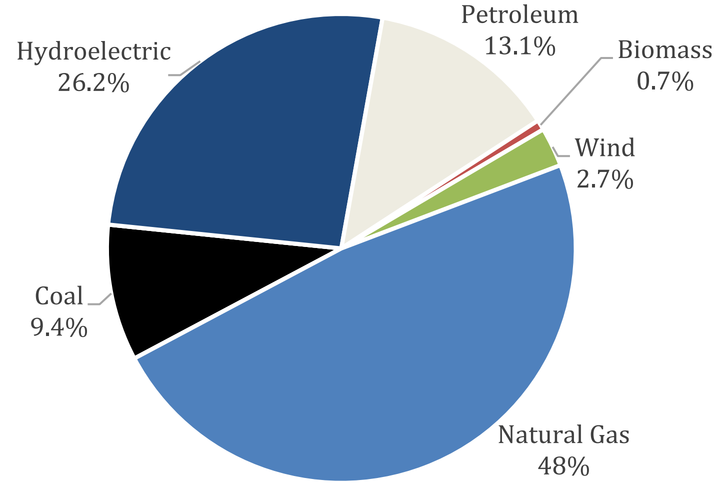
State Brief: Alaska

BACKGROUND

Alaska's Electricity Mix, 2016



Total GWh: 6,337 Source: EIA

Alaska's electric generation mix is predominately comprised of natural gas, hydroelectric power, petroleum, and coal. Alaska's economy is heavily reliant on crude oil and natural gas. Permanent residents of Alaska receive an annual dividend from mineral royalties through the Alaska Permanent Fund. The industrial sector accounts for over half of energy consumption in the state. Even with subsidies and the Power Cost Equalization Program, Alaska has some of the highest energy costs in the nation. Not only are energy costs in remote areas high, energy costs vary across the state depending on location, remoteness, type of nearby power generation, and population. Complicating electricity use in The Last Frontier, communities throughout the state are not connected to the road system and lack access to large, interconnected electric grids. This leads to dependence on costly diesel fuel for electricity and home heating.

Alaska is unique in that it is the largest U.S. state by area, has the lowest population density, and has more territory held as tribal lands than any other state. The state has lower than average energy demand and a substantial potential for energy development across the state. Alaska's large coastline provides significant wind energy potential while the rivers provide high hydroelectric power potential. Some utilities' electric portfolios, such as Alaska Electric Light and Power Company and Kodiak Electric Association are sourced primarily from hydroelectric resources. Alaska does not have a renewable portfolio standard but does have a nonbinding goal to reach 50% renewable energy by 2025.

The Governor appoints the five members of the Regulatory Commission of Alaska (RCA), which regulates 132 electric utilities, nine natural gas utilities, and 23 pipeline companies in the state. The state currently has an Independent Governor, Bill Walker, and Republicans hold the majority in both the House and Senate.

POLICY STRENGTHS AND OPPORTUNITIES[1]

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[2] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for clean energy technologies. Tier 3, market expansion policies, create incentives and other programs in order to

[1] For more information on policy opportunities, please visit the SPOT for Clean Energy. For more information on specific policy actions related to these opportunities, please review the *Clean Energy Policy Guide for State Legislatures*.

[2] V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

GRID MODERNIZATION

Policymakers can view grid modernization as creating a policy structure that supports and ties together many other initiatives, such as smart metering infrastructure, customer data management, energy storage, electric vehicle infrastructure, and utility business models.

In the last two decades, new digital technologies have enabled utilities to better manage the grid and provide opportunities for consumers to customize their services to fit their priorities. These technologies allow a two-way flow of information between the electric grid and grid operators and between utilities and their customers. Emerging technologies improve system reliability and resiliency by enabling better tracking and management of resources. These technologies allow grid operators to incorporate central and distributed energy resources, energy storage technologies, electric vehicles, and assist in addressing the challenges associated with planning, congestion, asset utilization, and energy and system efficiency. On the customer's side of the meter, advanced metering infrastructure, dynamic pricing, and other emerging technologies allow an exchange of information and electricity between a consumer and their electric provider.

Alaska has more than 150 stand-alone electrical grids serving rural villages and a large transmission grid in the southeast. The state does not have a grid modernization plan nor does the state energy plan address resilience or modernization of grid infrastructure. In September 2017, the U.S. Department of Energy announced funding through the Grid Modernization Initiative (GMI) that includes $6.2 million to an Alaskan focused project partnered with NREL. The goal of this project is to enhance resilience for distribution grids and protect the grid from harsh weather, cyber-threats, and dynamic grid conditions by incorporating microgrids, energy-storage, and grid technologies.

There are supportive policies that Alaska's policymakers could adopt to begin in-state modernization efforts.

1. Develop a grid modernization strategy through a stakeholder process. States may also decide to require that utilities propose a ten-year grid modernization plan within a specified timeframe. Legislation could require plans to outline a clear set of grid modernization goals and describe methods to measure, report, verify, and enforce progress towards those goals. States might also provide incentives or cost recovery mechanisms for utilities to meet grid modernization goals.

2. Require that the Alaska Energy Authority support the development of regional plans to enhance cybersecurity, integrate distributed energy resources (including electric vehicles and energy storage), increase smart meter deployment and demand response and/or demand-side management (DSM) programs, and measure and report on the results of grid modernization efforts. While there is no statewide policy requiring smart meters in Alaska, utilities have taken the lead on residential smart meter deployment.

3. Alaska does not have clear state policies governing customer data access and privacy protections. To address this, policymakers should develop legislation or rules that, at minimum, do the following: clarify who owns the energy data associated with customer energy usage; protect customer privacy; outline the process for allowing direct access to data by third parties; and promote access to the highest resolution of data by third parties to facilitate market expansion. The state could establish customer access to energy data through the Green Button Connect program, for example.

Additionally, the adoption of incentives for or a requirement to integrate a certain amount of energy storage on the grid alongside enhancing renewable energy and electric vehicle policies would support modernization efforts and improve the chances of successful grid modernization.

ENERGY STORAGE

Energy storage offers a unique opportunity to dynamically manage supply and demand while maximizing the value of grid resources. By deploying storage in strategic locations, utilities can more effectively manage their energy portfolios. First, storage provides management of intermittent demand – helping to flatten peak demand requirements for the utility. Second, the responsiveness of energy storage can allow the utility to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, storage can dispatch power to better integrate intermittent resources like renewable energy. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider extending demand charges to the residential sector, this will become an even more important issue.

Storage provides multiple benefits to both the customer and the utility. State planning and regulatory policies can help maximize these benefits by 1) establishing a framework for easy integration of energy storage into the grid and 2) establishing a marketplace that monetizes the benefits of energy storage for cost effective investment.

The remote communities in Alaska could greatly benefit from energy storage deployment across the state. While Alaska currently does not have any polices to support energy storage development, the Department of Energy, the Alaska Center for Energy and Power at the University of Alaska Fairbanks, and other public and private entities have collaborated on various energy storage projects throughout the state. There are several opportunities for developing supportive state policies:

1. Amend existing interconnection policies to ensure that storage can connect to the grid through a transparent and simple process. IREC has produced a series of interconnection protocols that states may easily adopt. The state could establish best practices for interconnection in statute, or legislation could provide an instruction to the Power Review Board to direct these best practices.

2. Instruct the utilities commission to evaluate the value of energy storage in multiple strategic locations across utility systems and consider a requirement to deploy storage where it will be cost effective, or identify the price point at which it will become cost effective.

3. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires alternatives (NWAs) to large transmission and generation investments. Alternatively, states might want to require utilities to develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

4. Consider adding a mandatory energy storage procurement target or requirement for energy storage with a documented process for periodic review of progress towards that goal. Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework. Five states currently have energy storage goals that range from five megawatt hours (MWh) to two gigawatts (GW).

5. Finance and incentivize energy storage for customers and utilities. Incentives could allow customers to use storage to manage their electric load and store locally produced renewable energy. Policymakers could allow utilities that provide incentives to customers to install smart meters to enable dynamic energy management from multiple distributed battery systems. Finally, financing energy storage installations for commercial businesses would help reduce their demand charges. Policymakers may want to start first with a policy to incentivize solar system owners.

Improvements to the state's energy storage policies, including the adoption of incentives for or a mandate to integrate a certain amount of energy storage on the grid would enhance efforts to modernize Alaska's grid. Enhancing renewable integration and electric vehicle policies, as described below, would likewise improve the chances of successful grid modernization.

MAINSTREAMING RENEWABLES

As the renewable energy industry has matured, technology has improved, and global production of generating equipment has increased, renewable energy is increasingly seen as the least costly and lowest risk form of energy (excluding energy efficiency). A Bloomberg New Energy Finance report from this year predicts that at least 50% of total global electricity will be renewable by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interests of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

Alaska's legislature created the state's Renewable Energy Fund (REF) in 2008, which has been extended until 2023 to assist in funding renewable energy projects across the state. In October 2017, Governor Bill Walker issued an Executive Order establishing the Alaska Climate Change Strategy and the Climate Action for Alaska Leadership Team. The draft Alaska Climate Change Policy, released for public comment in May 2018, includes goals to reduce greenhouse gas emissions by 30 percent (from 2005 levels) by 2025 and to meet a 50 percent by 2025 renewable energy target. To support these goals and to reduce barriers to customer and utility participation in the renewable energy market, Alaska might consider several policies.

Customer-Oriented Policies

1. Interconnection, net metering, and streamlined permitting – In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. While Alaska has a state-specific net metering policy, Alaska's policymakers could consider adopting IREC's model interconnection procedures, removing net metering system size limitations and the aggregate capacity limit, and crediting net excess generation at the customer's retail rate. Applications for aggregated net metering could include commercial and agricultural properties and public entities like state and local governments, universities, and schools. The state might also consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program. State incentives, such as tax credits, financial incentives, or loans may be tied to systems that are established within a designated streamlined permitting jurisdiction.

2. Shared Renewables – Due to building and property attributes and ownership issues, many customers are unable to install renewable energy technologies. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the generation provided by the system. While there are no state policies addressing shared renewables in the state, some utilities are developing community solar projects on their own. To expand program participation, the state might consider adopting a virtual net metering policy. Virtual net metering allows a customer to receive credits from a shared power generation system as if the generation were on site. Virtual net metering is different from a power purchase agreement (PPA), which pays the customer for the proportion of power they produce, and that income is taxable. PPA tax implications can adversely impact the economics of the system and may come as a surprise to the participant. Because virtual net metering is treated as a credit on the customer's bill, the customer can avoid the tax implications of a PPA payment.

   Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be encouraged either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to low-income customers. Alaska may consider coordinating a shared renewable program with implementation of the existing federal Weatherization Assistance Program to provide recipients of assistance with participation in a shared renewable system.

   There are several additional policy options that Alaska might consider to promote renewable energy uptake by low- and moderate-income consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.

3. Corporate Procurement – Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. In just the last four years, over nine GW of renewable contracts have been announced by corporate entities. In the first quarter of 2018 alone, corporations signed 14 agreements for over 1700 MW of renewable energy. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. Alaska's policy allows companies to purchase RECs and develop or lease onsite renewable energy projects. There is currently no policy enabling customers to purchase renewable energy through the grid. Policies to increase corporate access to renewable energy can be designed to meet the six Corporate Renewable Energy Buyers' Principles. Alaska might consider expanding access to onsite third-party PPAs and encouraging the development of and corporate participation in shared renewable projects.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. States might see an emissions or clean peak standard as the next step in a progression from renewable portfolio standards (RPSs). To increase utility adoption of clean energy technologies, Alaska's policymakers might consider the following:

1. Emissions standards can take a technology neutral approach that looks at the total emissions of the utility portfolio and drive emissions down with a combination of renewables, traditional fuels, efficiency, and technological advances. Utilities can achieve emissions reductions through 1) a carbon portfolio standard approach, or 2) a market-based approach. A portfolio emissions standard sets emissions reduction targets to be reached over time. This can be implemented through the long-term planning process or by establishing a maximum allowable rate of emissions per unit. Under a market-based approach, a state or a group of states might set a certain emissions reduction target, for example, 20% below 1990 levels by 2040. This reduction is achieved by the distribution of annual emission allowances that decrease to the point that the standard is met in 2040. One of the advantages of a market-based program is that it is designed to reduce emissions in the most economically efficient manner possible. Such a standard can also address other concerns such as pollution, asthma risk, environmental justice and water use.

2. Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest. These objectives can be met through different policy options including: planning and procurement that focuses on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

An estimated 54% of new car sales will be electric by 2040. Therefore, a key part of building a modernized grid involves designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid. One of the most important barriers to increased adoption of EVs is the consumer's awareness of the availability of EV charging stations. Ultimately, drivers want to be sure that their car will get them where they need to go. Another important barrier to increased adoption of EVs is their higher up-front cost as compared to similar conventionally fueled vehicles. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety."

The Alaska Department of Transportation must evaluate the cost, efficiency, and availability of alternative fuels every five years and purchase or convert to these vehicles whenever practical. In addition, the statute (A.S. 44.42.020.a11) enables the Department to participate in joint ventures to promote access to alternative fuels. Alaska does not have incentives for citizens to purchase EVs and has the lowest vehicle miles traveled of all 50 states. The state also does not have electric vehicle supply equipment (EVSE) incentives. There are a number of opportunities to expand the market for EVs in Alaska:

1. EV and EVSE Financing and Financial Incentives – Providing additional financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are

one of the simplest methods for addressing higher up-front costs of EVs and EVSE. While sales tax credits are typically applied at the time of purchase, property and income tax credits may do less to address upfront cost barriers as receipt of the credit is typically removed in time from the purchase.[3] States have adopted several other financial incentives including low-interest loans, grants, vouchers, and rebates. A handful of states qualify EV charging stations under their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations.

2. Charging Infrastructure Plan – Locating charging infrastructure is different from locating conventional fueling stations. For the most part, EVs are cars used for commuting and local trips. Furthermore, while a driver of a conventional vehicle stops only briefly at a gas station for the specific purpose of filling up, a driver of an EV is generally looking to refuel when they are parked for a longer period of time, for example when going shopping, going to a restaurant, or going to work. Charging infrastructure plans should target these types of locations and attempt to pair the appropriate level of charging infrastructure with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop such a plan through a stakeholder process.

3. Parking Infrastructure Requirements – In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Alaska has a statewide energy policy, which could be updated to include EV parking infrastructure or make-ready charging stations.

NEWS

- July 12, 2018: Alaska Wants to Drill for Oil and Fight Warming
- July 6, 2018: Alaskan City Eliminates Fuel Oil Reliance with Energy-Efficient Retrofits
- June 29, 2018: As Funding Dries Up, Alaska Seeks New Way to Pay for Rural Power
- June 22, 2018: Two Alaska Projects Selected for Federal Marine Energy Innovation Grant Funds
- June 10, 2018: Can Alaska Rely on Oil and Address Climate Change? State Officials are About to Find Out
- June 1, 2018: Face-Off in Alaska Over Refuge Drilling Plan
- March 15, 2018: 'Impossible to Ignore': Why Alaska is Crafting a Plan to Fight Climate Change
- January 9, 2018: Community Solar Project Coming to Anchorage
- March 26, 2017: What Rural Alaska Can Teach the World about Renewable Energy

OTHER RESOURCES

- American Wind Energy Association (AWEA), Alaska: http://awea.files.cms-plus.com/FileDownloads/pdfs/Alaska.pdf
- Alaska Energy Authority: http://www.akenergyauthority.org/
- The Alaska Center for Energy and Power: http://acep.uaf.edu/
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Alaska: http://database.aceee.org/state/alaska
- The Database of State Incentives for Renewables and Efficiency, Alaska: http://programs.dsireusa.org/system/program?fromSir=0&state=AK
- U.S. Energy Information Administration, Alaska: https://www.eia.gov/state/?sid=AK
- National Renewable Energy Laboratory Biomass Maps: https://www.nrel.gov/gis/biomass.html
- U.S. Department of Energy's Alternative Fuels Data Center, Alaska: https://www.afdc.energy.gov/states/ak
- SPOT for Clean Energy, Alaska: https://spotforcleanenergy.org/state/alaska/
- The Rocky Mountain Institute: From Gas to Grid – Building Charging Infrastructure to Power Electric Vehicle Demand
- The GridWise Alliance, EVs - Driving Adoption, Capturing Benefits: http://gridwise.org/evs-driving-adoption-capturing-benefits/
- The Regulatory Assistance Project, Performance-Based Regulation: https://www.raponline.org/event/performance-based-regulation-the-power-of-outcomes-part-1/

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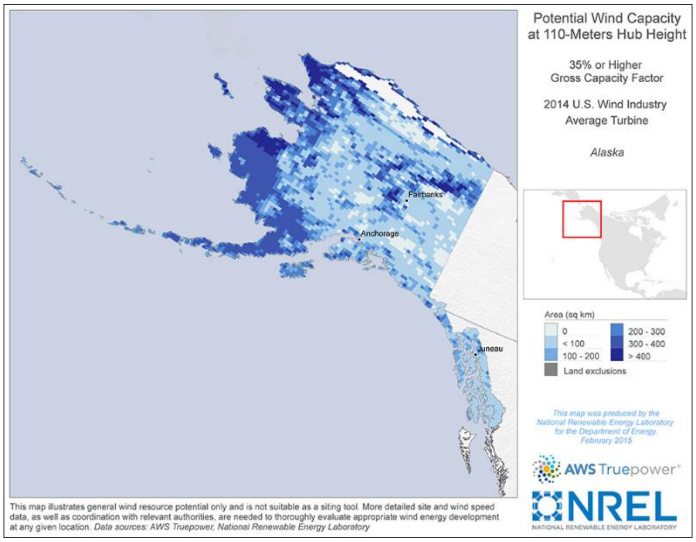
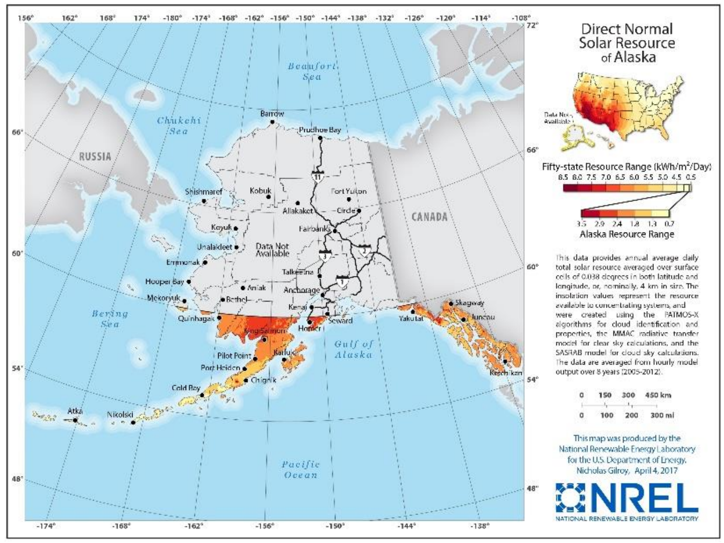
[3] A study by the Congressional Budget Office however suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

ALASKA'S WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/ak[4]
SOLAR https://www.nrel.gov/gis/solar.html





Our Resources

CNEE Homepage: http://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: http://www.aeltracker.org/

Clean Energy Policy Guide for State Legislatures: http://cnee.colostate.edu/cleanenergypolicyguide/

The Energy Policy Podcast: http://energypodcast.colostate.edu/

CNEE Contact Information

Tom Plant, Senior Policy Advisor
Tom.Plant@colostate.edu

[4] Please see your packet for a higher resolution wind energy capacity map.