

BACKGROUND

Idaho generates [more than 75%](#) of its electricity from renewable resources. Of this, the largest share is provided by hydroelectric sources. Due to drought conditions, hydropower’s contribution to the state’s energy portfolio has decreased in recent years. Out of state coal-fired plants, many of which are facing retirement, supplied about [one-fifth](#) of Idaho’s electricity in 2017.

The Gem State has substantial hydroelectric, wind, and geothermal resources. Almost all of the state’s [solar generation](#) is provided by utility-scale installations. The Idaho National Laboratory (INL) is the site of the [world’s first nuclear power plant](#), which came online in 1951. A 2019 [report](#) by the National Association of State Energy Officials and the Energy Futures Initiative found that Idaho has 13,165 traditional energy workers (1.8% of total state employment) and an additional 8,747 workers employed in energy efficiency.

The [Idaho Public Utilities Commission](#) (IPUC) [regulates](#) investor-owned electric and gas utilities in the state. The bipartisan IPUC has three appointed commissioners. Currently, there are two Republicans and one Democrat on the commission; Paul Kjellander is President. Republican majorities control both chambers of the [state legislature](#), and Republican Governor Brad Little was elected in 2018.

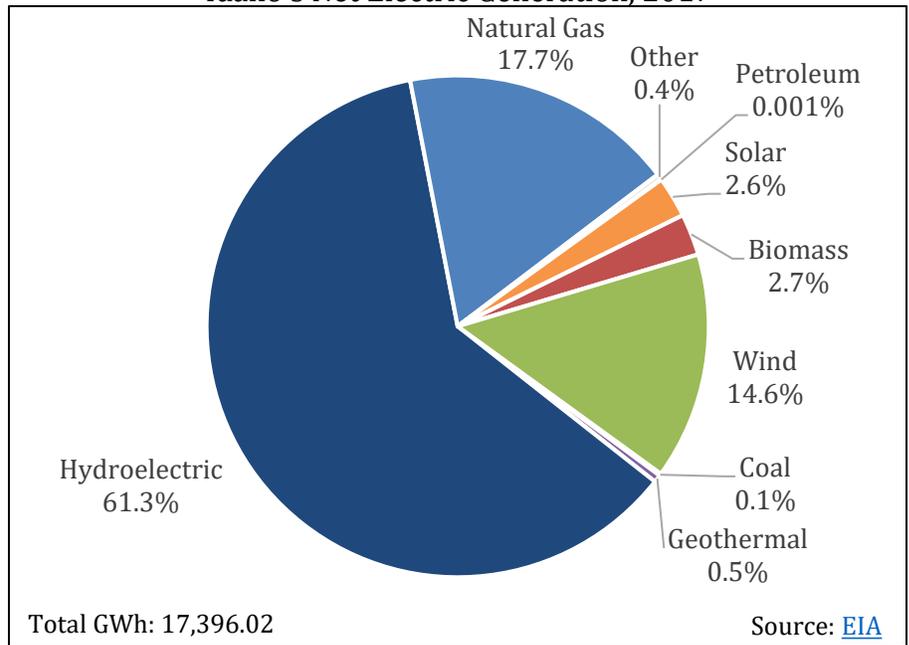
POLICY STRENGTHS AND OPPORTUNITIES¹

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

Idaho’s Net Electric Generation, 2017



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>.

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.

The GridWise Alliance's latest [Grid Modernization Index](#) ranks Idaho 32nd overall for grid modernization efforts. The state is in a good position to act. [INL](#) engages in research and development of and serves as a test site for cybersecurity measures, clean energy integration, microgrids, and critical infrastructure security and resilience. INL is also a member of the [Grid Modernization Laboratory Consortium](#) (GMLC), a collaborative project between the Department of Energy and the national labs. The [Center for Advanced Energy Studies](#) (CAES), a research and education partnership between INL, Boise State University, Idaho State University, the University of Idaho, and the University of Wyoming, focuses on developing advanced energy solutions and policy. As part of the Pacific Northwest Smart Grid Demonstration Project, Idaho Falls Power [installed](#) advanced metering infrastructure (AMI) that employs a wireless network and that allowed the utility to test a number of new technologies. Avista is currently seeking IPUC approval for a [rate increase](#) that would be used, in part, to pay for distribution system modernization.

There are policies that Idaho'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.
2. States might also provide incentives or cost recovery mechanisms for utilities that meet grid modernization goals. Policymakers could consider directing the IPUC to evaluate alternative ratemaking mechanisms, [performance-based regulation](#), and/or new utility business models that support grid modernization.
3. Require that utilities' integrated resource plans (IRPs) include 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.
4. Idaho 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 consumer 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. While some utilities in the state have platforms that allow customers to access their usage data and will provide third parties that data, with customer consent, 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.

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.

Idaho is well-positioned to grow its energy storage capacity. In 2018, the U.S. Department of Energy's (DOE) Geothermal Technologies Office [announced](#) that it would fund two INL projects that will investigate geothermal energy storage. The first will study storing heat from thermoelectric power plants. The second will study the feasibility of storing heat from a concentrating solar plant in a geothermal reservoir. The INL is also working with Idaho Falls Power and another utility to [demonstrate](#) the ability of run-of-river hydropower projects paired with energy storage to operate microgrids and restore power independently from the transmission system. The state also has several firms that manufacture energy storage technologies.

There are several opportunities for developing supportive state policies:

1. Establish a statewide interconnection policy 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 PUC to adopt new rules.
2. Instruct utilities to evaluate the value of energy storage in multiple strategic locations across the utility system 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](#) (NWA) 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.
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. Idaho's

existing renewable energy tax credits for [residential](#) and [commercial](#) customers could be expanded to include storage.

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 2019 Bloomberg New Energy Finance [report](#) predicts that renewable resources will generate at least 60% of total global electricity and 43% of U.S. electricity 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 interest of policymakers to ensure that their states are well positioned to benefit from the transition to clean energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, policymakers in Idaho might consider several options.

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. To ensure this, Idaho’s policymakers could consider adopting IREC’s model interconnection procedures and adopting a statewide net metering policy. Lawmakers could consider modeling state net metering policy on IREC’s [model rules](#). There have been actions to reassess current utility net metering programs in the state. In April 2019, Idaho Power [filed a petition](#) with the IPUC to suspend its net metering program and explore alternative compensation for net metered customers. The utility argues that the change is necessary to respond to a 114% increase in net-metered capacity in the first three months of the year, largely driven by commercial, industrial, and irrigation customers.

Allowing [aggregated net metering](#) would be especially beneficial to the state’s agricultural operations. Other applications for aggregated net metering include 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, as [Boise](#) has done. State incentives, such as tax credits, financial incentives, or loans can 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. Idaho 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 ensured 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 LMI customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal [Weatherization Assistance Program](#) or the [Low Income Home Energy Assistance Program](#) to provide recipients of assistance with participation in a shared renewable system.

Utilities in Idaho offer community solar to customers. Northern Lights built the [first](#) community solar project in Idaho. Kootenai Electric also [provides](#) customers the opportunity to participate in a shared solar project. While Idaho Power received [approval](#) to build a project, low participation in the program led to its [abandonment](#) this year. The company says that it will continue to explore offering community solar to its customers.

There are [several additional policy options](#) that Idaho 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. [Idaho's policy](#) allows companies to purchase renewable energy credits (RECs) and develop or lease onsite renewable energy projects. To increase access to large-scale renewable energy, the state might consider allowing companies to purchase renewable energy through green tariffs. [Green tariffs](#) allow customers to source their electricity from renewable resources through a fixed rate. Policymakers might also consider allowing companies to enter into onsite [third-party PPAs](#), and encouraging corporate participation in shared renewable projects. Policies to increase corporate access to renewable energy can be designed to meet the six [Corporate Renewable Energy Buyers' Principles](#). In addition, it is prudent to incorporate corporate renewable purchase commitments into the IRPs that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the IRP 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 (GHG) emissions and increase utility investments in clean energy resources. While Idaho does not have a renewable portfolio standard (RPS), utilities and cities in the state are taking the lead by incorporating more renewable resources in their energy portfolios. In March 2019, Idaho Power [announced](#) a goal to provide 100% clean energy by 2045. In a separate [press release](#), the utility announced that it had signed a “landmark” PPA to purchase up to 120 megawatts (MW) of solar, at a price that is among the “lowest on record.” The solar will replace power produced at the North Valmy coal-fired plant, which Idaho Power [will exit](#) by 2025. Following Idaho Power’s announcement of its goal, Boise became the first city in the state to set a [goal](#) of 100% renewable electricity by 2040. In April 2019, Avista [announced](#) its goal to provide a carbon-neutral electricity supply by 2027 and 100% clean energy by 2045. [Rocky Mountain Power](#), a division of PacifiCorp, will repower its existing wind fleet and add an additional 1,150 MW of wind by the end of 2020.

To increase utility adoption of clean energy technologies, Idaho’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.

A [few incentives for alternatively fueled vehicles](#) are currently available in Idaho. The Idaho Department of Environmental Quality will provide [funding](#) for direct current fast charging (DCFC) infrastructure in strategic locations. There are several policy opportunities to further encourage and prepare for increased market penetration of EVs in the state, including:

1. EV and EV Supply Equipment (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 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. Idaho's existing registration fee for EVs could help fund these efforts. For example, in [Washington](#) a portion of each EV registration fee is used to fund charging infrastructure development across the state.

Idaho [joined](#) Arizona, Colorado, Montana, New Mexico, Nevada, Utah, and Wyoming in signing the Regional Electric Vehicle West (REV West) [memorandum of understanding](#) to create an Intermountain West EV Corridor. The goal is to develop best practices and voluntary minimum standards for stations, expand access to new EVs, and create consistent charging experiences.

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.

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

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. Idaho's [building energy code](#) could also be updated to include requirements for EV charging infrastructure.

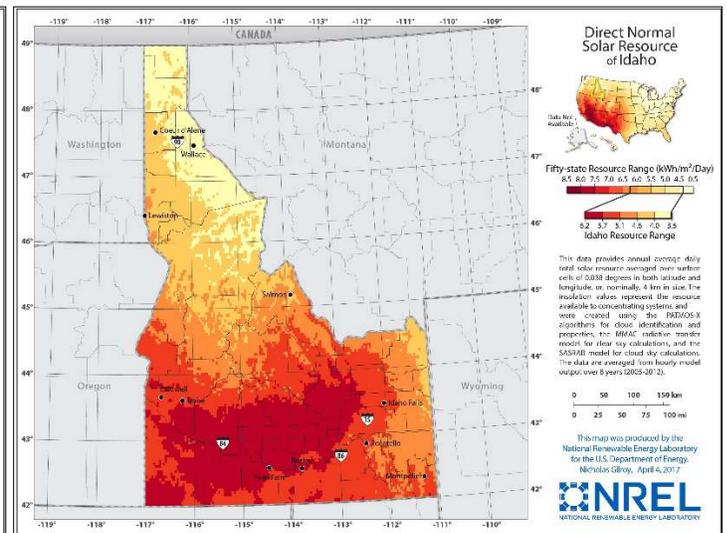
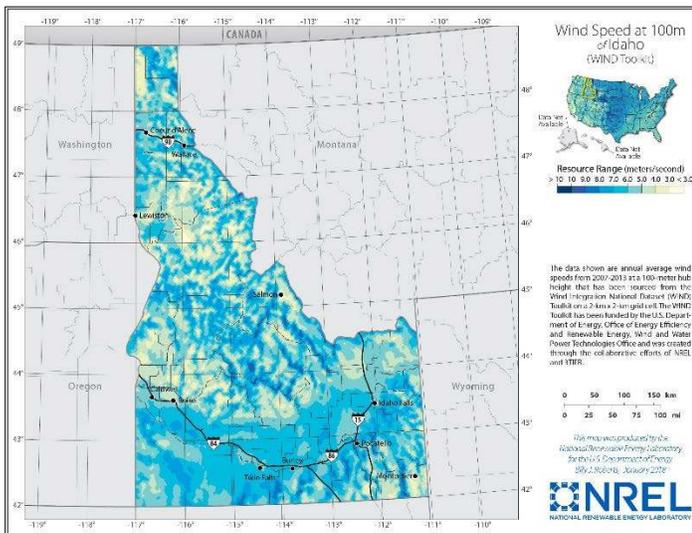
NEWS

- August 11, 2019: [Project Aims to Power Idaho Falls with Nuclear Energy by 2027, and You're Invited to Learn More](#)
- August 8, 2019: [New Life for Hoku?: Energy Company Aims to Make Shuttered Pocatello Plant Operational](#)
- August 8, 2019: [Power Grid Test Bed Expansion Wins Approval](#)
- August 6, 2019: [DOE: New Nuclear Reactor Needed to Test "Fast" Technologies](#)
- July 19, 2019: [Plan to Build First Small Modular Nuclear Reactors in Idaho Advances](#)
- July 11, 2019: [Going Solar: Solarize Pocatello Campaign Proving to Be Wildly Popular with Local Residents](#)
- July 11, 2019: [Idaho Falls Expands its SMR Interest](#)
- July 5, 2019: [Idaho Power Looks Toward Clean-Energy Future](#)
- June 26, 2019: [Rocky Mountain Power Leverages Home Energy Reports to Save 41 GWh](#)
- June 25, 2019: [INL Awarded Technology Commercialization Funding for 13 Projects](#)
- May 23, 2019: [Idaho Power Line Could Help Cybersecurity Efforts](#)
- April 24, 2019: [Idaho, Oregon Agree on Hydroelectric Project](#)
- August 31, 2018: [Breakfast Series Report – Power of Choice: Energy in Idaho](#)

IDAHO'S WIND AND SOLAR RESOURCES

WIND <https://windexchange.energy.gov/states/id>

SOLAR <https://www.nrel.gov/gis/solar.html>



OTHER RESOURCES

- Governor's Office of Energy and Mineral Resources: <https://oemr.idaho.gov/>
- Idaho Strategic Energy Alliance: <https://oemr.idaho.gov/isea/>
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Idaho: <https://database.aceee.org/state/idaho>
- The Database of State Incentives for Renewables and Efficiency, Idaho: <http://programs.dsireusa.org/system/program?fromSir=0&state=ID>
- U.S. Energy Information Administration, Idaho: <https://www.eia.gov/state/?sid=ID>
- 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, Idaho: <https://www.afdc.energy.gov/states/id>
- SPOT for Clean Energy, Idaho: <https://spotforcleanenergy.org/state/idaho/>
- The Rocky Mountain Institute: [From Gas to Grid – Building Charging Infrastructure to Power Electric Vehicle Demand](#)

- The GridWise Alliance: [EVs - Driving Adoption, Capturing Benefits](#)
- The Regulatory Assistance Project: [Performance-Based Regulation](#)

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/>

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