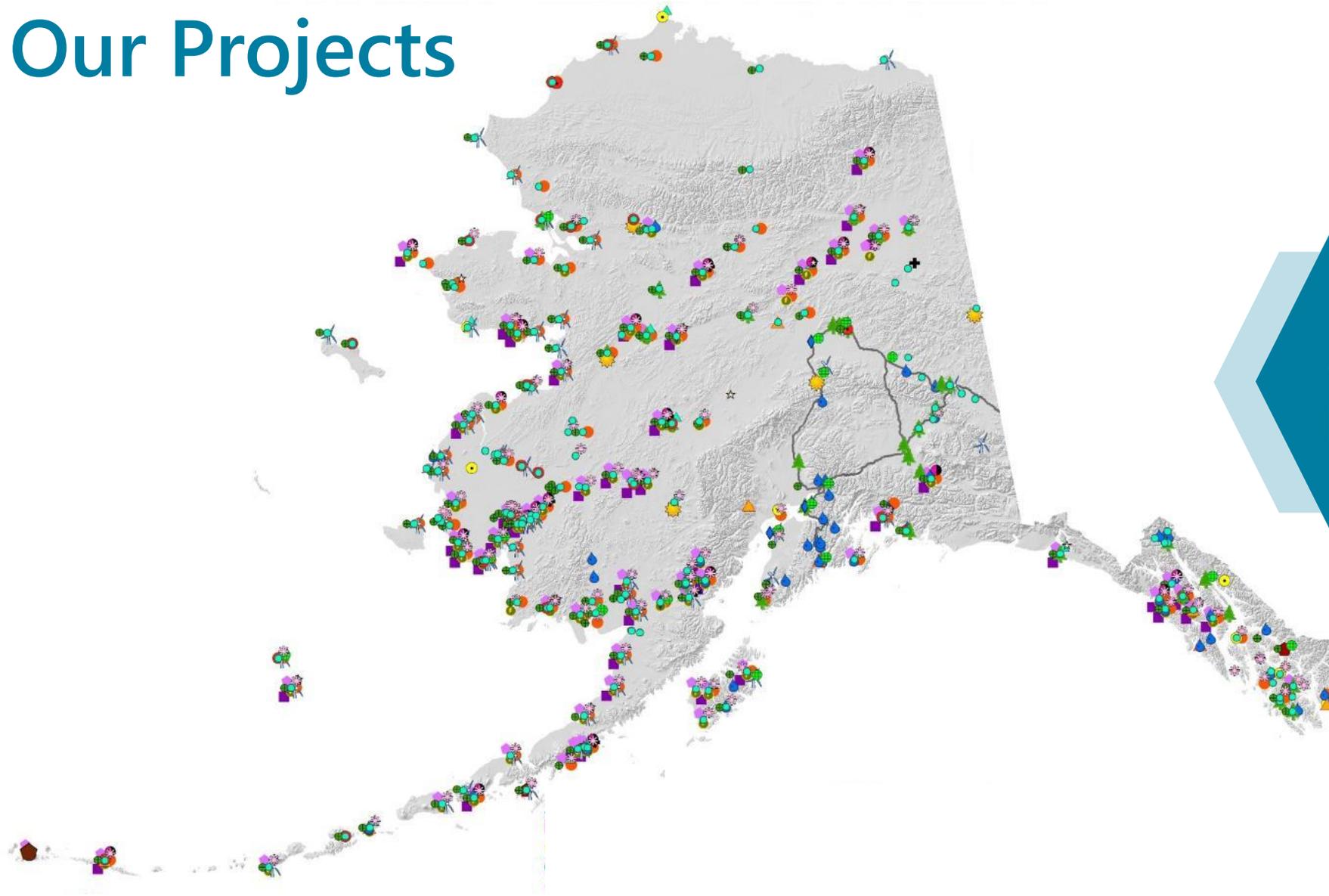


Power Cost Equalization – The Power Cost Equalization Program reduces the cost of electricity in rural Alaska for residential customers and community facilities.



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.

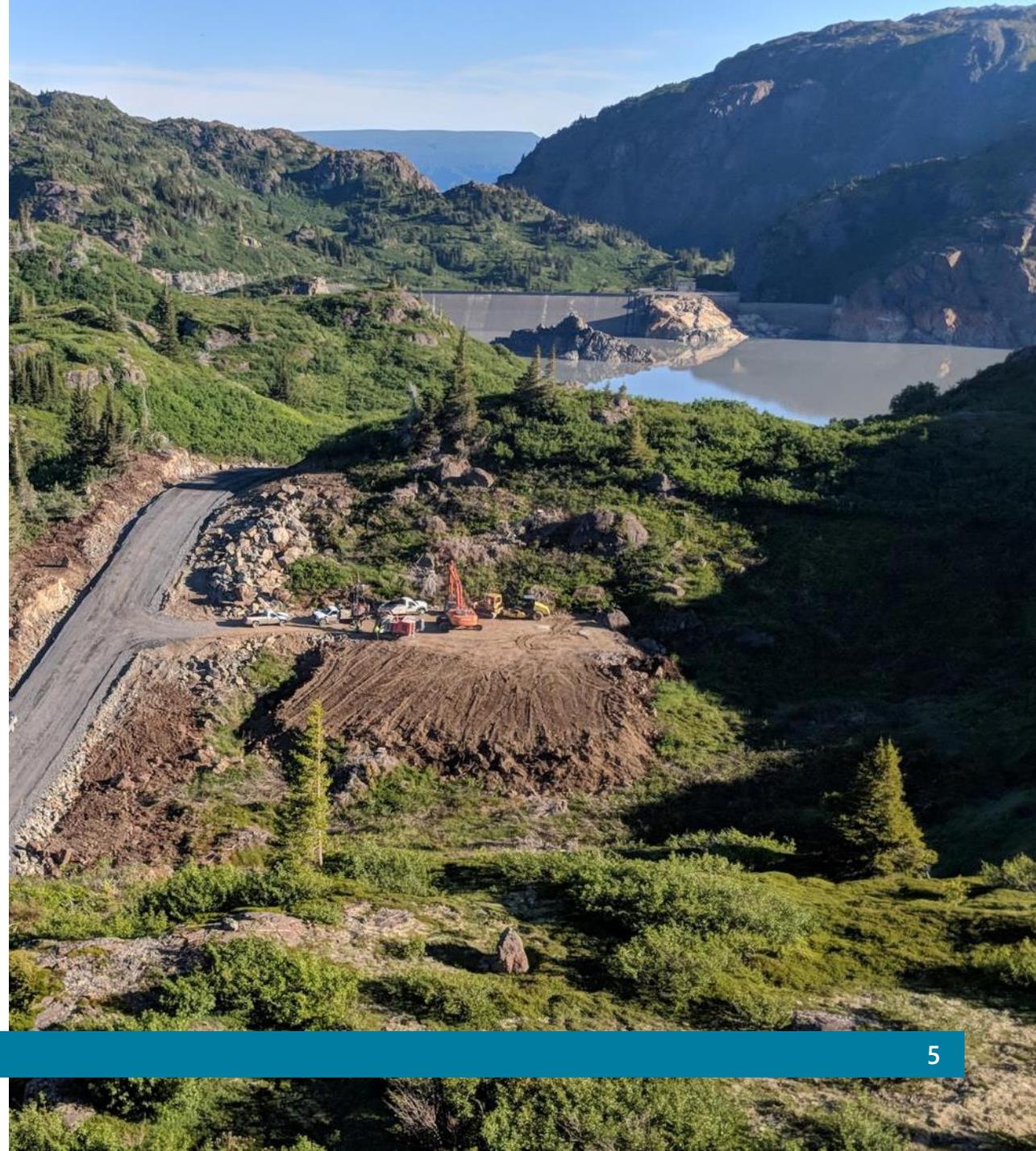
Our Projects



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

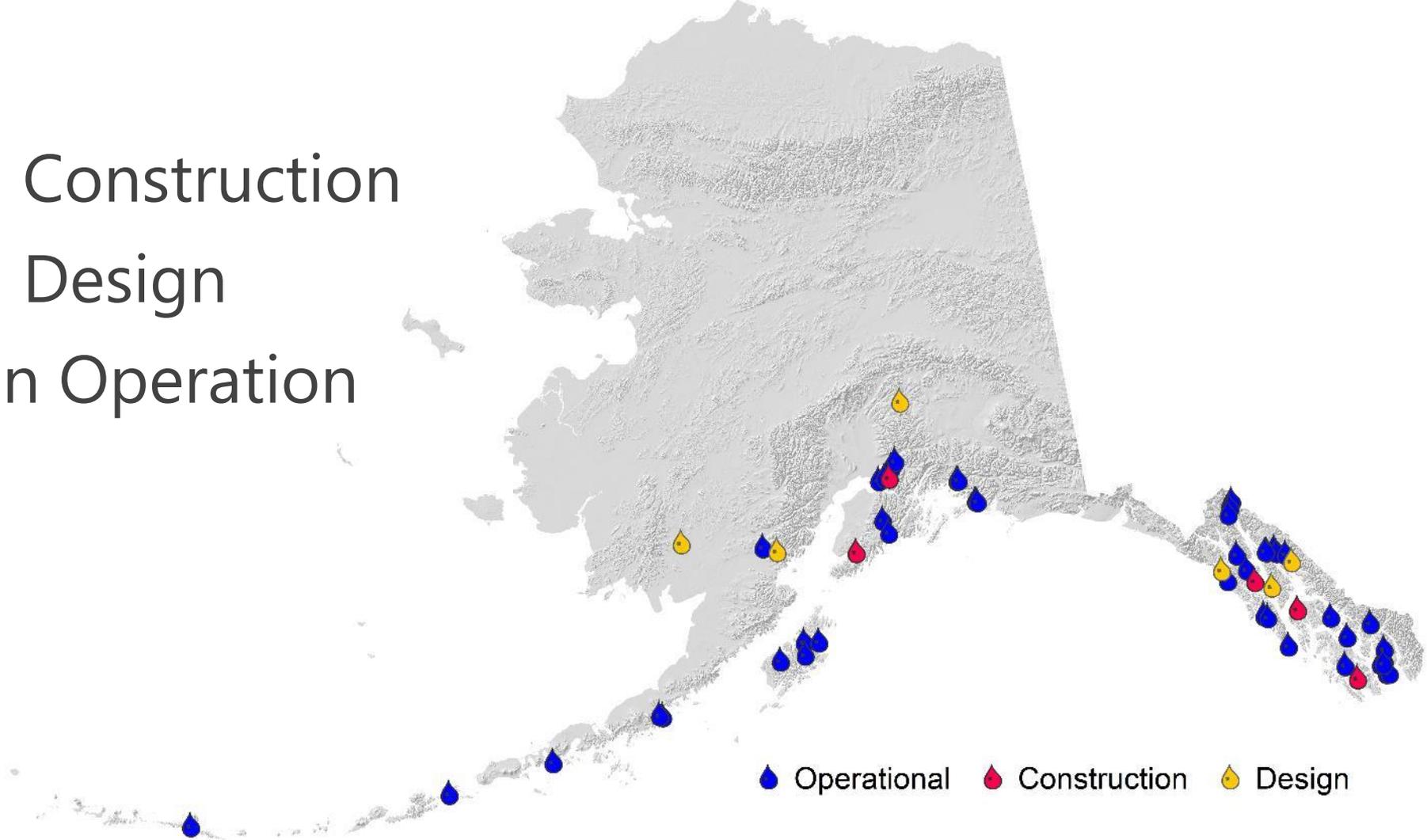
Programs and Projects

- ▶ 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

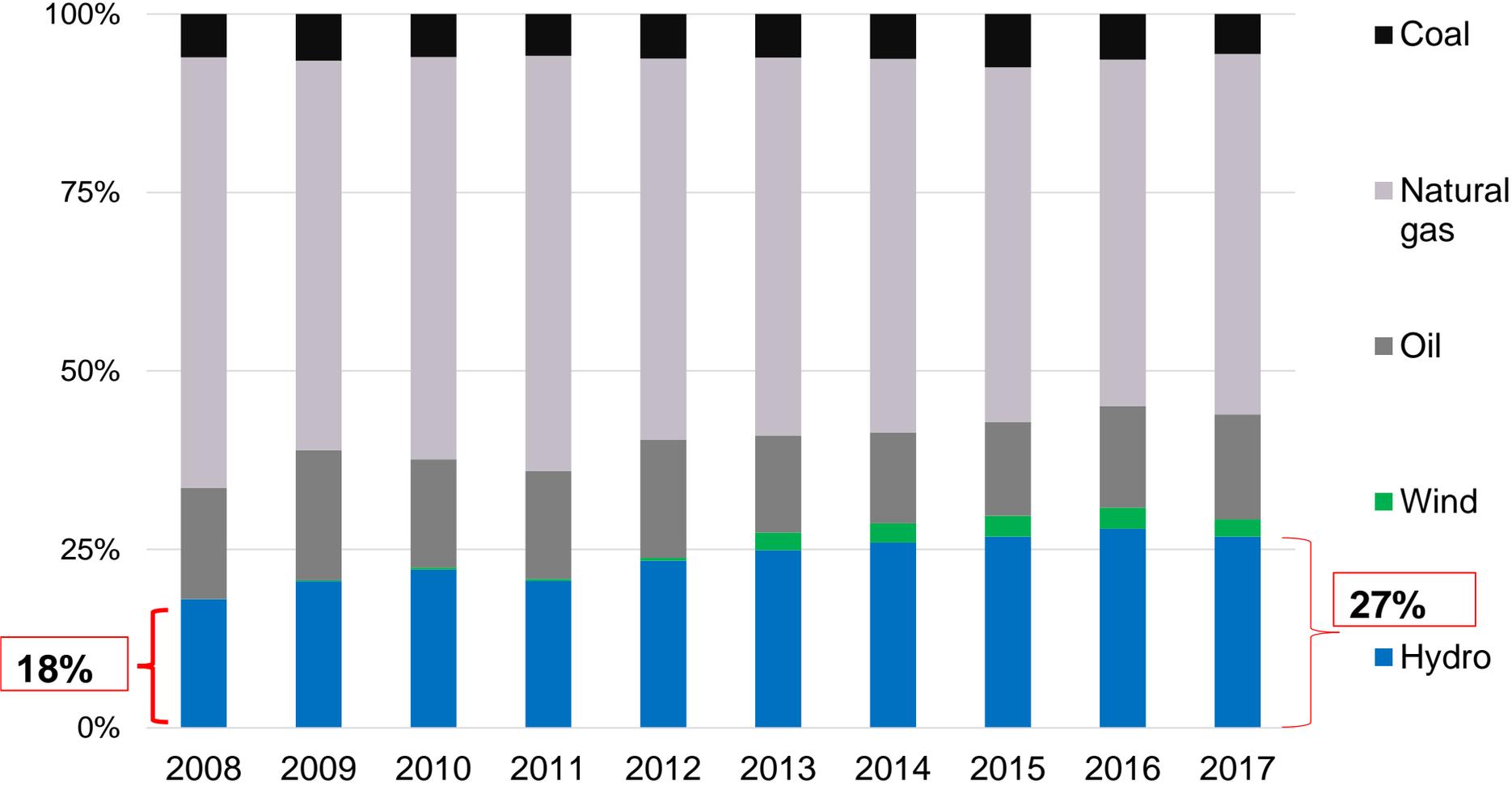


Hydropower Projects in Alaska

- 🔴 4 Projects in Construction
- 🟡 6 Projects in Design
- 🟦 51 Projects in Operation



Alaska Electric Energy Generation (2017)





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

1 watt =



1 kilowatt =
(1,000 watts)



1 megawatt =
(1,000,000 watts)



1 gigawatt =
(1,000,000,000 watts)



Important Terms

- ▶ Capacity (Engine size) 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). How far can you go?
- ▶ House on the Alaska Railbelt may use 500-600 kWh per month energy.



Lowest Cost Hydropower Are
Improvements to Existing

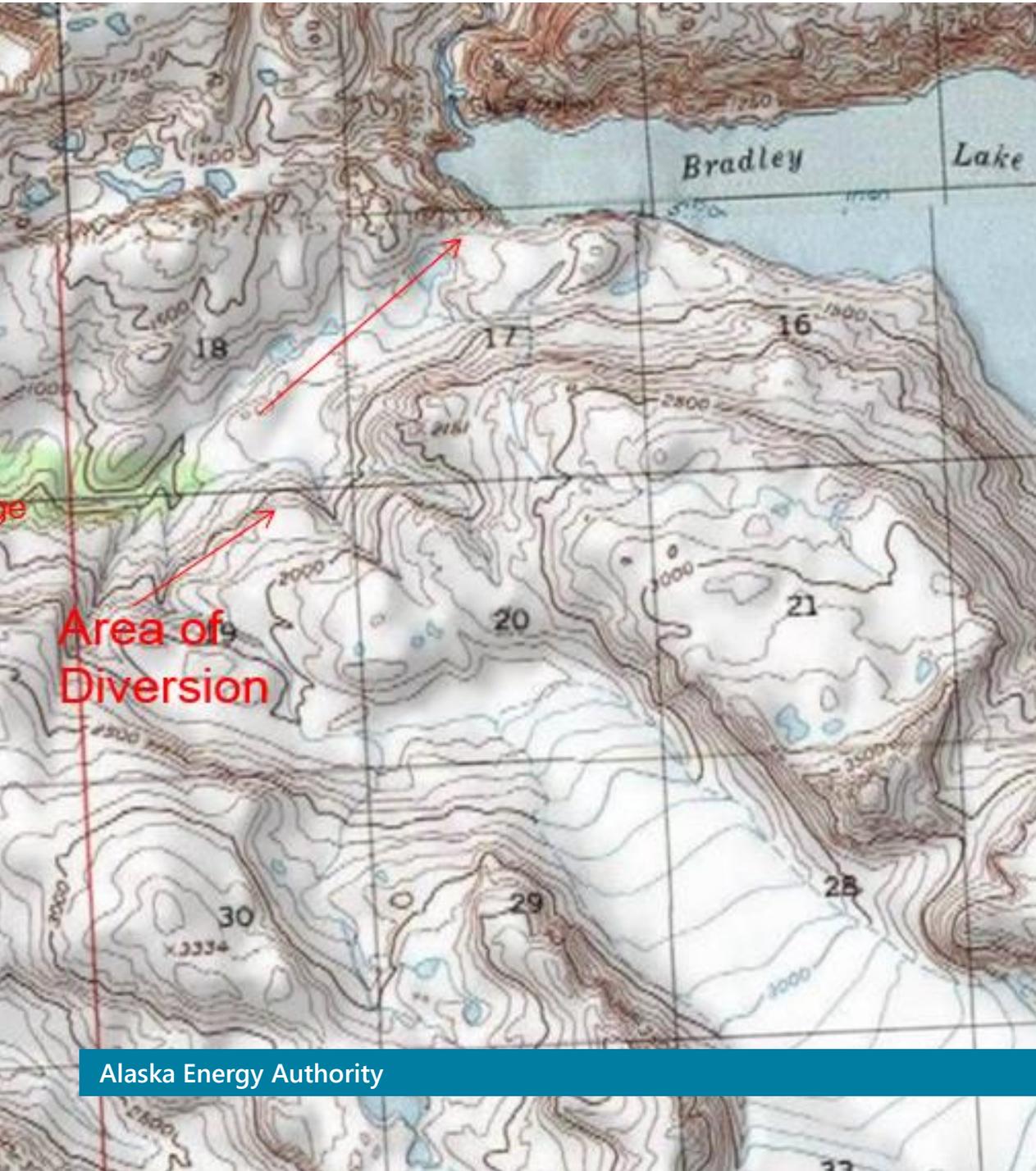
Hidden Basin

- ▶ 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



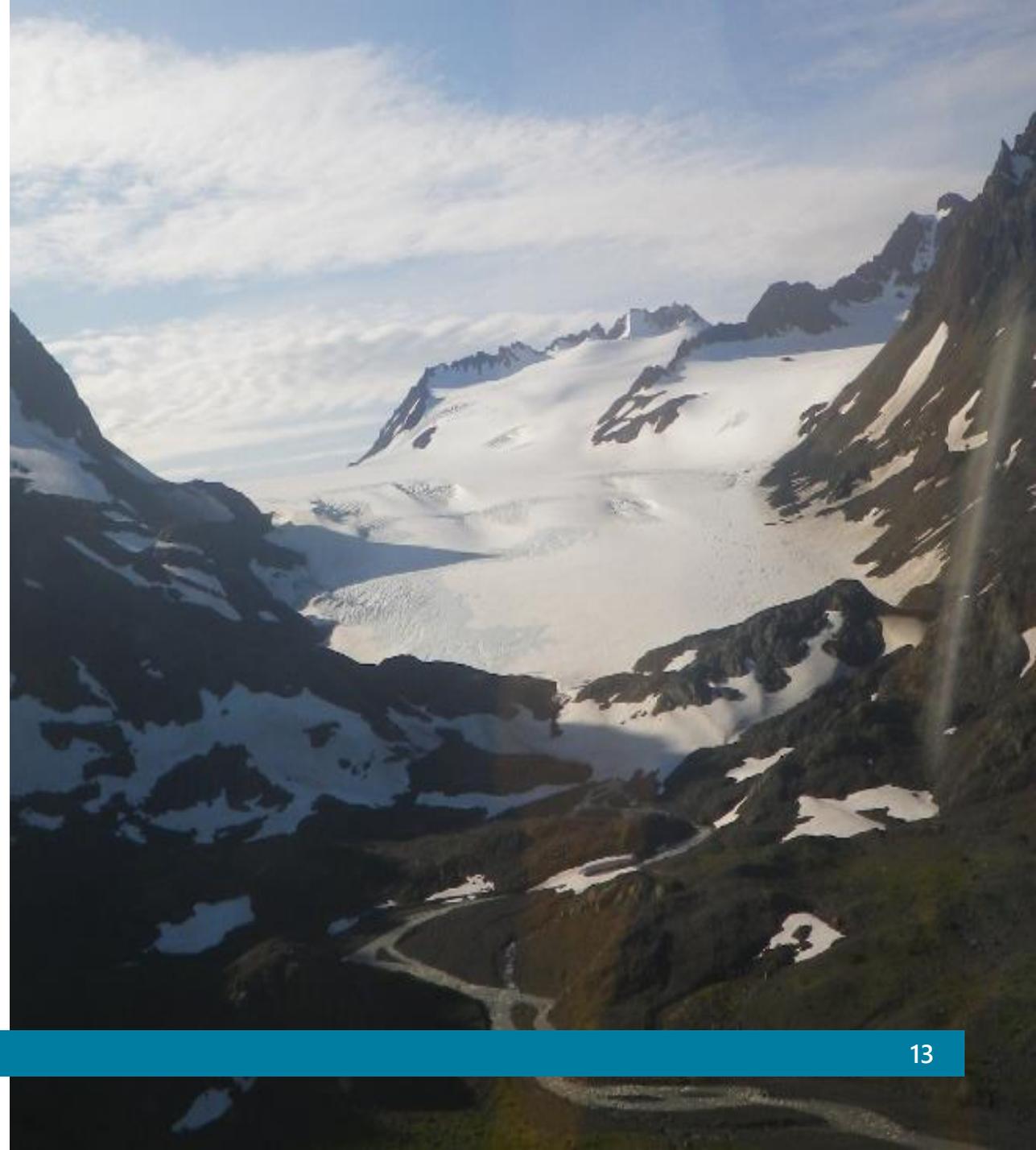
West Fork Upper Battle Creek Diversion

- ▶ Diversion location 2 miles southwest of Bradley Lake
- ▶ Diversion 600 feet above Bradley Lake
- ▶ Convey water by pipe



Battle Glacier Source

- ▶ Glacier is a form of energy storage
- ▶ Basin increases contribution area of Bradley Lake
- ▶ Higher elevation receives greater precipitation



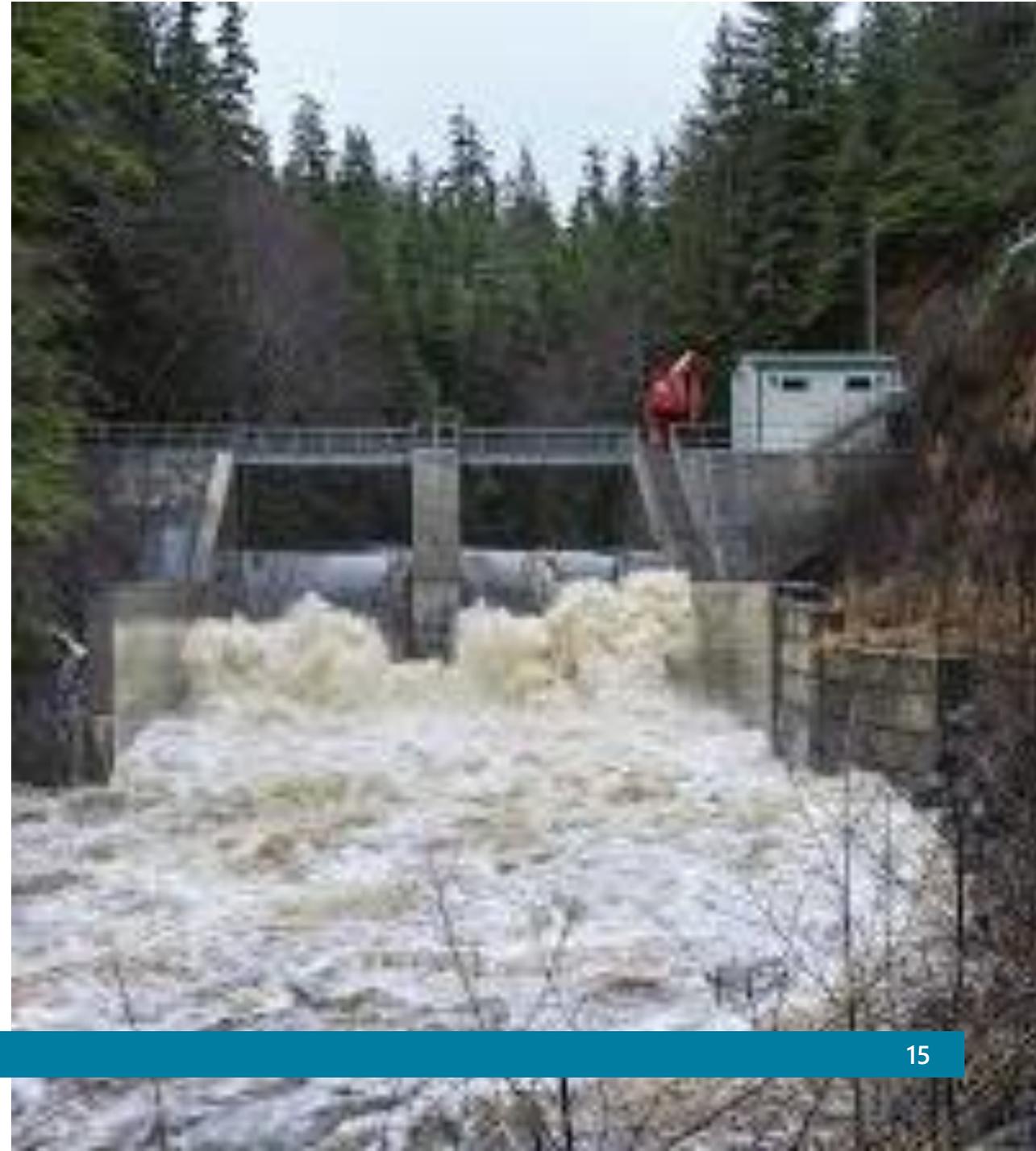


West Fork Upper Battle Creek Diversion

- ▶ Stage 2 Diversion show under construction
- ▶ Stage 3 under construction and to be finished in the next month
- ▶ Install pipe and complete project in 2020.

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



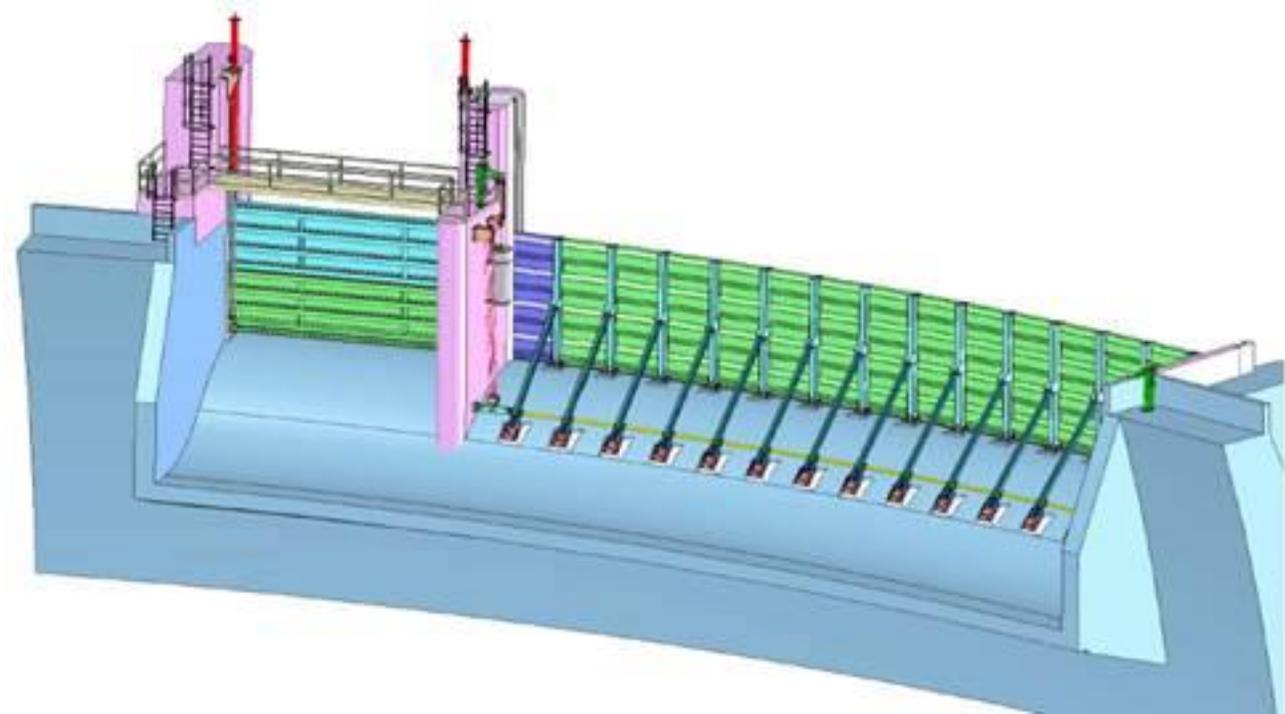


Swan Lake

- ▶ Owned by Southeast Alaska Power Agency (SEAPA)
- ▶ Most years would spill (storage limited)

Swan Lake Spillway Raise

- ▶ Gated spillway
- ▶ Flashboards 78 feet wide & 17 feet tall
- ▶ Increase storage by 25%
- ▶ Flashboards can be pulled during flood situation





Bradley Lake Fish Water Release

- ▶ Salmon & point of compliance
4 miles downstream of dam
- ▶ Historically have over released
30%
- ▶ Install computer program and
change valves
- ▶ Tighter control to save up to
5,000 MWh energy

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



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