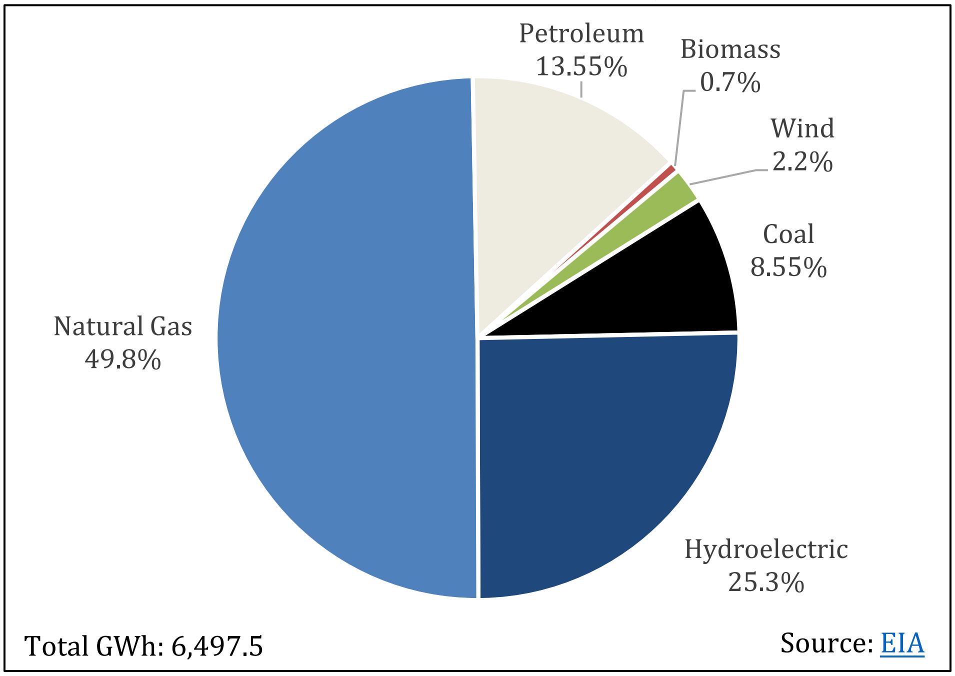
State Brief: Alaska

BACKGROUND

Alaska's Net Electric Generation, 2017



Alaska's electric generation mix is predominately comprised of natural gas and hydropower. The state'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 total 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. As of April 2019, residential energy costs are 73% higher than the U.S. average while commercial costs are nearly double the average and industrial costs are nearly triple. 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. Because of Alaska's harsh winters, energy-intensive industries, and small population, the state's per capita energy consumption is the third highest in the nation.

A 2019 report by the National Association of State Energy Officials and the Energy Future Initiative found that Alaska has 21,756 traditional energy workers (6.5% of total state employment) and an additional 4,617 workers employed in energy efficiency.

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 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 a Republican Governor, Michael Dunleavy. Republicans hold the majority in the Senate, and a coalition of Unaffiliated, Democratic, and Republican representatives holds the majority in the House.

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 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

The transition to a digital economy requires affordable, sustainable, and reliable electricity and presents challenges and opportunities to the grid. Emerging physical and cyber security threats, along with increased demand for faster outage response times, require, at minimum, real-time incident tracking and response capabilities. Increased grid penetration of renewable energy coupled with the adoption of advanced metering, energy storage, microgrids, electric vehicles, and other technologies to modernize our electric system will provide economic benefits, increase security, and ensure more reliable, resilient, and clean electricity. These innovations will require substantial planning and investment in grid technologies.

Grid modernization will require a suite of state and federal policy changes to support advancements in grid technologies, grid management, and utility regulation. Grid modernization strategies, while recognizing regional and inter-state diversity and avoiding one-size-fits-all plans, should take a holistic view of the electric system.

Alaska has more than 150 stand-alone electrical grids serving rural villages and a large transmission grid in the southeast. The state faces many challenges in modernizing its energy infrastructure, especially in rural areas. The GridWise Alliance's latest Grid Modernization Index ranks Alaska in the bottom five states for grid modernization efforts. Alaska is in a good position to modernize grids around the state. 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 project partnered with NREL. The goal of this project is to enhance the resilience of the local distribution grid in the face of harsh weather, cyber-threats, and dynamic grid conditions by incorporating microgrids, energy-storage, and advanced grid technologies.

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

1. Develop a grid modernization strategy through a stakeholder process. Alternatively, states might decide to require that utilities develop and propose a ten-year grid modernization plan to the public utilities commission within a specified timeframe. Utilities would then be required to implement that plan within another specified timeframe. Strategies and/or plans should outline a clear set of grid modernization goals and describe methods to measure, report, verify, and enforce progress towards those goals.

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[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.

2. States might also provide incentives or cost recovery mechanisms for utilities that meet grid modernization goals. Policymakers could consider directing the RCA to evaluate alternative ratemaking mechanisms, performance-based regulation, and/or new utility business models that support grid modernization.

3. Require that the Alaska Energy Authority support the development of Regional Energy Plans that evaluate enhancing cybersecurity, integrating distributed energy resources (including electric vehicles and energy storage), increasing smart meter deployment and demand response and/or demand-side management (DSM) programs, and measuring and reporting 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.

4. 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 possible. The state could establish customer access to energy data through a program like Green Button.

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.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control, for instance, how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to a number of economic and environmental gains.

Two major trends have enabled increased deployment of energy storage: declining costs and technological advances. State policy can help maximize these benefits through a combination of establishing a framework for easy integration of energy storage into the grid and establishing a marketplace that monetizes the benefits of energy storage for cost-effective investment.

The remote communities in Alaska could benefit greatly from the deployment of energy storage. While Alaska 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. The Interstate Renewable Energy Council (IREC) has produced a series of interconnection protocols that states can easily adopt. The state could establish best practices for interconnecting storage in statute, or legislation could provide an instruction to the RCA to adopt new rules.

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 creating 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 limit the amount of utility owned storage; require that a certain amount of storage be targeted to low-income customers; and create carve-outs for storage at the transmission, distribution, and customer levels. Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework.

5. Finance and incentivize energy storage for customers and utilities. Incentives could enable customers to use storage to manage their electric load and store locally produced renewable energy. Incentives in the form of rebates, grants, and tax credits can provide a bridge to scalable deployment for storage. Incentives can be designed to decline as storage values become more readily monetized and/or as the cost of storage decreases. Policymakers could allow utilities that provide incentives to customers to recover the costs of installing smart meters. This would enable dynamic and time-varying energy management from multiple distributed battery systems. This should signal to customers the value of leveraging storage while better aligning customer costs with system costs. Financing energy storage installations for commercial customers could help reduce their demand charges. Policymakers might want to start first with a policy that provides grants to pilot projects. Policy might also target solar system owners. Financial incentives should be designed to ensure that the state will meet other goals including emissions and peak demand reductions, and equitable access to clean energy.

6. Clear data access policies that allow third parties to provide energy management services based on signals from the utility can greatly increase the value of efforts to monetize the value stream offered by energy storage. (See discussion above, under 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 cost and lowest risk form of energy (excluding energy efficiency). A 2018 Bloomberg New Energy Finance report 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 2022, to provide grants for renewable energy projects across the state. 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. 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. Allowing aggregated net metering would be especially beneficial to the state's commercial 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 where they live or work. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the project or the generation provided by the system. While there are no state policies addressing shared renewables, some utilities are developing community solar projects on their own. Alaska might consider

adopting a virtual net metering policy. Virtual net metering allows a customer to receive credits from a shared 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. Because it is treated as a credit on the customer's bill, the customer can avoid the tax implications of a PPA payment - which can adversely affect the economics of the system (and may come as a surprise to the participant).

Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Shared renewables policies 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 might 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. Over the last five years, over 16 gigawatts (GW) of renewable contracts have been announced by corporate entities. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. Alaska's policy allows companies to purchase renewable energy credits (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. It is prudent to incorporate corporate renewable purchase commitments into the resource plans that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the planning process, regulators can avoid over-building resources and stranding generation assets.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. In 2018, the state was in the process of developing a statewide climate action plan. Initiated by Governor Walker's Administrative Order 289, the Climate Action for Alaska Leadership Team was charged with developing a comprehensive climate change policy. The task force published a draft policy in summer 2018, which included carbon pricing and power sector decarbonization as policy recommendations for reducing greenhouse gas emissions from fossil fuels. In February 2019, Governor Dunleavy disbanded the Climate Action for Alaska Leadership Team. In May 2019, Anchorage city officials voted to implement a Climate Action Plan, the plan sets a goal of reducing the city's carbon emissions by 80% over the next 30 years.

To increase utility adoption of clean energy technologies, Alaska's policymakers might consider the following:

1. Emission standards are designed to drive emission reductions through either 1) a carbon portfolio standard or 2) a market-based approach. Both types of approaches can take a technology neutral stance that drives emissions down with a combination of renewables, traditional fuels, efficiency, and technological advances. These policies can also address other concerns such as pollution, asthma risk, environmental justice, and water use.

   A portfolio emissions standard sets emissions reduction targets to be achieved over time. This can be implemented through the utility planning process or by establishing a maximum allowable rate of emissions per unit.

   Market-based approaches can take the form of an emissions trading regime or a tax. Under a market-based approach, a state or a group of states might set a certain emissions reduction target, for example, 40% below

1990 levels by 2030. This reduction is achieved by the distribution of annual emission allowances that decrease over time until the goal is met. Allowances can be bought and sold on a market that allows utilities and other emitting firms flexibility in reaching total emissions goals. Revenue generated by these markets can be used to support the development of renewable energy, energy storage, and energy efficiency programs. There are emissions trading markets in operation today that states can join. The other pathway to reaching emissions targets is through a tax on fossil fuel use that can be used to generate revenue to fund emissions reductions policies and technologies and to incentivize the reduction of emissions over time. One of the advantages of a market-based program is that these are designed to reduce emissions in the most economically efficient manner possible.

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 requirements that focus on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives 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

Bloomberg New Energy Finance estimates that 57% of all new passenger vehicle sales will be electric by 2040 and that price parity with conventional vehicles will be met for most segments in the mid-2020s. Designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid is a key part of building a modernized grid. The relationship between the increased adoption of EVs and the availability of EV charging stations is complicated. On the one hand, consumer range anxiety creates a barrier to increased adoption. On the other hand, while greater availability of charging stations would ease this anxiety, the relatively low numbers of vehicles on the road provides little incentive to install and make these stations available to the public. The good news is that both supportive policies for developing charging infrastructure and advancements in technology 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 or EV supply equipment (EVSE) and has the lowest vehicle miles traveled of all 50 states.

There are several policy opportunities to further encourage and prepare for increased market penetration of EV's in the state, including:

1. EV and EVSE Financing and Financial Incentives – Providing financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing high 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 the credit is not applied at the time of purchase.[3] States have adopted other financial incentives including low-interest loans, grants, vouchers and rebates. A handful of states qualify EVSE 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 attempt to pair the appropriate

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

level of charging with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop an infrastructure 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. Legislation could also incentivize utilities to develop make-ready locations. These locations supply power to the point where a utility or third party developer might install an EV charging station.

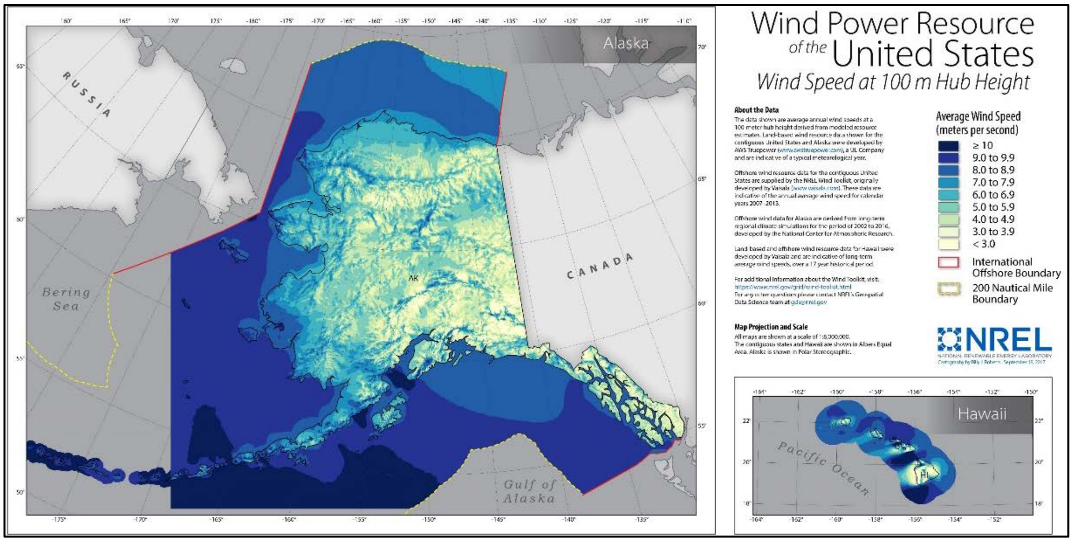
NEWS

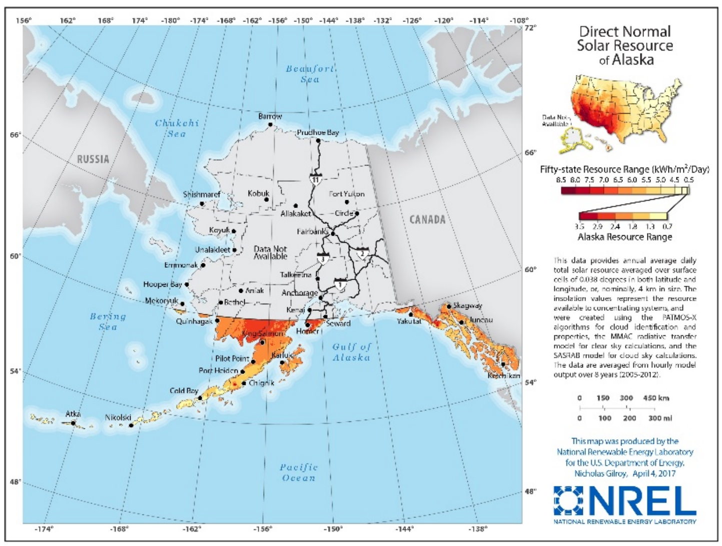
- August 13, 2019: Buckland Sets A Milestone for Rural Energy Capabilities with New Li-ion Battery
- August 1, 2019: Experts Explore Options for Microreactors in Alaska
- July 17, 2019: Alaska Village will Install New River Power Generator
- July 1, 2019: Will Climate Change Force This Alaska Village to Relocate?
- May 31, 2019: Solar Energy is Lighting Up More of the Land of Midnight Sun
- May 23, 2019: Alaska, Frontier for Innovation
- March 20, 2019: US DOE $17 Million For Energy Infrastructure on Tribal Lands
- March 8, 2019: Cordova's Microgrid Integrates Battery Storage with Hydropower
- February 6, 2019: Native Village Integrates Solar and Storage to Cut Costs, Displace Diesel

OTHER RESOURCES

- 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
- American Wind Energy Association (AWEA): https://www.awea.org/resources/fact-sheets/state-facts-sheets
- 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/

ALASKA'S WIND AND SOLAR RESOURCES
WIND https://windexchange.energy.gov/states/ak
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: https://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