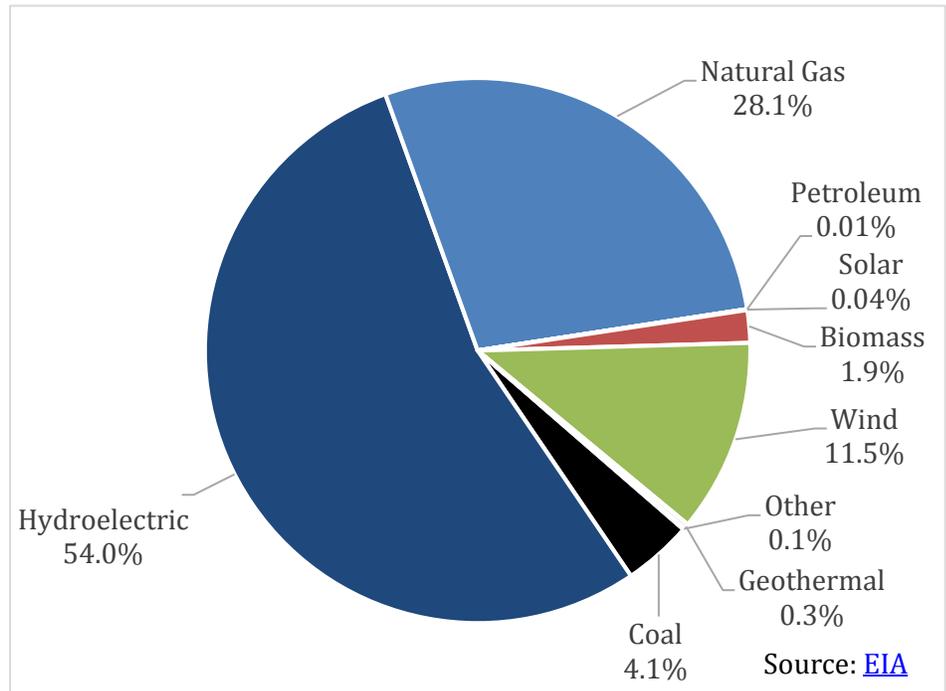


Oregon's Energy Mix



Background

Conventional hydroelectric power dominates Oregon's energy mix, comprising more than half of the [state's overall electricity generation](#). This is a typical proportion of hydroelectric generation for a given year for Oregon, as hydropower has historically provided the state with most of its electricity. Natural gas is the second-highest electricity source and has been gradually increasing in the energy mix, with the most significant jump occurring in 2012. Wind's contributions have also been growing in recent years.

[The Clean Electricity and Coal Transition Act](#) of 2016 made Oregon the first state to set explicit targets for [eliminating coal](#) from the

electricity mix. Among other provisions, the law facilitates the market's transition to clean energy, establishes emissions reductions goals, and expands renewable portfolio standard requirements for large utilities to 50% by 2040. The Act also provides for a community solar program. Residential-scale solar installations have been on the rise in the state, and other solar projects are expected to be developed over the next few years.

The three members of the bi-partisan [Public Utilities Commission \(PUC\)](#) are appointed by the Governor and confirmed by the Senate. The Democratic Party has control of both legislative chambers and the Governor's seat.

Policy Strengths and Opportunities¹

An important framework for policymakers to consider, the notion of "policy stacking"² was developed at the National Renewable Energy Laboratory (NREL). The basic idea behind policy stacking is that there is an interdependency and a 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.

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>.

A simple 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, policies to address interconnection and stand-by rates should be adopted before financial incentive programs are implemented.

Energy Storage

Energy storage offers a unique opportunity to dynamically manage supply and demand to maximize the value of grid resources. By deploying storage in strategic locations, utilities can more effectively manage their energy portfolios. First, storage can dispatch power to better integrate intermittent resources like renewable energy. Second, it provides management of intermittent demand – helping to flatten peak demand requirements for the utility. Third, the responsiveness of energy storage can allow the utility to implement voltage regulation and other ancillary services, useful for improving system efficiency. 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 through a combination of 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.

Oregon has been a frontrunner in policy supporting energy storage development. In 2015, they became the second state to pass legislation establishing [energy storage mandates](#). Under the Act, the largest in-state electric utilities must provide at least 5 megawatt hours of energy storage service by 2020. The Oregon PUC [released implementation guidelines](#) regarding the project proposal process in January 2017.

1. Provide incentives for customers to purchase storage to both manage their electric load and store locally produced renewable energy. Allow utilities that provide incentives to customers to install smart meters that enable dynamic energy management from multiple distributed battery systems.
2. Customer Data Access – Oregon has passed policies governing access to energy data, including the [Electric Company Transfer of Data rule](#) and the [PUC requirement](#) that customers have access to detailed real-time information regarding their energy use. In pursuit of this goal, utilities have used the Green Button “Download my Data” program. The state might also consider Green Button’s “[Connect to my Data](#)” program.
3. Provide an option for utility customers (targeted at commercial users) to pay an additional charge to be included in a “high reliability zone” created through a combination of distributed generation and energy storage – forming a utility integrated “microgrid”.

Grid Modernization

In the last two decades, digital technologies have been developed that enable utilities to better manage the grid and also 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. This can make the operational side of the utility more efficient. 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. Grid modernization will be associated with greater consumer choice, allowing customers to meet their energy priorities by producing their own energy or to selecting to receive innovative energy efficient or clean energy services from different providers.

Grid modernization efforts compliment other policies such as demand response policies, customer data management, smart metering infrastructure, electric vehicles, and others. Policy approaches around grid modernization should be seen as an umbrella to put in place a structure that supports and ties together these other individual policy initiatives.

In the latest [Grid Modernization Index](#), Oregon received the 7th highest score, jumping 10 places since the previous GMI (largely due to the state's passage of an energy storage mandate). The state receives high marks for "state support", placing 4th, indicating a high level of policy activity directed toward grid modernization efforts. Oregon also performs well in terms of customer engagement and grid operations. Oregon can enhance its grid modernization efforts by adopting some of the following supportive policies.

1. Customer Data Access – Oregon has passed policies governing access to energy data, including the [Electric Company Transfer of Data rule](#) and the [PUC requirement](#) that customers have access to detailed real-time information regarding their energy use. In pursuit of this goal, utilities have used the Green Button "Download my Data" program. The state might also consider Green Button's "[Connect to my Data](#)" program.
2. Require that utilities' integrated resource plans include plans to increase smart meter deployment, and measure and report on the results of these efforts. [Portland General Electric](#) and [Pacific Power](#) have already initiated steps to begin installing smart meters onto the grid.

Clean Energy Financing

Distributed generation (DG) provides localized generation that serves a specific part of the grid. It may include generation serving a specific residence or business, a neighborhood, or a region served by a substation. DG has the benefit of reducing stress on large transmission infrastructure by providing distribution level power (as opposed to central generation). Because small-scale renewable energy systems require large upfront investments, overcoming the upfront cost barrier is arguably the biggest challenge to clean energy deployment at the consumer level. Financing is key; and many states provide financing and financial incentives to spur adoption of these technologies.

To promote wide-spread deployment of DG, there are a handful of policy opportunities in Oregon.

1. Property Assessed Clean Energy (PACE) – PACE is a financing mechanism used by local governments that allows property owners to finance energy efficiency and renewable energy improvements through their property tax payment. The repayment of qualified energy improvements is done via a voluntary property tax assessment collected by local governments, just as other public infrastructure investments are financed. While PACE programs can be designed for both the residential and the commercial markets, residential PACE takes a much more committed and engaged approach on the part of the state. Oregon has passed enabling legislation for PACE, and there is currently one commercial PACE program still in its pilot period, [PropertyFit Oregon](#) is set to be fully implemented by the end of 2017. In order to amend Oregon's existing residential PACE authorization, legislation might follow the Department of Housing and Urban Development's (HUD) guidance for determining eligibility for Federal Housing Authority (FHA) insured mortgage financing:
 - a. Collection: The PACE obligation is collected and secured by the creditor in the same manner as a special assessment against the property;
 - b. Enforcement: The property may only become subject to an enforceable claim (i.e., a lien) that is superior to the mortgage for delinquent regularly scheduled PACE payments. The property shall not be subject to an enforceable claim superior to the mortgage for the full outstanding PACE obligation at any time;
 - c. Property Transfer: There are no terms or conditions that limit the transfer of the property to a new homeowner. Provisions to require the consent of a third-party prior to conveyance are prohibited, unless these provisions can be terminated at the option of, and with no cost to, the homeowner;
 - d. Disclosure: The existence of a PACE obligation on a property is readily apparent to all parties to an FHA-insured mortgage transaction in the public records and must show the obligation amount, the

expiration date and cause of the expiration of the assessment, and in no case, can default accelerate the expiration date.

2. Green/Infrastructure Bank - A green bank blends public and private capital to fund the upfront cost of clean energy improvements. The intent is to reduce the risk for the investor and to scale the market for projects. Sometimes these banks will attempt to address a limitation in the private lending sector – for example, while most bank commercial loans are 5-10 years, the NY Green Bank extends these terms for 20 years and assumes the risk of the investment on the back end. In this way, the public bank is partnering with the private lending institutions to address barriers for businesses. These entities can be housed within an existing state agency with administrative, rule making, and underwriting authority. The state of Oregon does not currently have any designated green banks or infrastructure banks, but the [Energy Trust of Oregon](#) offers cash incentives for a variety of clean energy upgrades. Residential consumers can locate green financing from several private banks and credit unions, such as [Umpqua Bank's GreenStreet lending](#) program. Oregon may want to look at Hawaii's securitization of a portion of their system benefits charge proceeds to create a fund that could provide seed capital for a state green bank.
3. DG and Solar Incentives – Oregon offers tax credits for solar and other DG technologies, including performance-based volumetric incentives, and loans. Oregon can advance DG deployment by including interim targets, by applying the policy to both investor-owned and publicly-owned utilities, and by imposing a tiered rate system for different customer classes. In addition, through the 2009 American Recovery and Reinvestment Act, states were provided with low interest bond financing for renewable energy and energy efficiency projects through Qualified Energy Conservation Bonds (QECBs). These may still be available, as it appears that [Oregon's allocation was not fully used](#).

Electrification of the Transportation Sector

One of the most important barriers to increased adoption of electric vehicles (EVs) is their higher up-front cost as compared to a similar conventionally-fueled vehicle. In addition, there has been a complicated relationship between increased adoption of EVs and the availability of EV charging stations. Put simply, consumers want to be sure 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.” For instance, the most recent GM Bolt has an estimated range of 240 miles.

While Oregon offers some incentives for the purchase of EVs and for the installation of EV supply equipment (EVSE), there are policy opportunities to further encourage and prepare for increased market penetration of EVs.

1. Charging Infrastructure Plan – Locating charging infrastructure is different than locating conventional fueling stations. For the most part, EVs are cars used for commuting and local trips. Furthermore, while one fuels a conventional vehicle when they are going somewhere, stopping at a gas station for the specific purpose of filling up, a driver of an EV is generally looking to refuel when they are stopping somewhere: when going shopping, going into 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 may be stopped at that location. Legislation could direct a state agency to develop such a plan through a stakeholder process.
2. Parking Infrastructure Requirements – In tandem with the development of a state-wide 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, one EV charging spot must be provided.
3. EVSE Financing and Financial Incentives – The provision of financial incentives and innovative financing options can increase installations of charging stations. States have adopted a number of financial incentives including grants and rebates. A handful of states qualify EVSE under their property assessed clean energy (PACE) programs.

4. EV Financing and Financial Incentives – The provision of financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales and income tax credits are one of the simplest methods for addressing higher up-front costs. While sales tax credits are typically applied at the time of purchase, income tax credits may do less to address the upfront cost barrier as receipt of the credit is typically removed in time from the purchase. However, a [study](#) by the Congressional Budget Office suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles. To increase the value of the incentive, some states offer transferrable tax credits, allowing the savings to be applied by the dealership at the time of sale. States have adopted a number of other financial incentives including low-interest loans, grants, vouchers, and rebates.

2017 Legislation Introduced by Attendees

Bill Number	Bill Summary	Bill Status	Sponsor(s)
HB 17-2704	Requires Environmental Quality Commission to establish program to provide rebates to persons that purchase and register certain low emission vehicles and zero-emission transit buses in this state on or after effective date of Act.	Introduced	Helm
HB 17-2710	Sets schedule for Director of Department of Consumer and Business Services to perform certain duties regarding energy efficiency standards and requirements for newly constructed buildings.	Introduced	Helm
HB 17-2711	Imposes moratorium until December 31, 2027, on use of hydraulic fracturing for oil and gas exploration and production.	Passed One Chamber	Helm
HB 17-3269	Changes name of Oregon Global Warming Commission to Oregon Climate Change Commission. Requires commission to appoint executive director. Appropriates moneys to commission for purposes related to executive director of commission. Modifies certain duties of commission and of certain nonvoting members of commission. Modifies certain duties of certain agencies of state government with regard to duties of commission.	Introduced	Helm, Power
HB 17-3343	Directs State Department of Energy to develop climate test to conduct reviews for approval of proposed fossil fuel infrastructure projects.	Introduced	Helm
HB 17-3344	Prohibits Legislative Assembly from funding new bulk coal or oil terminals for biennium beginning July 1, 2017.	Introduced	Helm
HB 17-2725	Requires Environmental Quality Commission to adopt by rule grant program for providing funding to local service providers to develop and implement woodstove replacement rebate programs.	Introduced	Helm, Johnson
HB 17-2146	Prohibits tax-exempt entities from earning or transferring energy-related tax credits. Applies to final certifications issued on or after January 1, 2018, and to tax years beginning on or after January 1, 2018.	Introduced	Johnson
SB 17-634	Authorizes use of woody biomass energy technology as alternative to green energy technology as part of construction, reconstruction or major renovation of a public building if: woody biomass energy technology creates new energy generation capacity and the contracting agency has considered potential costs of woody biomass technology; it is located in area that is in compliance with Department of Environmental Quality standards for emission particulate matter; or, if it is in area that does not comply with standards, it uses pelletized fuel or produces same level, or lower level, of particulate matter than pelletized fuel. Authorizes DEQ to require additional emission control technology.	Enacted	Helm, Johnson

HB 17-2748	Allows moneys in fund to be used for funding programs for replacing or removing solid fuel burning devices that are not certified by Department of Environmental Quality. Adds rebates to permissible types of subsidies available under solid fuel burning device replacement or removal program. Requires Department of Environmental Quality to establish program for providing grants, loans, rebates or other subsidies to make dry wood or cleaner fuel available to communities or individuals. Requires Department of Environmental Quality to prioritize allocation of grants, loans, rebates or other subsidies under solid fuel burning device replacement or removal program and dry wood or cleaner fuel provision program to be used in nonattainment areas for particulate matter or areas at substantial risk of being designated nonattainment areas for particulate matter.	Enacted	Johnson
HB 17-2989	Requires State Department of Energy to conduct study on incentives for residential solar in this state. Requires report to be submitted to interim legislative committees related to environment and natural resources no later than September 15, 2017.	Introduced	Johnson
HB 17-2020B	Establishes Oregon Energy and Climate Board as oversight and advisory body for Oregon Department of Energy and Climate.	Introduced	Power
HB 17-2468	Requires Environmental Quality Commission to adopt by rule certain statewide greenhouse gas emissions limits by no later than January 1, 2018.	Introduced	Power
HB 17-2725A	Appropriates moneys from General Fund to Department of Environmental Quality for supporting community efforts to improve economic development and public health by reducing emissions from solid fuel burning devices that burn wood.	Introduced	Power
SB 17-1008B	Authorizes State of Oregon to receive moneys pursuant to Volkswagen Environmental Mitigation Trust Agreement, deposit agreement moneys in Clean Diesel Engine Fund and use moneys to award grants for reducing emissions from school buses powered by diesel engines.	Introduced	Power

Other 2017 Energy-Related Legislative Activity

Only bills that have passed both chambers are set out below. For all 2017 energy-related legislation, visit aeltracker.org.

Bill Number	Bill Summary	Bill Status
HB 17-2111	Prohibits inclusion of provisions prohibiting installation and use of solar panels for obtaining solar access in declaration or bylaws of planned community.	Enacted
HB 17-2312	Updates certain terms and references used throughout state law to conform with changes to federal law associated with enactment of federal Workforce Innovation and Opportunity Act.	Enacted
HB 17-2331	Extends until January 2, 2025, sunset for Oregon Department of Administrative Services program to make compressed natural gas available for use in motor vehicles.	Enacted
HB 17-2343	Replaces requirements for State Department of Energy to complete biennial comprehensive energy plan and biennial energy forecast with requirement for department to complete biennial comprehensive energy report.	Enacted
HB 17-2510	Authorizes commercial tenant to install on premises and use electric vehicle charging station.	Enacted

HB 17-2511	Authorizes residential tenant to install on premises and use electric vehicle charging station for personal, noncommercial use.	Enacted
HB 17-2748	Modifies sources of moneys deposited in Residential Solid Fuel Heating Air Quality Improvement Fund.	Enacted
HB 17-2760	Extends sunset for property tax exemption for alternative energy systems.	Enacted
HB 17-3025	Excludes certain battery charger systems from definition of "battery charger system" for purposes of energy efficiency standards.	Enacted
HB 17-3456	Permits establishment of photovoltaic solar power generation facility on certain high-value farmland.	Enacted

News

- August 15th, 2017: [Oregon National Guard First in Army's Net Zero Energy Pilot Program.](#)
- August 12th, 2017: [State Regulators Push Back on PGE's Green Energy Plan.](#)
- August 11th, 2017: [Ruling Poses Risk to Oregon Energy Department Budget.](#)
- August 9th, 2017: [Burning Greater Portland's Trash for Energy Ruled Out for Now.](#)
- August 8th, 2017: [Regulators Deny Gas Plant Expansion.](#)
- July 20th, 2017: [Merkley Announces Key Oregon Wins in Senate Passage of Energy and Water Appropriations Bill.](#)
- July 18th, 2017: [Apple's Oregon Wind Farm Cleared for Super-sized Turbines.](#)
- July 6th, 2017: [Oregon Lawmakers Nix Rooftop Solar Tax Credits.](#)

Other Resources

- Energy Trust of Oregon, Renewable Energy: <https://www.energytrust.org/renewable-energy/>
- Oregon Department of Energy, Oregon's Renewable Energy: <http://www.oregon.gov/energy/energy-oregon/Pages/Renewable-Energy.aspx>
- Renew Oregon – Coal to Clean Energy: <http://www.reneworegon.org/coal to clean energy>
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Oregon: <http://database.aceee.org/state/oregon>
- The Database of State Incentives for Renewables and Efficiency, Oregon: <http://programs.dsireusa.org/system/program?fromSir=0&state=OR>
- U.S. Energy Information Administration, Oregon: <https://www.eia.gov/state/?sid=OR>
- SPOT for Clean Energy, Oregon: <https://spotforcleanenergy.org/state/oregon/>