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Inside this Brief

- **Electricity**
- **Electricity Consumption**
- **Petroleum**
- **Natural Gas**
- **Energy Efficiency**
- **Staff and Agency Contacts**

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Background Brief on ...

Energy

Energy is a significant economic driver in both Oregon and the United States. Oregonians spent about \$14.9 billion on energy in 2012.¹ The majority of the electricity used by Oregonians comes from hydroelectric sources. Energy planning efforts in Oregon focus first on conservation and increased efficiency to meet extra consumer demand, and then on increased generation from local renewable and traditional sources.

The U.S. Department of Energy's Energy Information Administration (**EIA**) tracks energy use in four broad categories: electricity, petroleum, natural gas, and coal across the residential, commercial, industrial, and transportation sectors. Oregon's total energy consumption in 2012 (the most recent year for which data is available) ranks it 39th in the nation on a per capita basis. Wyoming consumes the most energy per capita and New York and Rhode Island the least. Energy use in Oregon is distributed between transportation (33 percent), electricity (41 percent), and thermal (26 percent) uses.

Electricity

In Oregon, electricity is sold through two types of utilities: investor-owned and consumer-owned utilities. The IOU (Portland General Electric, Pacific Power, and Idaho Power) markets make up 67.4 percent of Oregon's electricity sales; 37 consumer-owned utilities provide 29.6 percent, and electricity service suppliers provide about 31 percent. The consumer-owned utilities purchase most of their power from the Bonneville Power Administration. The IOUs generate their own power or purchase power from energy markets.

Oregon produced about 515 trillion Btu of energy in 2011, ranking it 31st of the total energy produced in the U.S.

¹ U.S. Department of Energy, Energy Information Administration (EIA), State Energy Consumption Estimates, 2012.

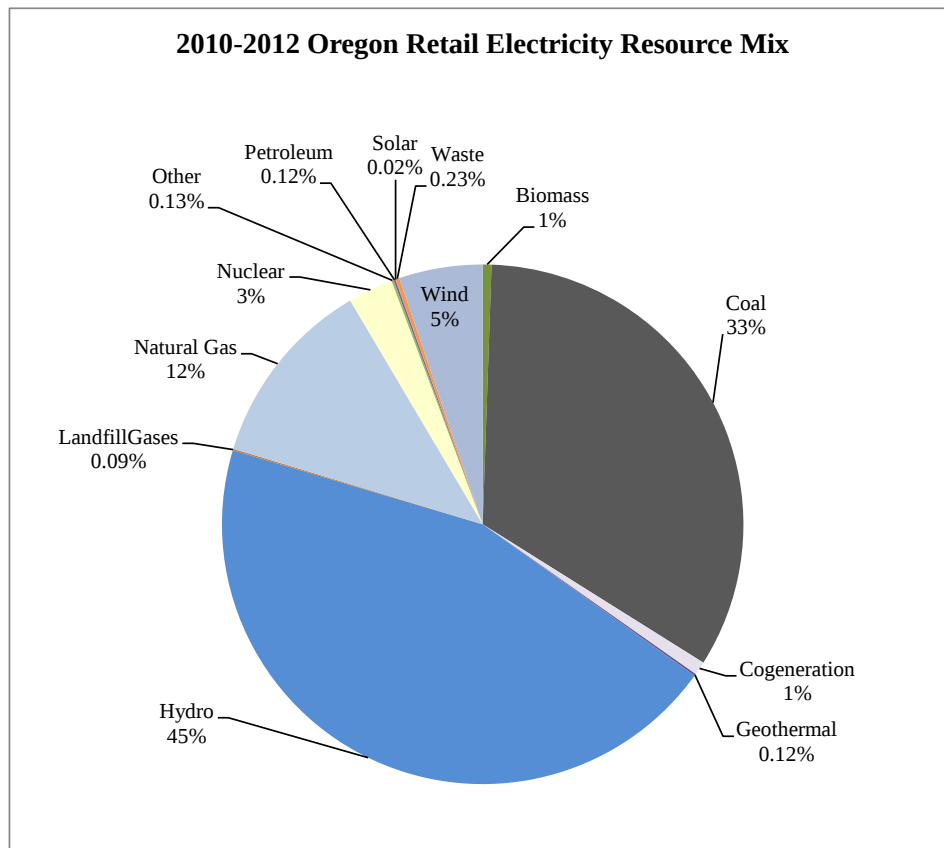


Figure 1: Oregon's Electricity Resource Mix 2010-2012 (ODOE)

Over half of Oregon's retail electrical mix is from conventional hydroelectric power plants and other renewable energy resources. (Figure 1).

Electricity Consumption

According to the EIA, a typical household in Oregon uses about 957 kWh of electricity per month. The average U.S. household consumed 903 kWh per month of electricity in 2012, of which the largest portion was for appliances, electronics, lighting, and miscellaneous uses. For decades, space heating and cooling accounted for more than half of all residential energy consumption.

Estimates from the most recent national Residential Energy Consumption Survey, collected in 2010 and 2011 and released in 2011 and 2012, show that 48 percent of energy consumption in U.S. homes in 2009 was for heating and cooling, down from 58

percent in 1993. This change is attributed to increased adoption of more efficient equipment, better insulation, more efficient windows, and population shifts to warmer climates. (Figure 2).

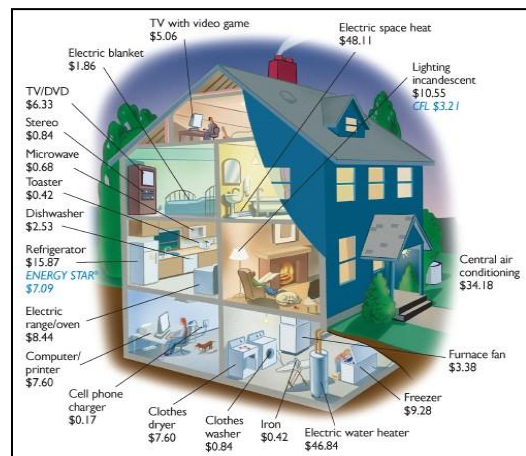


Figure 2: Pacific Power, monthly energy use average 1,500 square-foot Oregon home

Petroleum

Oregon imports 100 percent of its petroleum, more than 90 percent from refineries in Washington's Puget Sound region. Oregon, along with Alaska, Arizona, California, Hawaii, Nevada, and Washington form a nearly self-contained system of petroleum production and consumption, referred to by the federal government as Petroleum Administration Defense District Five. Approximately 80 percent of the crude oil the Puget Sound refineries utilize originates in Alaska's North Slope oil fields. This percentage is changing as Puget Sound refineries increasingly source crude oil from the Western Canada Sedimentary Basin (tar sands and wells), and the oil fields in Alaska decline. Less than five percent of Puget Sound refineries' crude oil comes from the continental U.S., Mexico, Indonesia, or the Middle East. However, these percentages

are changing as refineries in Washington are now receiving crude oil by rail from the Bakken field in Montana/North Dakota.

The majority of Oregon's petroleum is used in the transportation sector, mainly gasoline. The past decade has seen the addition of ethanol and biodiesel to the fuel mixture, which now make up 7.4 and 1.3 percent respectively.

Natural Gas

The Mist gas field in northwestern Oregon is the only producing natural gas field in the Pacific Northwest. Total natural gas production has exceeded 65 billion cubic feet of gas since its discovery in 1979. The Mist field now includes two underground natural gas storage projects, using three depleted natural gas reservoirs that can store 14 billion cubic feet of natural gas to meet peak demands during colder months. Exploration wells continue to be drilled at Mist; however, production has declined markedly from its high of over 4 billion cubic feet of natural gas per year in the mid-1980s.

Oregon imports natural gas via two main interstate pipelines: the Williams Company Northwest Pipeline and the Pacific Gas & Electric Pipeline. In July 2011, the El Paso Corporation put its Ruby pipeline in service, running from Opal, Wyoming to Malin, Oregon and serving the Western U.S.

When it comes to home heating, about 35 percent of Oregon homes heat with natural gas, compared to 51 percent nationwide.

Energy Efficiency

Since its inception in 1975, two cornerstones of Oregon Department of Energy's (ODOE) policy have been energy conservation and improved efficiency.

ODOE works with state, regional, federal and tribal governments, and organizations to promote conservation and efficiency. These partners include the Northwest Power and

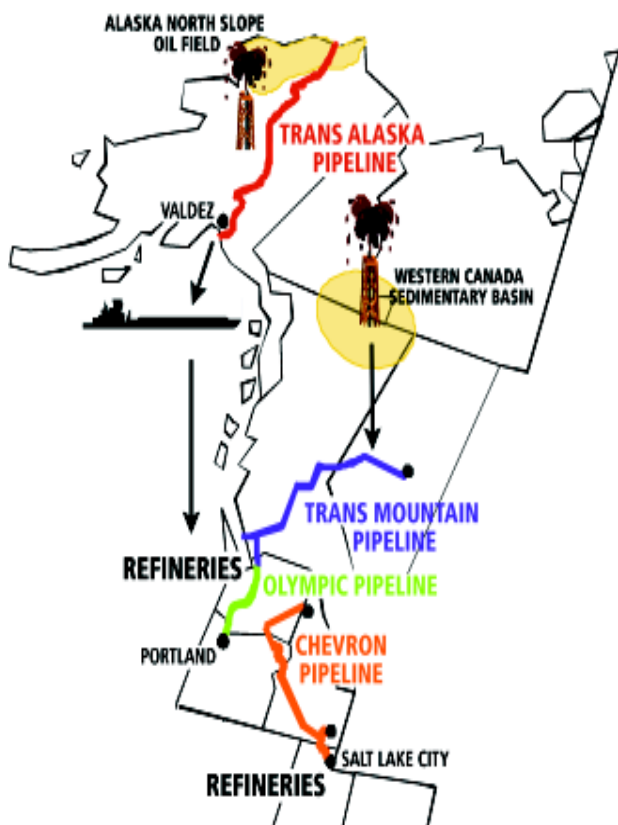


Figure 3: Illustration of source, refineries, and shipment of Oregon's petroleum—State of Oregon Energy Plan, 2011-2013

Conservation Council, investor-owned and consumer-owned utilities, state and academic institutions, the Energy Trust of Oregon, the NW Energy Efficiency Alliance, Pacific Coast Collaborative, and the Bonneville Power Administration.

encourage energy efficiency and conservation (Figure 4). ODOE estimates that the cumulative energy savings and electricity generated through these programs is enough to meet the energy needs of approximately 1.5 million homes in Oregon.

For more than 35 years, Oregon has designed a number of programs to

Program	Established	Purpose
Residential building codes that included energy efficiency	1974	Increase energy efficiency in residences.
Residential Energy Tax Credit	1977	Encourage homeowners to invest in renewable energy technologies.
Commercial building codes that included energy efficiency	1978	Increase energy efficiency in commercial buildings.
Business Energy Tax Credit	1979	Encourage investments in energy conservation, recycling, renewable energy sources, 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 energy conservation, renewable energy, alternative fuels, or create products from recycled materials.
Public Purpose Charge	1999	Provide funds for conservation, renewable resources, weatherization for low-income households, and energy efficiency in schools.
Energy efficiency requirements for new state buildings	2001	Increase energy efficiency in state buildings.
State appliance efficiency standards	2005	Increase energy efficiency in commercial appliances.
Energy Efficiency and Sustainable Technology Loan Program	2009	Provide low-cost loans to individuals for projects that increase energy efficiency in homes and small businesses.
“Cool Schools” Program	2011	House Bill 2960 creates the “Cool Schools” program, which provides grants and loans to school districts for projects to weatherize, upgrade, and retrofit K-12 public schools for energy efficiency; and replacing or retrofitting school bus fleets to operate on compressed natural gas, other alternative fuels.
State appliance efficiency standards	2013	Senate Bill 692 established minimum energy efficiency standards for televisions, large battery charger systems, inductive charger systems, small battery charger systems with certain exceptions, and high light output double-ended quartz halogen lamps.

Figure 4: Energy efficiency and conservation programs and legislation in Oregon

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