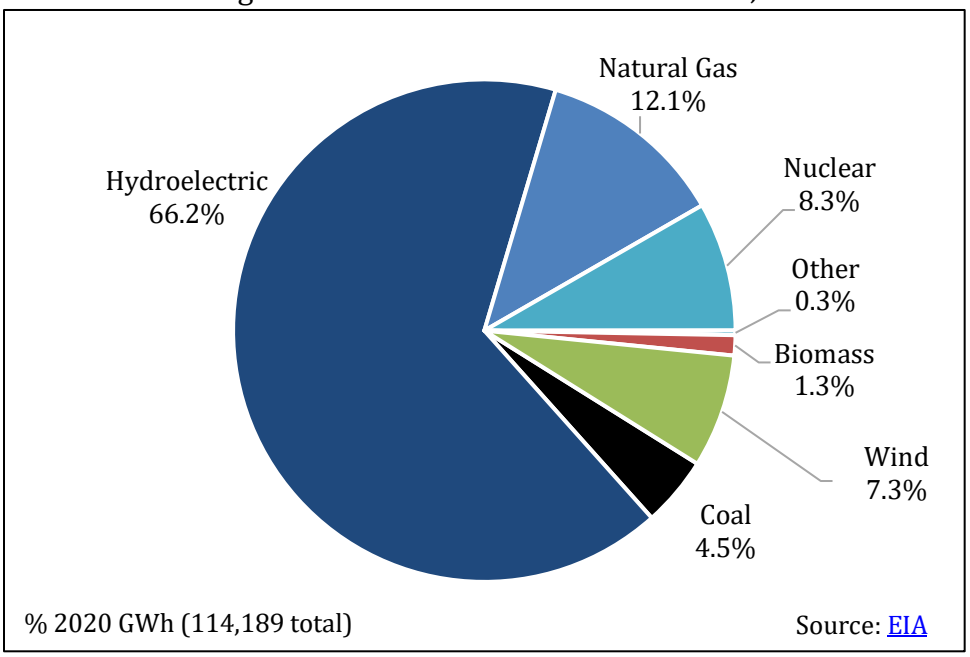
State Brief: Washington

BACKGROUND

Washington's electricity mix is dominated by hydroelectric power. With a total generating capacity of 6,890 megawatts (MW), the Grand Coulee Dam on Washington's Columbia River is the largest hydroelectric plant in the United States. The state produced 27% of the country's total conventional hydroelectric generation in 2020. Driven in part by past investments and the low operating costs of hydroelectric facilities, Washington has the 3rd lowest residential electricity rates in the country (as of June 2021).

Washington's Net Annual Electric Generation, 2020



Wind power is Washington's second largest source of renewable energy generation, having contributed 6% or more of the state's total generation since 2013. As of 2021, the state has 3,395 MW of installed wind capacity with another 120 MW currently under construction. Wind is likely to play an increasing role in Washington's generation mix. Especially as offshore wind projects gain traction, which the state has considerable potential for along its coastline.

As of mid-2021, Washington had 258.24 megawatts (MW) of installed solar capacity; accounting for approximately .27% of the state's total generation. In 2020, the Solar Energy Industries Association (SEIA) ranked Washington 32nd in the nation for projected solar energy capacity growth over five years at 823.66 MW. The 2020 U.S. Energy and Employment Report found that Washington has 55,919 traditional energy workers (1.6% of total state employment). In 2020, Washington ranked 14th nationwide for clean energy jobs (including jobs in energy efficiency and solar) and the industry employed 75,684 workers.[1]

The Evergreen State is a leader in clean energy policy development. In 2006, it became the second state in the country to adopt a renewable portfolio standard (RPS) through ballot initiative. In 2019, the Clean Energy Transformation Act (Senate Bill 5116) updated the state's RPS by requiring a transition to 100% clean energy by 2045, beginning with the elimination of coal from the state's generation mix by 2025. In 2021, a package of ambitious climate and clean energy bills were enacted by the state's policymakers. Part of this package, the Climate Commitment Act (Senate Bill 5126) created a comprehensive "cap and invest" program, the second in the country after California. In addition to establishing a declining cap on carbon emissions, the bill directs revenue raised from the carbon pricing market to several broad investment areas including sustainable transportation and climate change resilience. The bill also contains significant considerations for environmental justice, directing that at least 35% of investments be made in communities disproportionately overburdened by pollution. The bill also directs 10% of investments to projects supported by tribes and mandates consultation with tribes for any project impacting Tribal lands. The Healthy Environment for All (HEAL) Act (Senate Bill 5141) implemented policy recommendations from the state's Environmental Justice Task Force, requiring environmental justice considerations in a variety of state processes, as

[1] This is in addition to the number of traditional energy jobs in the state.

well as creating the Environmental Justice Council to advise state agencies. House Bill 1091 directed the Department of Ecology to establish a clean fuels program to reduce the carbon intensity of transportation fuels to 20% below 2017 levels by 2038. House Bill 1050 adopted several policies aimed at curtailing hydrofluorocarbon (HFC) emissions, powerful greenhouse gasses originally designed to replace the ozone depleting CFCs in refrigeration and cooling applications.

The three members of Washington's bipartisan Utilities and Transportation Commission (UTC) regulate eight electric utilities and 11 natural gas companies. All three members were appointed by Governor Jay Inslee who took office in 2013. Washington's legislature is under unified party control with Democratic majorities in the House and Senate.

Policy Strengths and Opportunities

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 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

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, dynamic pricing, advanced metering infrastructure, and other technologies allow an exchange of information and electricity between a consumer and their electric provider. Grid modernization is associated with greater consumer choice by allowing customers to meet their energy priorities by producing their own energy or through contracting innovative clean energy services from different providers.

Grid modernization will require a suite of state and federal policy changes to support advancements in grid technologies, grid management, and utility regulation.

Washington has taken several steps to modernize its grid infrastructure. In 2013 the state legislature approved a $76 million Clean Energy Fund to support renewable energy resources and grid modernization investments. In 2021, the fund solicited applications for up to $4.6 million in grants to utilities for the deployment of grid modernization projects. The state has also implemented a three tiered interconnection standard for distributed generation systems up to 20 MW. Enacted in 2021, Senate Bill 5295 directs the UTC to develop a policy statement addressing

[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.

performance-based regulation. The bill also allows the UTC to approve cost recovery for discount rates and grants for services and/or infrastructure that reduces energy burden. Policymakers could consider the following supportive policies to enhance grid modernization efforts:

1. Establish a collaborative process to develop a grid modernization strategy that will incorporate the viewpoints of utility customers, utility regulators, utilities, and other stakeholders.

2. Require that utilities' integrated resource plans include plans to enhance cybersecurity, integrate distributed energy resources (including electric vehicles and energy storage), increase demand response and/or demand-side management (DSM) programs, and measure and report on the results of grid modernization efforts.

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 can support modernization efforts and improve the chances of successful grid modernization.

ENERGY STORAGE

Energy storage offers a unique opportunity to manage supply and demand dynamically while also maximizing the value of grid resources. By deploying storage to strategic locations, utilities can more effectively manage their energy portfolios. First, storage allows utilities to manage intermittent demand – helping reduce peak demand requirements. Because the generation resources that provide peak power are the system's most expensive, reducing peak demand can save consumers money. Second, the responsiveness of energy storage can allow utilities to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, because storage technologies can both store and dispatch power, storage enables better integration of intermittent power generation resources like renewable energy to the grid. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider implementing or extending demand charges to other sectors, energy storage will become more relevant as a customer cost-saving investment.

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 several economic and environmental gains.

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

Washington does not have a procurement target or goal for energy storage. However, the state's incentives and other policy supportive of energy storage are encouraging utilities in the state to pursue energy storage technologies and develop storage projects. In 2017 the UTC issued a policy statement directing the state's investor-owned utilities to include energy storage in their planning process. The existing 320 MW of utility scale energy storage in the state is provided almost entirely by pumped hydroelectric facilities. The recommendations here draw heavily from the Interstate Renewable Energy Council's (IREC) 2017 report, "Charging Ahead – An Energy Storage Guide for Policymakers." Policymakers in Washington could consider the following:

1. Amend existing interconnection and net metering policies to ensure that storage can connect to the grid through a transparent and simple process. IREC has produced a series of protocols that states can adopt. States can establish best practices for interconnection and net metering in statute, or legislation can provide an instruction to the utilities commission to implement these best practices.

2. 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. States can require that utilities evaluate energy storage in their integrated or long-term resource plans. Alternatively, states can 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.

3. 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 include provisions limiting the amount of utility owned storage to be procured, requiring that a certain percent of the storage procurement goal be targeted to low-income customers, and creating carve-outs for specific amounts of storage to be procured 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.

4. Finance and incentivize energy storage for customers and utilities. Incentives can 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 of storage. These incentives can also be designed to decline as the value of storage becomes more readily monetized, and/or as the cost of storage decreases. Policymakers can allow utilities that provide storage incentives to customers to also recover the costs of installing smart meters. This would enable dynamic and time-varying energy management from multiple distributed battery systems, while better aligning customer costs with system costs. Financing energy storage installations for commercial customers can help reduce their demand charges. Policymakers might start first with a policy that provides grants to pilot projects, and/or that targets existing solar system owners. Financial incentives should be designed to ensure that the state meets other goals including emissions and peak demand reductions, and equitable access to clean energy.

5. 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. State policy should include measures to protect customer data, while also encouraging the use of this information to facilitate additional improvements to grid management and customer services.

MAINSTREAMING RENEWABLES

As the renewable energy industry matured, technology improved, and global production of generating equipment increased. Renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A 2021 Energy Information Administration report predicts that the share of the United States' electricity generation mix supplied by renewable energy resources will increase from 21% in 2020 to 42% 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 and sustainable energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, Washington might consider several policy 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, Washington's policymakers could consider removing net metering system size limitations. 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 Issaquah 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. Between 2010 and 2016, 76 community solar installations were constructed in Washington. House Bill 5939, enacted in 2017, provides incentives and guidelines for the implementation of community solar projects up to one MW of peak generation and allows for more flexibility in the siting of community solar projects. To date, there are at least 19 operational community solar projects in the state.

   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. States that have a shared renewable program may want to coordinate this program with implementation of the federal Weatherization Assistance Program (WAP) to provide recipients of assistance access to participation in a shared renewable system.

   There are several additional policy options that Washington might consider to promote renewable energy uptake by LMI 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. Since 2016, nearly 31 gigawatts (GW) of renewable contracts have been announced by corporate entities. In 2020 alone, corporations signed 100 agreements for over 10 GW of renewable energy. The products available in Washington meet all six of the Corporate Renewable Energy Buyers' Principles, and the state was ranked 24th overall in the Retail Industry Leaders Association's 2020 rankings of state corporate procurement policies. 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 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 RPSs. As mentioned above, Washington has a mandatory RPS of 100% clean energy by 2045. In 2020, House Bill 2311 revised the state's greenhouse gas emission goals to 45% below 1990 levels by 2030, 70% by 2040, and 95% by 2050. Noted above, the Climate Commitment Act (Senate Bill 5126) created a comprehensive "cap and invest" program to meet these targets. To increase utility adoption of clean energy technologies, Washington's policy makers might consider the following:

1. **Accelerating and Amending Renewable Portfolio Standards –** States can revisit existing RPS policies to accelerate target dates to continue to spur the development of renewable resources and save ratepayers money. Additionally, states might add one or more carve-outs to further incentivize the development of distributed generation and offshore resources. Embedding an RPS within broader clean electricity or emissions standard can allow technological flexibility.

2. **Clean Peak Standards (CPS) –** 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 58% 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. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety."

Washington has several policies that incentivize EV purchases and the installation of charging infrastructure. House Bill 1091, enacted in 2021, requires the Washington Department of Ecology to develop a Clean Fuels Program to reduce the carbon intensity of transportation fuels to 20% below 2017 levels by 2038. Also enacted in 2021, House Bill 1287 directs the Washington Department of Commerce to maintain a publicly available mapping and forecasting tool for electric vehicle charging infrastructure. The bill also requires utilities with more than 25,000 customers to assess how their resource plans accommodate forecasted EV adoption. In 2020, Washington adopted California's low-emission vehicle (LEV) and zero-emission vehicle (ZEV) standards and joined 14 other states and the District of Columbia in signing an MOU to support the deployment of medium- and heavy-duty ZEVs.

The American Council for an Energy-Efficient Economy (ACEEE) publishes a State Transportation Electrification Scorecard that evaluates states' progress in electrifying transportation in six key policy areas and offers policy recommendations. Washington is ranked sixth in the 2021 report. While the state is a leader in EV adoption there are other policy opportunities to expand the EV market:

1. **EV and EV Charging Equipment 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 EV charging equipment. 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] Washington offers a sales and use tax exemption for purchases and leases of used and new alternatively-fueled vehicles, including EVs. The state's exemption also applies to batteries, battery installation and maintenance, and charging infrastructure. States have adopted other financial incentives including low-interest loans, vouchers, and rebates. A handful of states qualify EV charging equipment 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. While some drivers will need to charge more quickly, others will refuel when they are parked for longer periods of time, for example when shopping at the mall or going to work. Charging infrastructure plans should attempt to pair the appropriate level of charging (level 2 or direct current fast charging) with a reasonable amount of time a person will be at that location. In Washington, a portion of the revenue collected through EV registration fees is used to fund charging infrastructure development across the state. Regional transportation planning organizations with a territory that includes at least one county with a population greater than one million are required to collaborate with state and local government agencies to develop EV charging infrastructure plans and model local ordinances. In addition, certain jurisdictions are required to allow the use of charging infrastructure in certain areas of the territories. To facilitate this, the Department of Commerce has developed model ordinances and guidance for local governments.

   Regional collaborations around the US are emerging to coordinate the development of electric transportation infrastructure. The REV West Plan and the Transportation and Climate Initiative (TCI) are in the process of

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

planning regional EV charging corridors to reduce transportation sector carbon emissions. Washington is a member of the West Coast Electric Highway and the Department of Transportation manages the ZEV Infrastructure Partnerships program to provide grants to projects that expand the West Coast Green Highway network along other corridors in the state. Washington's policymakers might explore creating or joining other regional partnerships to facilitate greater EV mobility.

NEWS

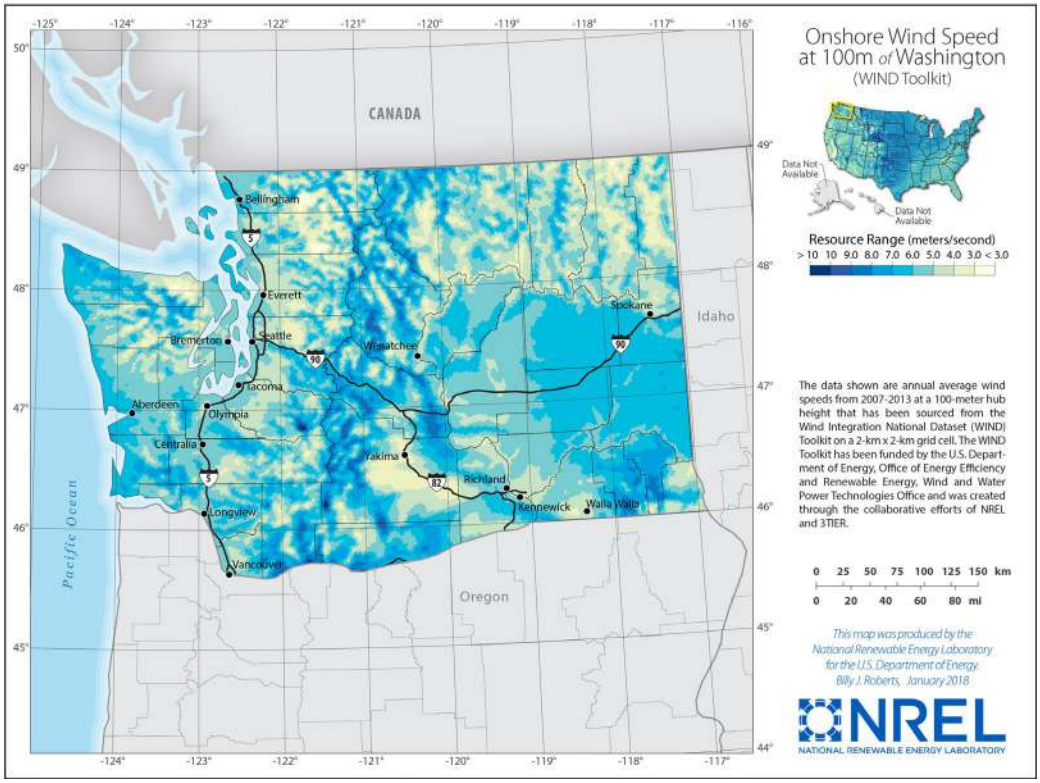
- July 29, 2021: Emerging Solar Panel Recycling Market Ripe with Opportunity, but Barriers Remain
- July 29, 2021: While Central Washington is Known for its Hops, Apples and Cherries, it is Also Becoming a Producer of Renewable Energy
- July 28, 2021: Washington State County is First in US to Ban New Fossil Fuel Infrastructure
- July 27, 2021: Helion Energy Breaks Ground on Site of its Next-Generation Fusion Facility in Everett, Washington
- July 20, 2021: FERC Issues Preliminary Permit for 2.65GW Pumped Hydro Storage Plant in Washington
- June 30, 2021: Washington Tribes Want to be at the Table for Green Energy Planning
- April 29, 2021: Washington Passes 'Cap-and-Invest' Legislation, Giving Utilities Incentive to Further Decarbonize
- April 15, 2021: Commentary: Washington can Lead the Transition to Cleaner Transportation

Additional Resources

- Washington State Energy Office: http://www.commerce.wa.gov/growing-the-economy/energy/washington-state-energy-office/
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Washington: http://database.aceee.org/state/washington
- The Database of State Incentives for Renewables and Efficiency, Washington: http://programs.dsireusa.org/system/program?state=WA
- U.S. Department of Energy's Alternative Fuels Data Center, Washington: https://afdc.energy.gov/states/wa
- U.S. Energy Information Administration, Washington: https://www.eia.gov/state/?sid=WA
- SPOT for Clean Energy, Washington: https://spotforcleanenergy.org/state/washington/

WASHINGTON'S WIND RESOURCES

https://windexchange.energy.gov/states/WA



Our Resources

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

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

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

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