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Oregon Renewable Energy Resources

Overview of Renewable Energy

Renewable energy is defined as an energy source that is replenished continuously in nature or that is replaced after use through natural means. Oregon has a wide variety of renewable resources that can be used to generate electricity including biomass, geothermal, hydropower, solar, wave and wind. Oregon's primary renewable energy generation source is conventional hydropower.

According to the U.S. Department of Energy's Energy Information Administration (**EIA**), 64 percent of electricity generated in Oregon and 44 percent of electricity consumed came from renewable resources in 2010, mainly conventional hydropower. Generation from other renewable resources is increasing, most notably wind power, which in 2010 was more than four percent of Oregon's electricity consumption.

The National Renewable Energy Laboratory (**NREL**) 2010 Renewable Energy Data Book and the EIA report the following statistics:

- Between 2000 and 2009, the installed capacity for renewable energy has more than tripled in the United States and internationally.
- Renewable sources, including hydropower, provided approximately 10 percent of the United States' electricity supply in 2009 (Figure 1), the highest percentage since 1997.
- Between 2008 and 2009 roughly 55 percent of all new electrical capacity installations utilized

renewable sources, compared to two percent in 2004. Much of this national growth was in the wind and solar photovoltaic (PV) sectors with wind growing by 39 percent and PV by 52 percent over their respective 2008 levels.

• While electrical generation from landfill gas is also increasing, generation rates from geothermal, hydropower and other forms of biomass have remained relatively stable since 2000.

The recent increases in renewable energy development are attributable to federal and state mandates and incentives, federal production and investment tax credits and concerns over fossil growing fuel emissions (EIA). A substantial

portion of the United States renewable energy capacity is located on the West Coast, with California, Oregon and Washington generating 40 percent of the renewable electricity in the country. Even excluding hydropower, the West Coast produces 24 percent of its electricity from renewable sources, more than any other region. Oregon is ranked within the top five states in installed renewable energy capacity both including and excluding hydropower, and on a total and per capita basis (Figure 2). In order of net generation, Oregon's current renewable sources are: conventional hydropower, wind, and woody biomass. Oregon also has operating facilities fueled by solar, geothermal, landfill gas and other biomass sources.



Figure 1 U.S. Electric Net Generation in 2009, National Renewable Energy Lab (NREL)



Figure 2 Renewable Energy Installed Nameplate Capacity in the United States (2009) NREL

Renewable Portfolio Standard

A renewable portfolio standard (**RPS**) requires utilities to obtain a minimum percentage of their power from qualified renewable sources within a certain timeframe. Oregon adopted a RPS in 2007 (Table 1). As of May 2012, 29 other states, two territories, and the District of Columbia have mandatory policies in place. Eight states and two territories have established voluntary goals, rather than mandates, for percentages of power generation from renewable resources.

Utility	Standard	Year	Qualifying Sources
Large (> 3% total OR electricity sales)	5 %	2011	 Geothermal, wave, wind, solar, biomass (some restrictions), hydropower (some restrictions), and hydrogen if generated from above sources. ODOE cannot allow sources from petroleum, natural gas, coal or nuclear fission. Facility must have become operational or had capacity/efficiency upgrades after January 1, 1995. Facility must be located in the Western regional grid. Eligible generation starts in January 2007.
	15 %	2015	
	20 %	2020	
	25 %	2025	
Medium (1.5% - 3% total OR electricity sales)	10 %	2025	
Small (< 1.5% total OR electricity sales)	5 %	2025	

 Table 1 Oregon's Renewable Portfolio Standard

Energy Facility Siting

The Energy Facility Siting Council (**EFSC**) is responsible for overseeing development of large energy facilities, high voltage transmission lines, gas pipelines, and radioactive waste disposal sites in Oregon. The EFSC is made up of seven members appointed by the Governor and confirmed by the Senate. The Oregon Department of Energy (**ODOE**) provides technical expertise and staffing to EFSC.

The types of energy facilities subject to EFSC review are defined in statute (ORS 469.300). Relevant to renewable energy projects, these facilities include:

- Electric power plants generating 25 MW or more from thermal power or combustion turbines;
- Electric power plants generating an average 35 MW (aMW) or more from geothermal, solar or wind facilities, at a single energy facility or within a single energy generation area;
- Solar collection facilities using more than 100 acres of land;
- Plants that convert biomass to gas, liquid or solid fuel, provided that at least one of these three is capable of being burned to produce the equivalent of six billion Btu of heat per day;

- High voltage transmission lines 10 miles or longer in length with a minimum capacity of 230,000 volts that are built in more than one city or county (with some exceptions);
- Pipelines six inches or greater in diameter and five or more miles in length that can carry geothermal energy in liquid form;
- Pipelines 16 inches or greater in diameter and five or more miles in length that can carry geothermal energy in gaseous form (excludes pipelines distributing heat within a geothermal heating district).

Prior to construction or operation, developers of covered energy facilities are required to obtain a site certificate, or permit, from EFSC. A typical siting process has two phases: the notice of intent and the application. In the notice of intent, the developer describes the proposed facility, and ODOE uses the notice of intent to gather initial public comments and other relevant state and local agencies use it to identify any applicable laws, regulations and ordinances. The application contains a more detailed description of the proposed site, the facility, and any anticipated impacts from the facility. It also describes what measures the applicant plans to take in order to comply with all EFSC standards for energy facilities. Those standards are defined in regulation; in general they are designed to ensure that energy facilities will protect

Oregon's natural resources and public health and safety, and will minimize any potential adverse environmental impacts. Proposed power plants with an average generating capacity of less than 100 MW can request an expedited review, which does not include the notice of intent phase.

ODOE reviews all applications to ensure that each project complies with EFSC's standards, any applicable state agency regulations and applicable local government ordinances. ODOE then makes a recommendation to EFSC. If a proposed facility meets all of EFSC's standards, EFSC is required to issue a site certificate. Similarly, if the facility fails to meet one or more standard, EFSC is required to reject the application, unless the applicant can demonstrate that the overall public benefit of the facility outweighs the damage to the resources the standards are designed to protect (some standards, such as organizational expertise, must be met).

A site certificate serves as a consolidated state permit; the decision is binding on all applicable state agencies and local governments, and those entities must issue the necessary permits and licenses to the facility (this excludes federally delegated permits, for instance, for compliance with the Clean Water Act or the Clean Air Act). The statutory time frame for the siting process is six months to 2 years, depending on the size and nature of the facility.

Facilities that do not require a site certificate must instead go through local processes to get a conditional use permit, as well as permits from applicable state agencies. Applicants for wind energy facilities of less than 35 aMW may elect to be permitted through EFSC's consolidated process.

California, Washington and Montana also have a consolidated energy facility siting process.

Renewable Energy Legislation

ODOE estimates that incentive programs in the state have led to the residential installation of approximately 4,670 solar electric arrays, 19,826 solar water heating systems, and 2,789 geothermal heat pumps. Table 2 provides a list of selected renewable energy legislation in Oregon.

Legislation	Year Enacted	Purpose	
Residential Energy Tax Credit	1977	Encourage homeowners and renters to install renewable technologies and improve energy efficiency.	
Business Energy Tax Credit	1979	Encourage investments in renewable energy sources, energy conservation, recycling and less-polluting transportation fuels.	
Small Scale Energy Loan Program	1979	Offer low-interest, fixed-rate, long-term loans for qualified Oregon projects that invest in renewable energy, energy conservation, alternative fuels, or creates products from recycled materials.	
Public Purpose Charge	1999	Provide funds for renewable resources, conservation, and weatherization for low-income households and energy efficiency in schools.	
Renewable Portfolio Standard	2007	Require electric utilities to acquire a minimum percentage of their power from renewable sources.	
Solar Technology on Public Buildings	2007	Require new public buildings or major renovations of existing public buildings include at least 1.5 percent of total contract price for solar technology.	
Encourage Wave Energy Development	2007	Exempt small wave energy projects from hydroelectric provisions; define wave energy as a renewable resource. This legislation was renewed in 2011 (House Bill 2748).	

Renewable Fuel Standard, Biomass Producer or Collector Tax Credit and Biofuel Consumer Tax Credit	2007	House Bill 2210 established Oregon's Renewable Fuel Standard and biomass producer or collector tax credit as well as the biofuel consumer tax credit. While this bill was largely about transportation, it also included significant tax credits for electricity production.
Renewable Energy Fund	2009	Financed acquisition and operation of renewable energy electric generation and transmission facilities.
Solar Power Pilot Program	2009	Created program to establish volumetric incentives for 25 MW of new solar development. Establish solar photovoltaic capacity standard for additional 20 MW or larger facilities.
Tax Credits and Other Incentives for Energy Generation and Conservation	2010- 2011	House Bill 3680 (2010) made significant changes to the Business Energy Tax Credit (BETC) program, capping the incentives available and adding a tiered competitive selection process. House Bill 3672 (2011) sunset the BETC program effective July 1, 2011 and creates several separate energy generation and conservation incentive programs. For a full summary see <u>http://www.oregon.gov/ENERGY/CONS/docs/HB3672summary.pdf</u>
Solar Photovoltaic Zoning	2011	House Bill 3516 established that installation and use of solar photovoltaic energy systems or solar thermal energy systems on residential or commercial buildings is an outright permitted use in any zone where such structures are an allowed use.
Geothermal Energy in Construction or Renovation of Public Buildings	2012	Senate Bill 1533 added electricity generation or direct use of geothermal energy to satisfy the existing statutory requirement that contracting agencies allocate at least 1.5 percent of the total contract price for the inclusion of solar technologies in the construction or renovation of public buildings.

 Table 2 Selected renewable energy legislation in Oregon

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Lisa Pinheiro Oregon Department of Energy (503) 373-2293 Committee Services provides centralized, nonpartisan research and issue analysis for the Legislative Branch. Committee Services does not provide legal advice. Background Briefs are intended to give the reader a general understanding of a subject, and are based on information which is current as of the date of publication. Legislative, executive, and judicial actions subsequent to publication may affect the timeliness of the information.