ALASKA ENERGY AUTHORITY

HB 301 OVERVIEW

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House Energy Committee
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ALASKA ENERGY AUTHORITY

AEA Programs and Services

ALASKA ENERGY AUTHORITY

AEA works to diversify Alaska's energy portfolio, engages on energy planning and policy, invests in Alaska's energy infrastructure, and provides rural Alaska with technical and community assistance.

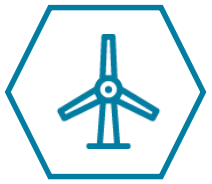
Railbelt Energy – AEA owns the Bradley Lake Hydroelectric Project, the Alaska Intertie, and the Sterling to Quartz Creek Transmission Line — all of which benefit Railbelt consumers by reducing the cost of power.

Power Cost Equalization (PCE) – PCE reduces the cost of electricity in rural Alaska for residential customers and community facilities, which helps ensure the sustainability of centralized power.

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.

Alternative Energy and Energy Efficiency – AEA provides funding, technical assistance, and analysis on alternative energy technologies to benefit Alaskans. These include biomass, hydro, solar, wind, and others.

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.



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

What is a Renewable Portfolio Standard?

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Renewable Portfolio Standard (RPS)

A requirement on retail electric suppliers…
To supply a minimum percentage or amount of their retail load…
With eligible sources of renewable energy

Typically	Backed with incentives of some form (financial or other)
Often	Accompanied by a tradable renewable energy certificate (REC) program to facilitate compliance
Never	Designed the same in any two states

House Bill 301

- House Bill (HB) 301 promotes energy **independence**, **long-term cost reductions**, and **competitive markets** in Alaska's Railbelt.
- HB 301 aligns Alaska with **30 states** and **two territories** in creating a renewable portfolio standard on the Railbelt.
- A key element of the Governor's RPS is a firm commitment to transition to **30% renewable power by 2030** and **80% by 2040**.
- Expanding our renewable energy portfolio is the **best way to diversify our supply** thus increasing Alaska's energy security.

Prior Legislative Action

AN ACT DECLARING A STATE ENERGY POLICY.

Be it enacted by the Legislature of the State of Alaska

***Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:
LEGISLATIVE INTENT. It is the intent of the legislature that

(1) the state achieve a 15 percent increase in energy efficiency on a per capita basis between 2010 and 2020;

(2) the state receive 50 percent of its electric generation from renewable and alternative energy sources by 2025;

(3) the state work to ensure a reliable in-state gas supply for residents of the state;

(4) the power project fund (AS 42.45.010) serve as the main source of state assistance for energy projects;

(5) the state remain a leader in petroleum and natural gas production and become a leader in renewable and alternative energy development.

Section 2. Permanent law. See Table of Disposition of Acts.

Approved: June 16, 2010
Effective: September 14, 2010

2010 Temporary Special Acts and Resolves, An Act Declaring a State Energy Policy, Chapter 82

Recent Evolution RPS Standards and Goals

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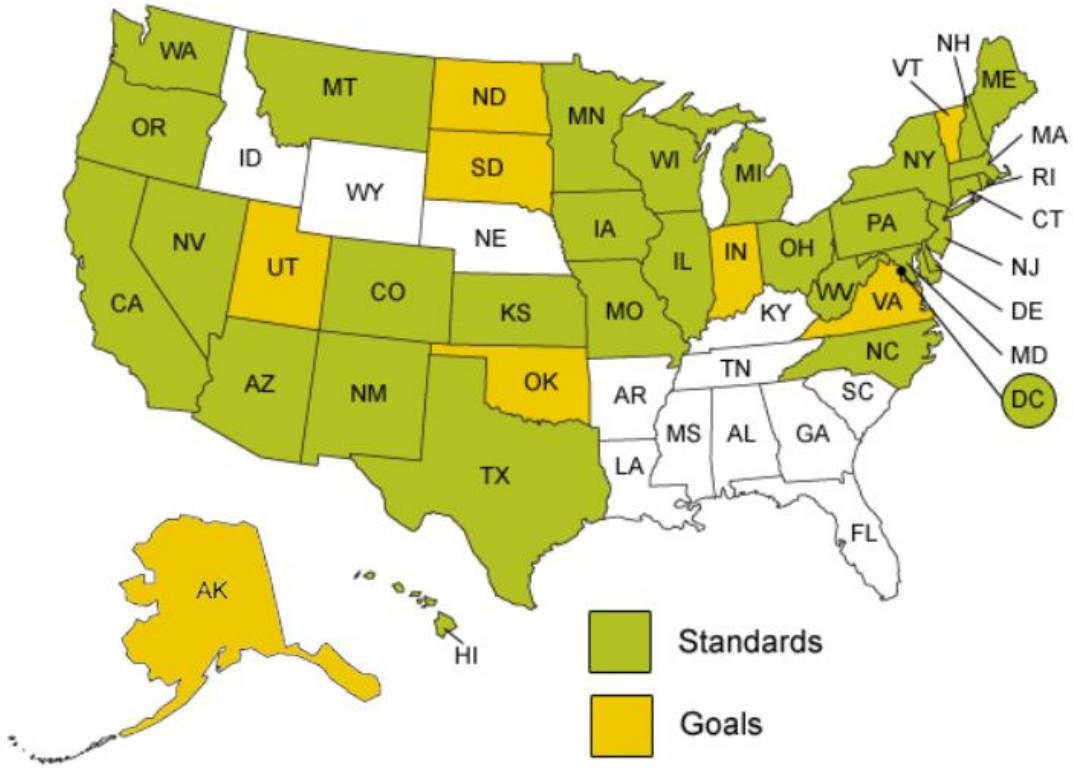
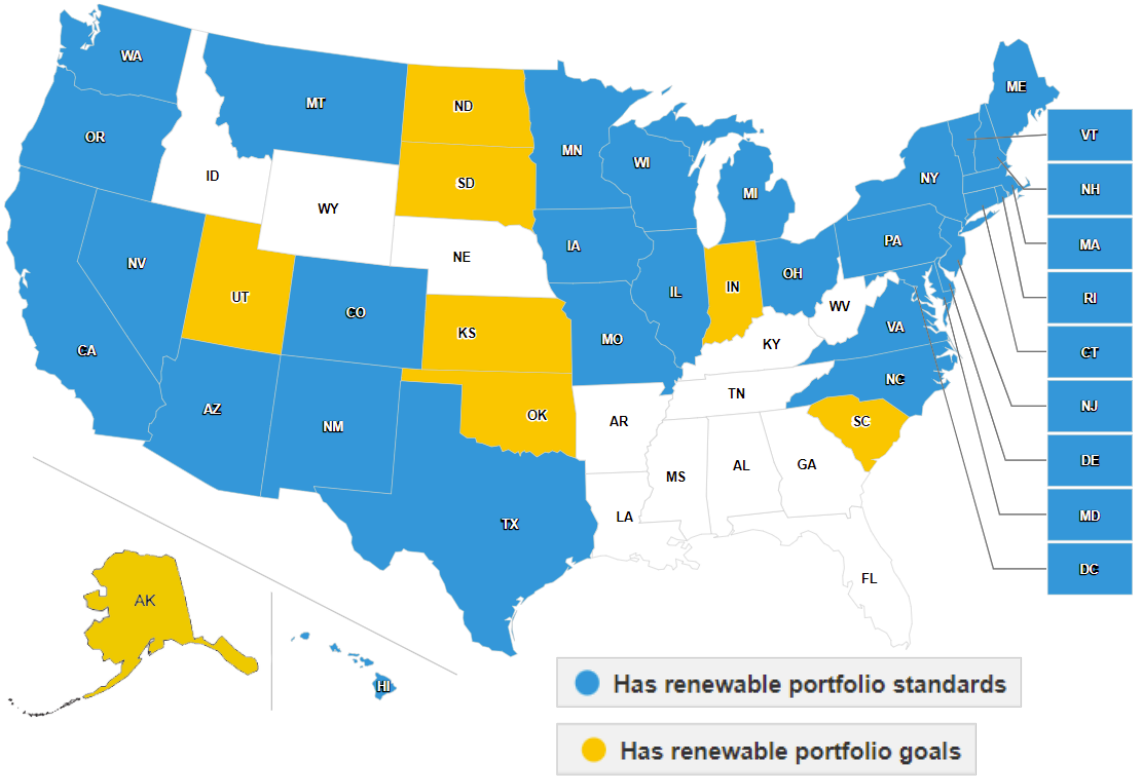
RPS policies exist in 30 States and DC; apply to 58% of total U.S. retail electricity sales

JANUARY 2012



Source: N.C. Solar Center at N.C. State University, Database of State Incentives for Renewables and Efficiency (accessed July 2012). (Correction: Amended source corrects the source listed in original publication of February 3, 2012.)
Note: The map includes West Virginia as a State with a Renewable Portfolio Standard, although the Interstate Renewable Energy Council categorizes it as a goal State rather than an RPS State.

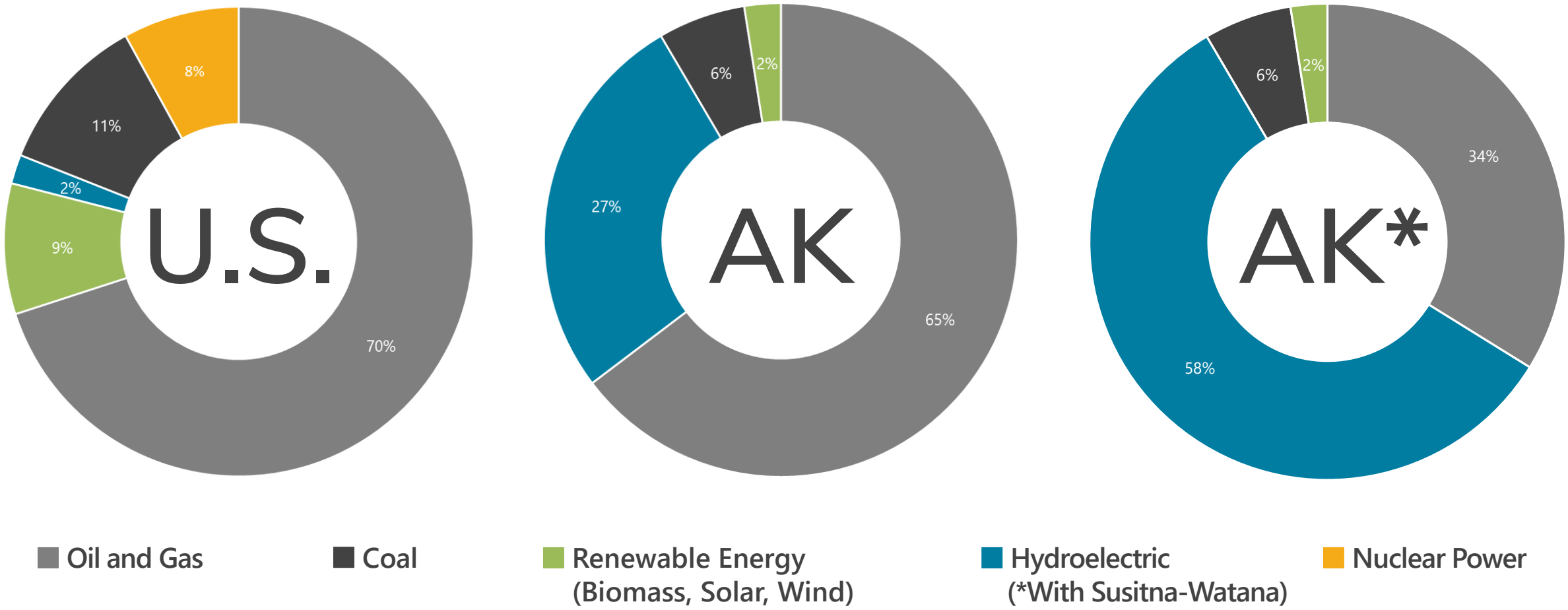
SEPTEMBER 2020



Source: Database of State Incentives for Renewable Energy & Efficiency® September 2020

HOW DO WE GET THERE

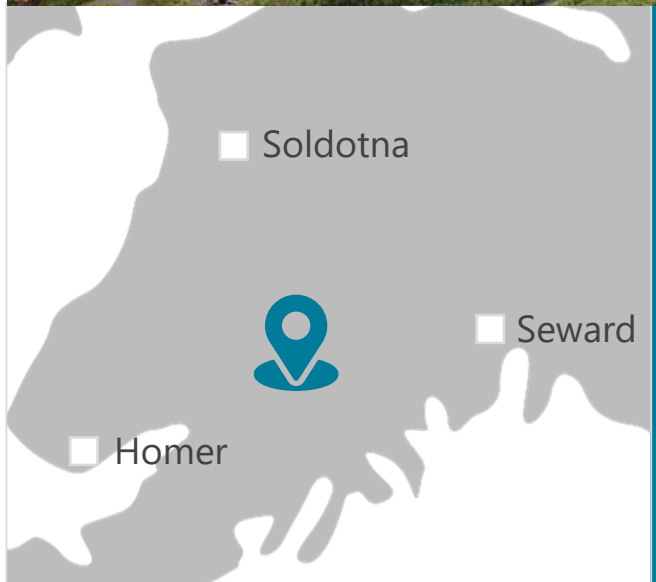
Energy Production Profile by Source (%)



Bradley Lake Hydroelectric Project

Hydroelectric power is Alaska's largest source of renewable energy — and Bradley Lake is Alaska's largest hydro facility.

- **Location** – The Bradley Lake Hydroelectric Project is located 27-air miles northeast of Homer on the Kenai Peninsula
- **Benefits –** Provide low cost energy to 550,000+ members of Chugach Electric Association, City of Seward, Golden Valley Electric Association, Homer Electric Association, and Matanuska Electric Association
- **Annual Energy Production –** ~10% of Railbelt electricity at 4.5 cents/kWh (or ~54,400 homes/year) and over $20 million in savings per year to Railbelt utilities from Bradley Lake versus natural gas
- **Status** – Energized in 1991

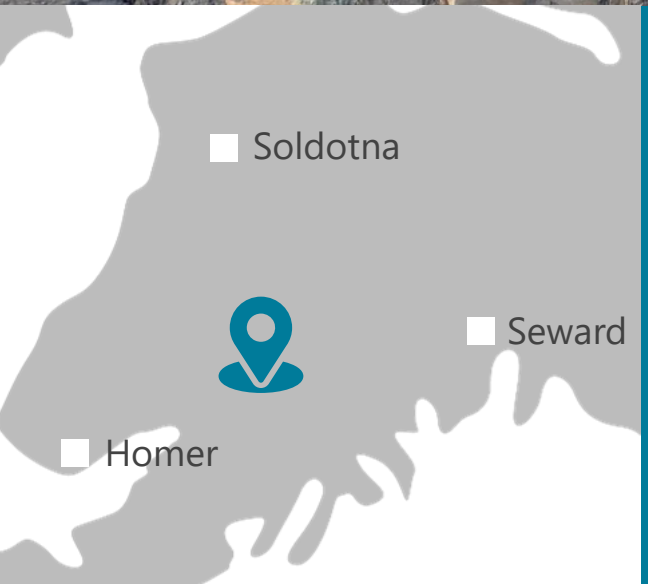


- **Dam Height –** 125 feet
- **Dam Elevation –** 1,190 Feet
- **Reservoir Length –** 4 miles
- **Reservoir Width –** 1.3 miles
- **Installed Capacity –** 120 MW
- **Annual Energy –** 400,000 MWh
- **Cost –** ~$400 Million

Dixon Diversion Project

The proposed Dixon Diversion Project would expand the size of the largest hydro project in Alaska — the Bradley Lake Hydroelectric Project.

- **Location –** The Dixon Diversion Project is located five miles southwest of Bradley Lake
- **Studying Two Options –**
  - Alternative 1 – Tunnel to Bradley Lake
  - Alternative 2 – Run-of-River Powerhouse on Martin River
- **Benefits –** Could provide annual electric energy for 17,000-40,000 homes on the Railbelt. (Bradley Lake Hydroelectric Project: 54,000 homes)
- **Status –** Alternative analysis underway



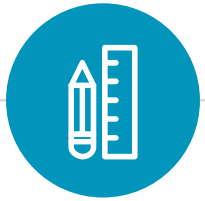
- **Installed Capacity –** ≤ 180 MW
- **Annual Energy –** 100,000-500,000 MWh
- **Cost –** ~$160-500 Million

Dixon Diversion: Next Steps

Fiscal Year 2022

- Establish river gauge
- Initiate Bradley Lake FERC License Amendment
- Alternatives Analysis Report (Conceptual Design

$345,000



Fiscal Year 2023

- Detailed mapping/topography
- License Amendment Consultations
- Environmental Studies
- Hydrology Studies
- Initial Geotechnical Investigations
- Preliminary Design

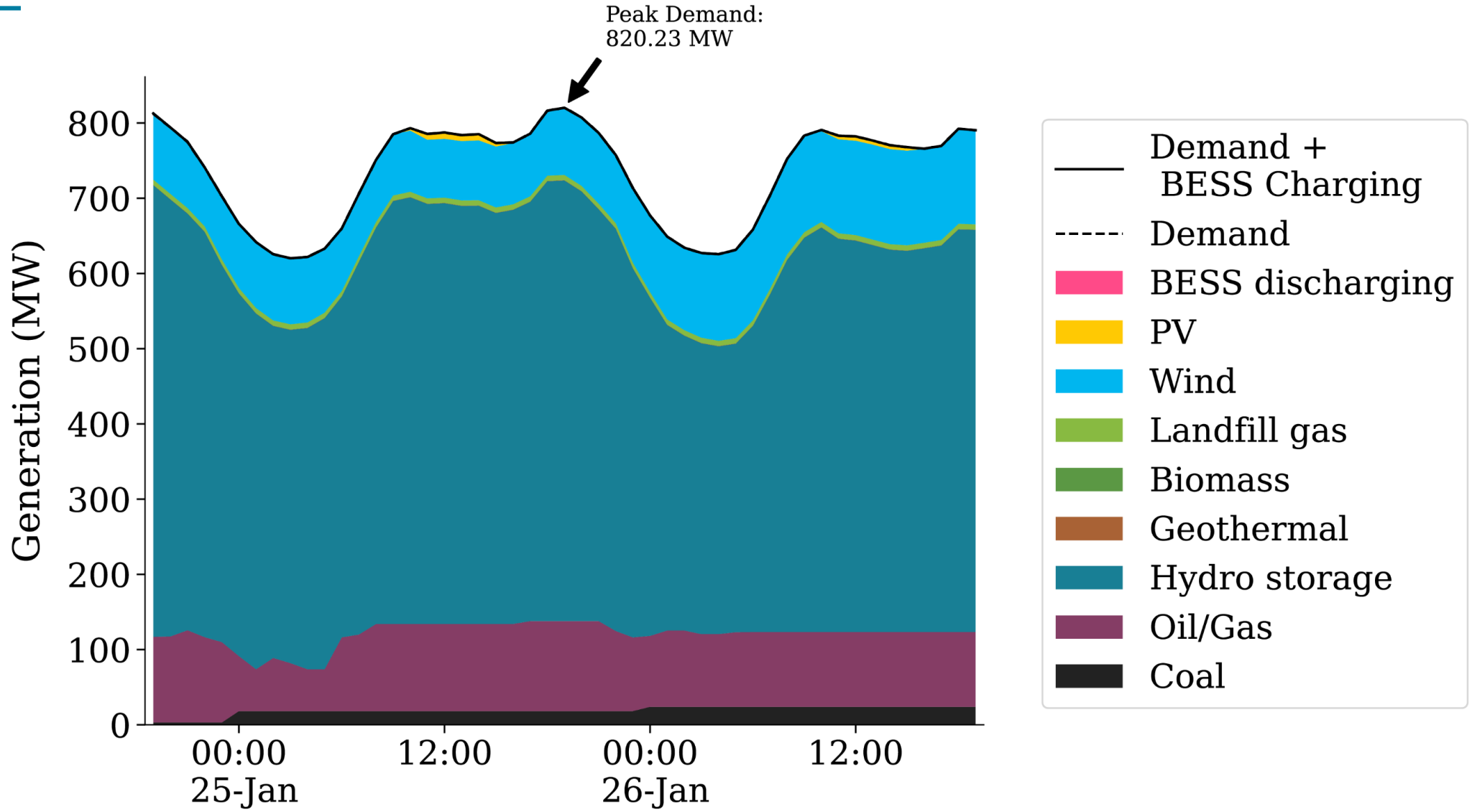
$1.5 Million

Fiscal Year 2024

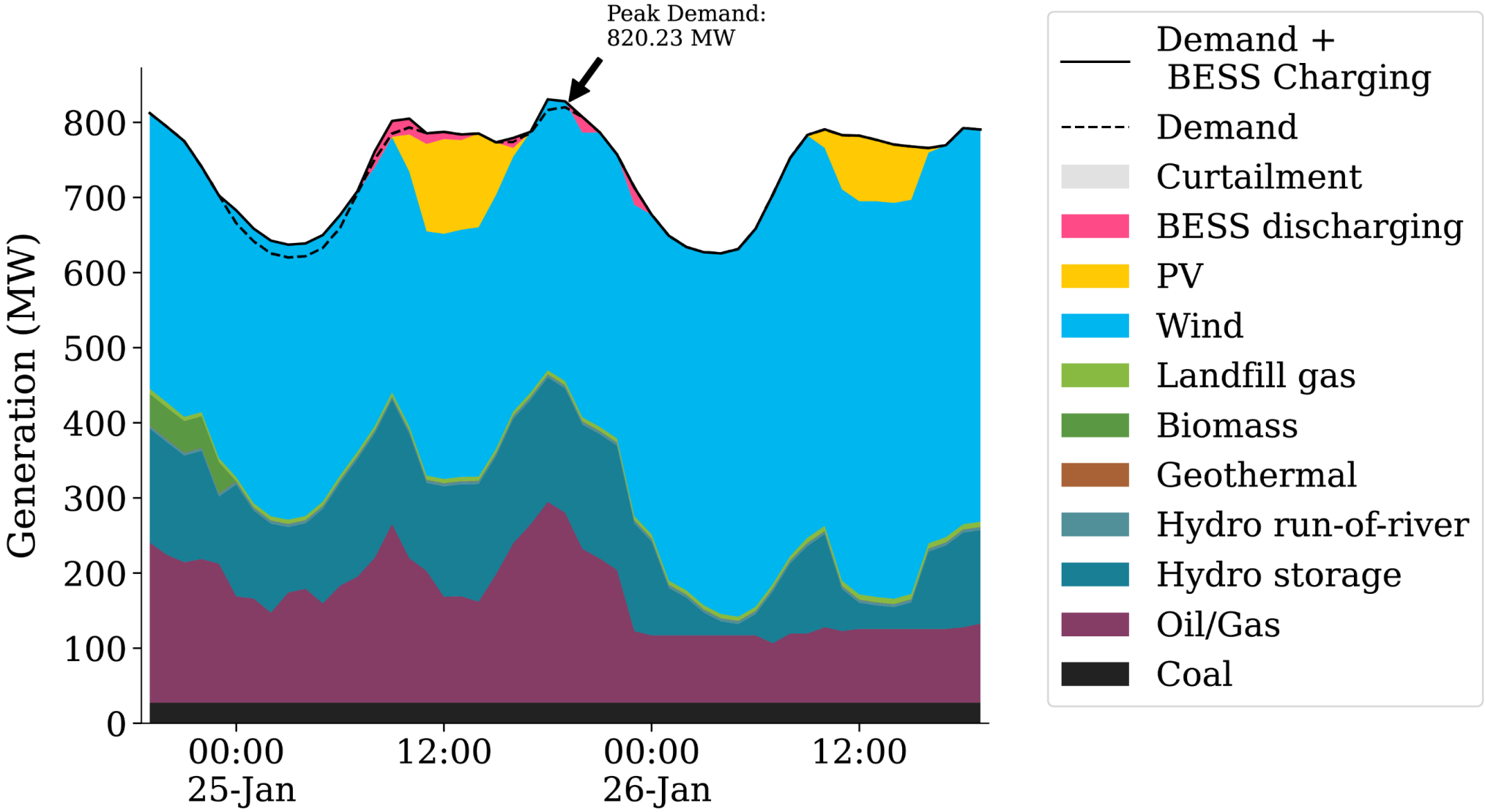
- Feasibility Design and Hydrology
- Environmental Studies
- Draft License Amendment
- Detailed Geotechnical Investigations
- Operations/Power Modeling
- Environmental Assessment

$2.5 Million

Peak Demand Scenario on Coldest Day of Year — Hydro



Peak Demand Scenario on Coldest Day of Year — Wind & Solar



Railbelt Infrastructure Upgrades

The Railbelt region of the State has seen significant changes to its energy infrastructure in the last 10 years. As a result of these changes transmission enhancements are necessary.

- The Bradley Lake Hydroelectric Project is managed by the Bradley Lake Project Management Committee (BPMC), which is **comprised of a member from each of the five participating Railbelt utilities** — Chugach Electric Association, Golden Valley Electric Association, Homer Electric Association, Matanuska Electric Association, Seward Electric Association — and AEA.
- AEA and the BPMC have identified **several opportunities to optimize the value provided by the project** to more than 550,000 Alaskans along the Railbelt.
- These projects will remove transmission constraints, improve grid resiliency, and allow for better use of the Bradley Project's potential by **increasing its ability to deliver more low-cost, renewable energy throughout the Railbelt grid** and enhance our ability to utilize that power most flexibly and cost-effectively.

Required Project Work Summary

Project Name	Scope	Schedule	Budget
Upgrade Transmission Line from Bradley Junction to Soldotna	Construction of a second 115 kV transmission line from Bradley Junction to the Soldotna Substation	2022-2029	$66 Million
Upgrade Transmission Line from Soldotna to Sterling	Upgrade of the transmission line from 115 kV to 230 kV from the Soldotna Substation to the Sterling Substation in accordance with the results of engineering studies	2022-2029	$17 Million
Upgrade Transmission Line from Sterling to Quartz Creek	Upgrade of the transmission line between the Sterling Substation and Quartz Creek Substation (SSQ Line) from 115 kV to 230 kV	2022-2029	$53 Million
Battery Energy Storage Systems for Grid Stabilization	Upgrade to existing BESS system in Fairbanks, and also new BESS systems in the Kenai, and Central regions of the grid	2019-2025	$115 Million
Study of Alternative Path to Export Energy Off Kenai Peninsula	Study the feasibility of the best alternative transmission line path to deliver Bradley Project energy off the Kenai Peninsula	2022-2024	$10 Million

Total $261 Million

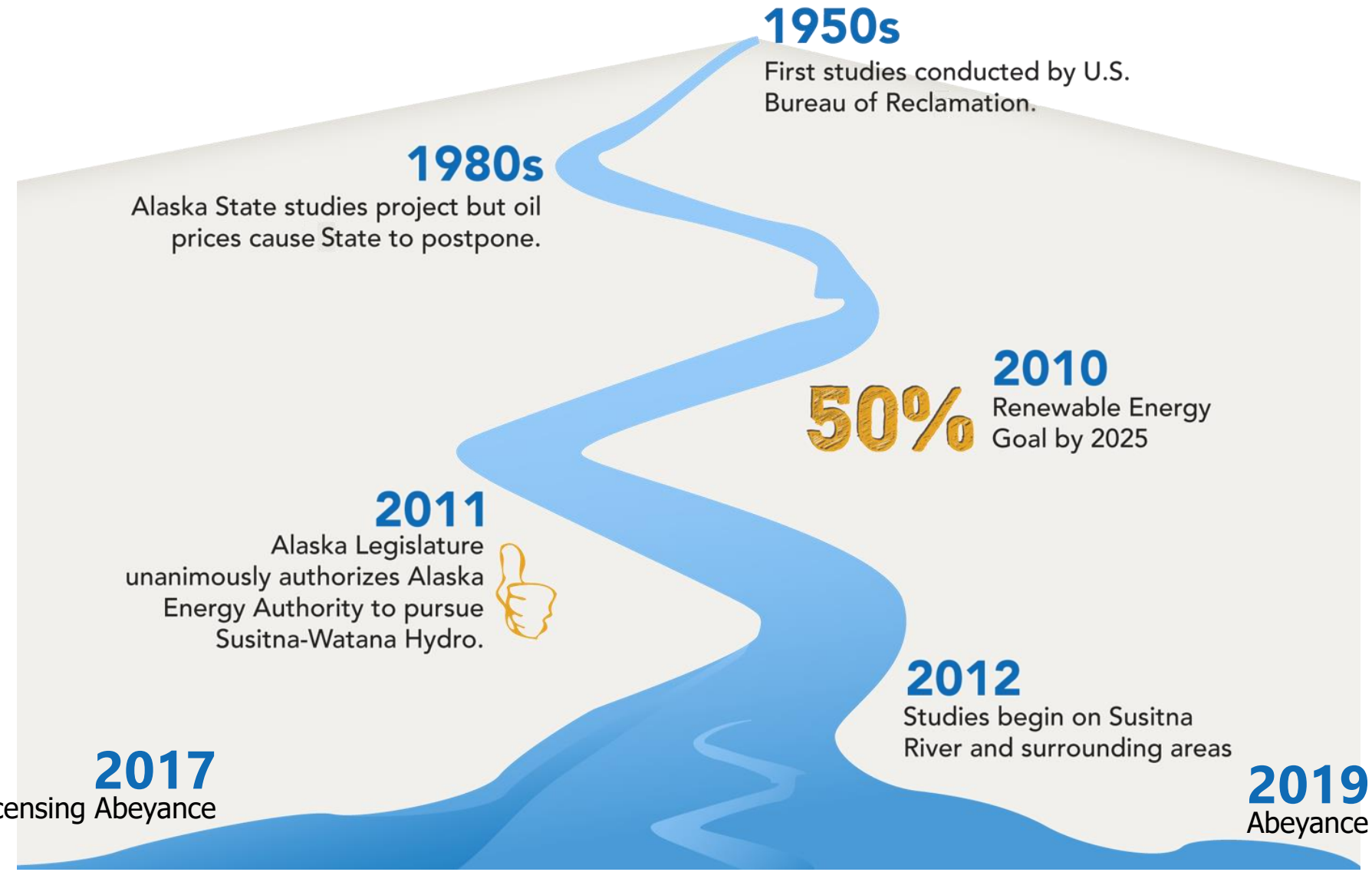
Alaska Intertie

- Constructed in the mid-1980s, the Alaska Intertie is a 170 mile-long, 345 kilovolt (kV) transmission line from Willow to Healy
- Operated by AEA and Railbelt utilities, the transmission line improves reliability within Railbelt system
- Allows Golden Valley Electric Association (GVEA) to connect to and benefit from lower cost power
- Between 2008 and 2018, the Intertie provided an average annual cost savings of $30 million to GVEA customers

Maximizing Clean Energy for the Railbelt

- **Bradley Lake Expansion (Spillway Raise) –** $4 million
- **Bradley-Soldotna 115kV Line –** $66 million
- **Soldotna-Quartz Creek (and Substation) –** $70 million
- **Bernice Lake-Beluga HVDC –** $185 million
- **Dave's Creek-University 230kV Line –** $58 million
- **Grid Stabilization –** $115 million

Susitna-Watana Hydroelectric Project History



Cook Inlet Natural Gas Value into the Future

Opportunities:

- Home heating on the Railbelt (including potential future expansion)
- Power generation fuel on an as-needed basis and gas storage (CINGSA)
- Industrial customers in the Cook Inlet
  - Combined heat and power applications stand alone customers
  - Possibility for green hydrogen production
  - In-state industrial use
  - Potential pipeline transport for minerals extraction

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

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APPENDIX

Susitna-Watana Hydroelectric Project Timeline