

Energy Matters in Washington State

www.energy.wsu.edu/library/

November 2009



A photograph of a landscape with several wind turbines in the distance. A faint rainbow is visible in the sky above the turbines. The foreground is a flat, light-colored field.

Energy Matters in Washington State

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This publication can also be found on the Internet at: www.energy.wsu.edu/library/
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Introduction

“Energy Matters in Washington State” is a quick reference resource designed to help public and academic librarians guide patrons to the best information about energy production, consumption, conservation and regulation in Washington State. Energy information about our state is spread among several agencies and organizations, which sometimes makes it difficult to find. Our purpose is to bring this array of information to a central location and highlight the most reputable and useful resources.

“Energy Matters in Washington State” is a reincarnation of what was once a print publication produced by the WSU Energy Program library and distributed to libraries statewide. This new, online-only publication will be updated periodically.

For more information, contact the WSU Energy Program library:

360-956-2076

or send an e-mail to library@energy.wsu.edu.

Table of Contents

Energy Data and Statistics	1
Reports and Publications	5
Laws and Legislation	8
Rebates, Incentives and Other Assistance	10
Directory of Energy Organizations	12
Energy Activities: Teaching Tools.....	16
Energy Activities: Field Trips	17
Tips and Tools for the Homeowner	21
FAQs	22

Energy Data and Statistics

Energy Information Administration, Washington, DC

Part of the U.S. Department of Energy, the Energy Information Administration is one of the best sources for nationwide energy data and statistics. Washington State information is available by fuel source, including renewables (solar, wind and geothermal energy); petroleum, natural gas, electricity, nuclear and coal. Price and consumption data are presented by sector: residential, commercial, industrial, transportation, and utilities.

http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=WA

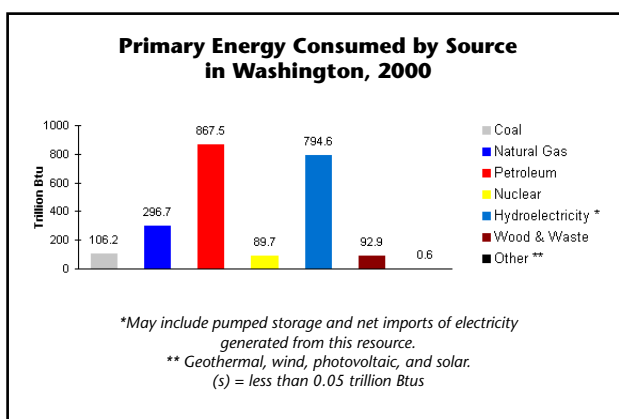
The U.S. Census Bureau

The U.S. Census Bureau provides data about residential heating fuels used by households in Washington State. Data from the first publication below shows that in 2000 a little more than half of Washington State households heated with electricity, while about a third used natural gas.

“Washington: 2000 Summary Social, Economic and Housing Characteristics, from the 2000 Census of Population and Housing,” April 2003, PHC-2-49. Starting on page 184, Table 21 and Table 22, Fuels and Equipment Characteristics:

2000, show the number of “occupied housing units” by state, county, county subdivision, and place¹, with a breakdown by heating fuel types: utility gas²; electricity; fuel oil or kerosene, and coal or coke, wood, solar energy, or other fuel.

www.census.gov/prod/cen2000/phc-2-49.pdf



¹ A type of governmental unit, incorporated under state law as a city, town, borough, or village, generally to provide governmental services for people within legally prescribed boundaries.

² This category includes gas piped through underground pipes from a central system to serve the neighborhood.

Another Census Bureau publication, **“Historical Census of Housing Tables: House Heating Fuel,”** covers 60 years of census data on housing characteristics, including home heating fuel by state. The site offers some national analysis of home heating trends, followed by decennial data for each state from 1940-2000.

www.census.gov/hhes/www/housing/census/historic/fuels.html

Washington Public Utility Districts Association

The Washington Public Utility Districts Association represents 28 nonprofit, community-owned utilities that provide electricity, water, sewer and broadband telecommunications to more than 1.7 million Washington State residents. The association has posted 2002 sales and revenue data for PUDs alongside corresponding figures for municipal, cooperative and investor-owned utilities.

www.wpuda.org/pud-faqs.cfm

Washington State Department of Commerce (COM)

The Energy Policy Division of the Washington State Department of Commerce maintains and periodically updates a collection of 23 energy indicators for Washington State. Each indicator includes a graph with a caption summarizing the trend portrayed, and narrative offering context.

As of July 1, 2009, the Washington State Department of Community, Trade, and Economic Development (CTED) was renamed Washington State Department of Commerce.
www.commerce.wa.gov/portal/alias__CTED/lang__en/tabID__533/DesktopDefault.aspx

Washington State Data Book – Energy

This Office of Financial Management (OFM) site provides historic information from the Washington State Data book including petroleum, natural gas and electricity consumption and prices by commercial, residential, and industrial sectors. Data may be downloaded as an Excel® spreadsheet or pdf file.

www.ofm.wa.gov/databook/default.asp#energy

Washington Utilities and Transportation Commission (WUTC)

The Washington Utilities and Transportation Commission regulates only investor- owned electric and gas utilities. The commission prepares reports titled “Annual Statistics of Electric Companies” and “Annual Statistics of Gas Companies,” which give detailed company financial and operating statistics from 1993 to 2002. Electric utilities included are: Pacific Power & Light, Puget Sound Energy and Avista Utilities. Gas utilities included are: Cascade Natural Gas, Northwest Natural Gas, Puget Sound Energy, and the Avista Corporation.

“Annual Statistics of Electric Companies”

www.wutc.wa.gov/webdocs.nsf/0/4b4a2bb5c32174f2882569eb00605e3b?OpenDocument

“Annual Statistics of Gas Companies”

www.wutc.wa.gov/webdocs.nsf/0/0b707b038b8999d288256a07007c550a?OpenDocument

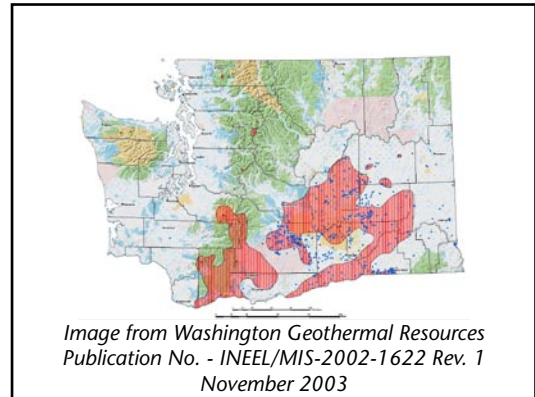
Renewable Energy Maps

Geothermal

The Idaho National Engineering and Environmental Laboratory publishes a digital map showing geothermal resources in Washington State. Geothermal energy is derived from heat that occurs naturally in the earth. According to the laboratory website:

“For commercial use, a geothermal reservoir capable of providing hydrothermal (hot water and steam) resources is necessary. Geothermal reservoirs are generally classified as being either low temperature (<150° C) or high temperature (>150° C). Generally speaking, the high temperature reservoirs are the ones suitable for, and sought out for commercial production of electricity.” *Note: The map is slow to load.*

<http://geothermal.id.doe.gov/maps/wa.pdf>



Dynamic Maps from the National Renewable Energy Laboratory

NREL's GIS team develops maps for various renewable resources; view solar, wind, biomass resource and hydrogen maps in a live-interactive session. Also provided from this page are links to the Federal Energy Management program maps, as well as the Renewable Energy Atlas of the West.

www.nrel.gov/gis/maps.html#resource_atlas

Solar and Wind Power Maps – Resource Potential in Washington

The Washington State Department of Ecology has produced these maps of Washington, clickable by county.

www.ecy.wa.gov/climatechange/greenenergy_maps.htm

Wind

Three maps showing Washington State's wind potential are available in various digital formats, as a result of a project sponsored by a group of agencies and organizations including Wind Powering America and the National Renewable Energy Laboratory and the Bonneville Power Administration, all part of the U.S. Department of Energy. Updated in 2002, the maps are color-coded by wind class, which ranges from Class 1 (lowest potential) to Class 7 (highest potential). In Washington, winds less than Class 4 generally are considered unsuitable for energy production.

www.windpowermaps.org/windmaps/states.asp#washington



Energy Reports and Publications

These selected reports and publications are from various state and regional energy agencies and organizations.

“2004 Natural Gas Study – Transition: The Natural Gas Market in the Pacific Northwest and North America”

This report updates an earlier one titled, *“Convergence: Natural Gas and Electricity in Washington,”* published in 2001. The new 140-page report looks at recent changes in regional, national, and international natural gas markets that affect Washington.

www.commerce.wa.gov/_CTED/documents/ID_1381_Publications.pdf

“A 2005 Look at the Renewable Energy, Energy Efficiency, and Smart Energy Industries in Washington State” (2005)

The Washington State Energy Policy Office commissioned this report to provide an economic snapshot of the renewable energy and energy efficiency industries in Washington State. This report provides an assessment of the size, health, and characteristics of Washington’s clean energy industry.

www.cted.wa.gov/_CTED/documents/ID_3543_Publications.pdf

“2007-08 Gas Price Study Final Report”

State residents saw gasoline prices climb dramatically in spring 2007. This document reports on the investigation of factors that influence Washington’s gasoline prices. The study focused on whether regional price differences can be identified and explained analytically, and if not, whether the differences suggested illegal activity.

www.atg.wa.gov/uploadedFiles/Another/Safeguarding_Consumers/Antitrust/Unfair_Trade_Practices/Gas_Prices/41708gasstudy.pdf

“Builder’s Field Guide,” Sixth Edition

The 2004 edition of the Builder’s Field Guide outlines construction practices that comply with the 2004 Washington State Energy Code and the 2004 Washington State Ventilation and Indoor Air Quality Code. The codes apply to all building jurisdictions in the state for residential construction. *Note:* An updated edition will be available later in 2008.

www.energy.wsu.edu/documents/code/bfg/2004/BFG_Full_2004.pdf

“Energy Planning” (formerly “Washington State Energy Strategy”)

Maintained by the Department of Commerce, this page links not only to the most recent Biennial Energy Report but to similar documents dating from 1993. The current report covers energy consumption and price trends, electricity trends, greenhouse gas emissions, energy intensity indicators, as well as an examination of the implications of Washington’s energy trends.

www.commerce.wa.gov/portal/alias__cted/lang__en/tabID__542/DesktopDefault.aspx

Wholesale price differences across the state are relatively small. On average, the range between the highest and the lowest wholesale prices is 3.4 cents per gallon. The varying costs to supply gasoline to wholesale distribution centers in each region with fuel largely explain the difference in the wholesale prices.

Source: "2007-08 Gas Price Study Final Report"

"Greenhouse Gas Inventory and Reference Case Projections 1990-2020," December 2007

Relying on the State projections of population and employment growth, utilities' projections of electricity use, and input from Washington staff from CTED, Ecology and other departments, a simple reference case projection was developed for Green House Gas emissions through 2020.

www.ecy.wa.gov/climatechange/docs/Updated1990GHGreport20071219.pdf

"Green Power Programs in Washington: 2007 Report to the Legislature," May 2008

Washington State law requires larger electric utilities to offer their customers a "green power" electricity product – that is electricity produced from renewable resources. This CTED and WUTC report presents information about these utility programs for the Legislature's review.

[www.wutc.wa.gov/webdocs.nsf/0/df36767ebd08753e8825745c0079be20/\\$FILE/2007%20Green%20Power%20Report.pdf](http://www.wutc.wa.gov/webdocs.nsf/0/df36767ebd08753e8825745c0079be20/$FILE/2007%20Green%20Power%20Report.pdf)

"Impressive Conservation Achievements Since 1980 can be Repeated by 2025, Council Reports"

This April 2003 press release from the Northwest Power and Conservation Council links to three publications:

- "2000/2001 Energy Savings by Utility"
- "Conservation Development Between 1980 and Today"
- "Role of Conservation in the Regional Power Supply and Estimates for the Future."

Formed under the 1980 Northwest Power Act, the council is responsible for developing a long-term power plan to meet energy needs, while protecting fish and wildlife.

www.nwcouncil.org/library/releases/2003/0408.htm

"Landfill Gas Projects in Washington"

To promote the use of landfill gas as an energy source, the U.S. Environmental Protection Agency has established the Landfill Methane Outreach Program. This publication is a primer on developing Washington's landfill gas-to-energy potential.

www.epa.gov/landfill/res/pdf/st_primers/wa_pmr.pdf

Northwest Energy Coalition Reports and Studies

This page links to several studies including the Citizens Energy Plan “a roadmap to the future” of energy in the Northwest states, the RAND Study which examines the implications of alternative power generation technologies in the Northwest and the 5th NW Electric Power and Conservation Plan – a draft blueprint for meeting regional electricity needs over the next 20 years.

www.nwenergy.org/publications/reports

“Powerful Choices VI: Survey of Retail Green Power Programs in the Pacific Northwest,” 2006

Renewable Northwest Project presents a summary of 2005 data of green power programs in the Northwest.

www.rnp.org/Resources/PC6%20report_v2.pdf

“Small Wind Electric System – A Washington Consumer’s Guide”

Produced by the National Renewable Energy Laboratory and the U.S. Department of Energy, this is a practical guide for the consumer answering questions such as is wind energy practical for me; how much do wind systems cost; and what size wind turbine do I need?

www.nrel.gov/docs/fy07osti/41391.pdf

“Washington Consumer’s Guide: Solar Electric Systems,” 2003

Mike Nelson of the Washington State University Extension Energy Program adapted this 22-page document from a publication produced in 2000 for the U.S. Department of Energy. It explains equipment, financing options, siting and sizing considerations, regulatory requirements, and net-metering agreements.

www.energy.wsu.edu/ftp-ep/pubs/renewables/ConsumerSolarguide.pdf

“Washington’s Greenhouse Gas Emissions: Sources and Trends – 2006” (Revised 2007)

Global greenhouse gas emissions concentrations continue to increase and many states and nations are taking actions to reduce their emissions of greenhouse gases. This paper reviews the sources of Global greenhouse gas emissions from Washington and their historical trends and is an update of the 2004 report *Washington State’s Greenhouse Gas Emissions: Sources and Trends*.

www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&ItemID=4084&MId=863&wversion=Staging

“Washington’s Solar Electric Industry: Sunrise or Sunset,” 2001

Mike Nelson and Gary Shaver, both of the Washington State University Extension Energy Program, wrote this 26-page publication analyzing the potential development of Washington State’s solar electric industry.

www.energy.wsu.edu/ftp-ep/pubs/renewables/sunrisesunset.pdf

Washington State Department of Commerce

Links to information about **electricity**. Included are electricity policy documents, data, reports on green power programs, and energy tips. Also includes FAQs about electricity.

www.commerce.wa.gov/site/837/default.aspx

The Energy Policy Division prepares **Energy Updates**, which includes information on regional energy supply, prices and forecasts, energy conservation at Washington State agencies, plus a few current articles from various news sources on energy issues.

www.commerce.wa.gov/portal/alias__CTED/lang__en/tabID__529/DesktopDefault.aspx

Links to **petroleum** information. Categories include: refined petroleum product data, petroleum energy policy documents, energy efficiency tips, consumer gasoline and diesel price info, petroleum organizations and businesses, as well as a section on petroleum FAQs.

www.commerce.wa.gov/site/847/default.aspx

Links to information about **natural gas** including natural gas data, natural gas energy policy documents, and energy efficiency tips.

www.commerce.wa.gov/site/839/default.aspx

“Washington State Electricity Profile”

This is a page of statistical information from the Energy Information Administration of the U.S. government. Information is downloadable in Excel® or pdf formats.

www.eia.doe.gov/cneaf/electricity/st_profiles/washington.html

Laws and Legislation

State Energy Office

Chapter 43.21F of the Revised Code of Washington (RCW) sets out which agencies are responsible for various aspects of energy planning and regulation in our state.

<http://apps.leg.wa.gov/RCW/default.aspx?cite=43.21F>

The statute is titled STATE ENERGY OFFICE, however, due to budget constraints, the state Legislature closed the Energy Office in 1996 and turned over responsibility for energy education, applied research, and technology transfer programs to Washington State University. Today, the **WSU Extension Energy Program** in Olympia handles these functions.

The Legislature assigned responsibility for energy efficiency in public buildings to the state **Department of General Administration**. The **Department of Commerce** retains its planning and advisory roles through the Energy Policy Division.

See the status of energy related bills pending or recently passed by the Washington Legislature, at the WSU Energy Program website:
www.energy.wsu.edu/library/bills/energybilltracking.cfm

Energy Code Resources

Links to information about residential permit applications. Included are links to Energy Code training information, links to the text of the 2006 Energy code, as well as changes and revisions to the code.

www.energy.wsu.edu/code/

Energy Policy Statutes and Rules

This site lists provisions of the Revised Code of Washington that address energy planning and policy.

www.commerce.wa.gov/energy/archive/RCWs.htm

Initiative Measure No. 937 (2006)

This measure, approved by voters in November 2006, imposes targets for energy conservation and the use of eligible renewable resources on all electric utilities that serve more than 25,000 customers in Washington.

<http://wutc.wa.gov/webimage.nsf/d60036703dbb408d88256efc00506bb4/135b5de8111f51a8825723b00690f67!OpenDocument>

Net Metering in Washington

In 1998, Washington state passed a law that allows utility company customers who generate their own power from renewable sources to get credit for electricity they generate in excess of what they use. The credit is applied to the customer's monthly energy bill.

See Revised Code of Washington 80.60 NET METERING OF ELECTRICITY at <http://apps.leg.wa.gov/RCW/default.aspx?cite=80.60>

For more information, see "Q&A about Washington State's Net Metering Law," adapted from a California Energy Commission fact sheet by Mike Nelson of the WSU Energy Program, at www.energy.wsu.edu/ftp-ep/pubs/renewables/netmeteringlaw.pdf

Seattle Energy Code

This site contains the entire text of the energy code in effect in Seattle: the 2006 *Seattle Energy Code*. Also included are links to Client Assistance Memos, forms, and Directors Rules, as well as a search function for the energy code.

www.seattle.gov/DPD/Codes/Energy_Code/Overview/default.asp

Washington State Energy Code

The *Washington State Energy Code* 2006 edition can be found at this web link: <http://apps.leg.wa.gov/WAC/default.aspx?cite=51-11>

For non-residential Washington State Energy Code support, contact the Northwest Energy Efficiency Council:

www.neec.net/

Contacts:

WSU Energy Program; (360) 956-2000

www.energy.wsu.edu

Washington State Department of General Administration; (360) 902-7272

www.ga.wa.gov

Washington State Department of Commerce, Energy Policy Division;

(360) 725-3118

www.commerce.wa.gov/site/526/default.aspx

Rebates, Incentives and Other Assistance

Your utility is the best place to start looking for rebates and other incentives on the purchase of appliances or renewable energy equipment, such as solar panels. Ask for the *conservation manager*.

Some utilities in Washington State offer incentives on solar-powered residential heating systems or other renewable energy systems. (See the *Database of State Incentives for Renewable Energy* below.) The State of Washington offers a sales tax exemption on the purchase of equipment used to generate renewable power. Retailers should have the exemption form, or visit the state Department of Revenue's website and download the Buyers' Retail Sales Tax Exemption Certificate.

http://dor.wa.gov/Docs/Forms/ExcsTx/ExmptFrm/BuyersRetailTxExmptCert_E.pdf



Photo courtesy of the Northwest Solar Center

Washington State University Extension Energy Program Library

Anyone who lives in Washington State can get free answers to questions about residential energy efficiency and conservation through the WSU Extension Energy Program Library. Call the library at 360-956-2076, or e-mail your question to library@energy.wsu.edu.

Department of Commerce Tax Incentives

COM provides links to many resources including Homeowner Incentives, Renewable Tax Credit Implementation, Federal Tax Incentives and Tax Credits, and State Tax Incentives.

www.northwestenergystar.com/index.html

The Database of State Incentives for Renewable Energy (DSIRE)

DSIRE is a comprehensive, up-to-date listing of federal, state and utility incentives, which is searchable by state. The database is a project of the Interstate Renewable Energy Council, funded by the U.S. Department of Energy and managed by the North Carolina Solar Center.

www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=WA&RE=1&EE=1

Green Building Incentives and Assistance

Seattle's Department of Building and Development has gathered information and resources on incentives for building green. Some of these are code or tax-based, and others involve cash paid for energy and water conservation.

www.cityofseattle.net/dpd/GreenBuilding/OurProgram/IncentivesAssistance/default.asp

Low-Income Home Energy Assistance

The Low-Income Home Energy Assistance Program is federally funded through the U.S. Department of Health and Human Services and administered through the state Department of Commerce. The purpose of the program is to maintain a warm, safe and healthy environment for households with young children, the elderly, and the disabled. The monthly income-eligibility cutoff for a family of four is \$1,964. For those who do qualify, there are often waiting lists for financial assistance. Find out how and where to apply at www.liheapwa.org/.

Northwest Energy Star Incentives

Many utilities offer rebates and incentives for purchases of ENERGY STAR appliances, lighting, and new homes to help reduce your energy costs. This is a search tool to see what tax credits and cash incentive programs your state offers to help you save energy and money.

www.northwestenergystar.com/index.html

Directory of Energy Organizations

Washington State and the Northwest

The **Bonneville Power Administration**, under the U.S. Department of Energy, markets transmission services and wholesale electrical power from hydro projects, one nuclear plant, and small nonfederal power plants in the Pacific Northwest.

www.bpa.gov

The **City of Seattle's City Green Building**, a subsidiary of the city's Department of Planning and Development, is an organization whose mission is to make green building the standard practice in Seattle through education, technical assistance, and incentives.

www.cityofseattle.net/dpd/GreenBuilding/

The **Climate Impact Group** is an interdisciplinary research group studying the impacts of natural climate variability and global climate change on the U.S. Pacific Northwest.

www.cses.washington.edu/cig/

Climate Solutions is an Olympia, Washington-based nonprofit dedicated to halting global warming by helping to develop practical and profitable solutions in the Northwest.

www.climatesolutions.org/

Energyexperts.org is a gateway to timely and objective energy efficiency and renewable energy information resources for building owners, operators and occupants, including publications, multimedia, programs and Q&As.

www.EnergyExperts.org

The **Energy Facility Site Evaluation Council**, a state agency that coordinates all of the evaluation and licensing steps for siting major energy facilities in Washington, oversees construction, and manages environmental and safety oversight.

www.efsec.wa.gov/

Energy Northwest is a joint operating agency comprised of public utilities that operates four electricity generating stations, including a nuclear facility near Richland, Washington.

www.energy-northwest.com/who/

The **Foundation for Water and Energy Education** is an organization dedicated to providing balanced information for students, teachers, and others about water as a Northwest renewable energy resource.

www.fwee.org/

The **Geo-Heat Center**, funded by the U.S. Department of Energy, provides information about geothermal projects and development.

<http://geoheat.oit.edu/>

The **Low-Income Home Energy Assistance Program**, a federally funded program to assist households in maintaining a warm, safe, and healthy environment.

www.liheapwa.org/

The **Northwest EcoBuilding Guild** is an association of builders, designers, homeowners, tradespeople, manufacturers, and suppliers interested in ecologically sustainable building.

http://ecobuilding.org/about_us/

The **Northwest Energy Coalition**, an alliance of environmental and civic organizations, utilities, and businesses that promotes renewable energy, conservation, consumer protection, low-income energy assistance, and fish and wildlife restoration on the Columbia and Snake rivers.

www.nwenergy.org/

The **Northwest Energy Education Institute** offers learning opportunities throughout the Northwest for practicing professionals in the energy industry, including an energy management certification program.

www.nweei.org/pages/?page_id=9

The **Northwest Energy Efficiency Alliance**, a nonprofit corporation supported by electric utilities, state governments, public interest groups, and others, promotes affordable, energy efficient products.

www.nwalliance.org/

The **Northwest Energy Efficiency Council** is a nonprofit trade association of the energy efficiency industry.

www.neec.net/

The **Northwest Gas Association** is an industry trade organization.

www.nwga.org/

The **Northwest Hydroelectric Association** is a regional trade organization.

www.nwhydro.org/

The **Northwest Power and Conservation Council**, created by Congress, oversees planning for electrical generation at Columbia River Basin hydropower dams, and related fish and wildlife protection.

www.nwccouncil.org

The **Northwest Power Pool** is a membership forum for the electrical industry.

www.nwpp.org/

The **Northwest Public Power Association** is an organization representing consumer-owned, locally controlled utilities in the western United States and Canada.

www.nwppa.org

Northwest SEED is a non-profit organization working throughout the Pacific Northwest to establish a clean, diverse, and affordable Northwest energy system based on efficient use of renewable resources, with local control and ownership of energy issues.

www.nwseed.org/

The **Northwest Solar Center** is a membership organization made up of utilities, not-for-profit organizations and local governments. It is affiliated with the Washington State University Extension Energy Program.

www.northwestsolarcenter.org/

Our Wind Co-op is a cooperative of small-scale wind turbines across the Northwest that seeks to create opportunities to explore on-farm green power production, distribution, ownership, and marketing models to meet local energy needs.

www.ourwind.org/windcoop/

The **Puget Sound Clean Cities Coalition**, a voluntary collaboration of public and private agencies and businesses, promotes the use of alternative fuels.

www.pugetsoundcleancities.org/

The **Renewable Northwest Project**, a coalition of public-interest organizations and energy companies, promotes development of the region's renewable resources.

www.rnp.org/

Solar Washington is a private, not-for-profit chapter of the *American Solar Energy Society*.

www.solarwashington.org/

The **Washington Association of Building Officials** is a nonprofit, professional association of state, county, city, and town building officials.

www.wabo.org/

The **Washington Department of Commerce – Energy Policy Division** is the agency responsible for developing state policy for an economically and environmentally sound energy future for Washington.

www.commerce.wa.gov/site/526/default.aspx

The **Washington Department of General Administration** is the state agency responsible for energy efficiency in public buildings.

www.ga.wa.gov/

The **Washington Public Utility Districts Association** is an organization that represents nonprofit, community-owned utilities that provide electricity, water, sewer, and broadband telecommunications.

www.wpuda.org

The **Washington Rural Electric Cooperative Association** is a lobbying and advocacy organization representing the interests of customers served by member utilities.

www.wreca.coop

The **Washington State University Extension Energy Program** is part of the university that provides information and technical assistance to promote industrial, commercial and residential energy efficiency.

www.energy.wsu.edu/

The **Washington Technology Center** is a statewide economic development organization focused on technology and innovation. We build Washington State's economy by:

- Providing funding support and access to capital
- Facilitating research collaboration
- Offering business services support
- Providing access to laboratory facilities
- Investing in emerging industries

www.watechcenter.org/

The **Washington Utilities and Transportation Commission** is the state board that regulates the rates, services, and practices of privately owned utilities and transportation companies.

www.wutc.wa.gov/

The **Western Energy Institute** is a regional association serving the electric and gas industries, both public and private, throughout the Western United States and Canada.

www.westernenergy.org/

The **Wild Horse Wind and Solar Facility**, located in Central Washington, is Puget Sound Energy's (PSE) second wind-powered electric generation facility. It is also the utility's largest wind farm with 127 turbines. Wholly owned by PSE, Wild Horse has the capacity to generate up to 229 megawatts (MW) of electricity. Construction began in October 2005, and was completed in December 2006, with a 22-turbine, 44 MW expansion underway in 2009.

www.pse.com/ENERGYENVIRONMENT/ENERGYSUPPLY/pages/EnergySupply_ElectricityWind.aspx?tab=3&chapter=1

For a more comprehensive and detailed listing of organizations with a direct or indirect interest in energy, see the Northwest Power and Conservation Council's

2007 *"Directory of Organizations,"* on-line at
<http://www.nwcouncil.org/library/2007/2007-18.pdf>

Energy Activities: Teaching Tools

Alliance to Save Energy: Multidisciplinary Educator Lesson Plans

A collection of K-12, hands-on, lesson plans in area of energy.

www.ase.org/section/_audience/educators/lessons

AskERIC Education Network Lesson Plans

Provides a searchable database of pre-K-12 lesson plans on many topics, but a search on “energy” uncovers many related lesson plans.

<http://askeric.org/Virtual/Lessons/#Search>

Bonneville Power Administration: Resources for Teachers in Oregon, Washington, Idaho and Montana

Provides curricula and various other instructional materials for K-12 on energy related topics.

www.bpa.gov/Corporate/KR/ed/page6.htm

EnergyNet

An online project for grades 6-12 that gets students involved in energy planning for their schools.

www.energynet.net/eninfo/info/what_is_energynet.html

National Energy Foundation: Resources for Education

Provides instructional material, teacher training and student programs.

www.nef1.org/

U.S. Department of Energy Education Resources

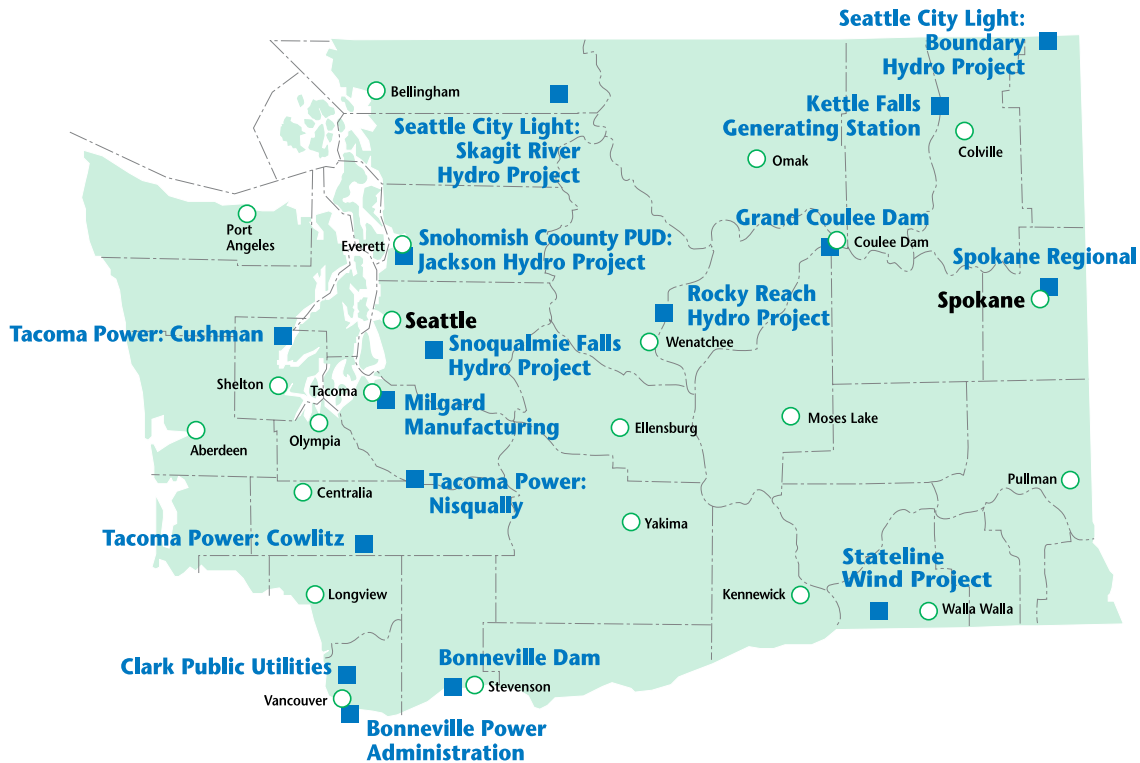
Provides energy related curriculum links from the Department of Energy’s Energy Smart Schools program.

www.eere.energy.gov/education/

Energy Activities: Field Trips

Some Washington State utilities and local governments offer access to facilities in the vicinity of their hydroelectric projects. Following are some examples of places to visit (*see map*). For other ideas, call your utility and ask for the conservation manager; talk to your school district's resource conservation manager.

*Map of Washington State
Energy Sites to Visit*



Bonneville Dam

Location: Columbia River area, west of Stevenson, Washington

Hours: Visitors center (Washington side), 9 a.m. to 5 p.m. daily

Comments: Facilities subject to security closures. Programs on fish, hydro-power, navigation, history or geology.

Groups larger than 40 will be split in two.

Activities: Self guided and interpretive programs available.

Schedule: Call for a group reservation

Contacts: Call (541) 374-8820

Bonneville Power Administration

Location: Vancouver, Washington

Hours: 8 a.m. to 5 p.m. Monday-Friday

Comments: School tours available for the high-voltage, mechanical, and chemical labs. Maximum group size 25.

Schedule: Advance reservation required

Contacts: Cheri Benson, (503) 230-3325, e-mail: clbenson@bpa.gov
www.bpa.gov

Clark County Public Utility Tours

Location: Vancouver, Washington

Hours: Tuesdays, Wednesdays, and Thursdays from 9:30 a.m. to 11:30 a.m., October through June.

Comments: The tour, geared toward fourth and fifth graders, features a video presentation, a walking tour of several parts of the operations center, and a hands-on presentation of electricity and magnetism,

Schedule: Visit company website and select dates from calendar.

Contacts: (360) 992-8728 or e-mail studenteducationprogram@clarkpud.com
www.clarkpublicutilities.com/community/schoolPrograms/studentTours/?searchterm=tour

Grand Coulee Dam

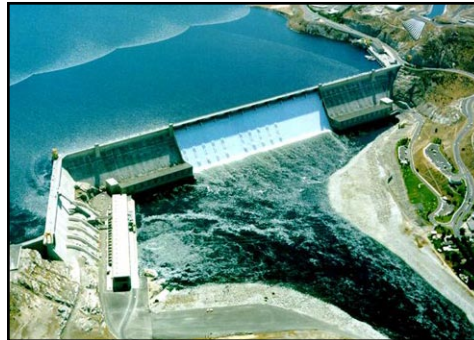
Location: Coulee Dam and Grand Coulee, Washington

Hours: 10 a.m. to 5 p.m., closed December and January.

Comments: The tour lasts about 45 minutes and includes a ride on an incline elevator. The tour route is wheelchair accessible.

Schedule: Call to schedule.

Contact: Visitor Center (509) 633-2798
www.usbr.gov/pn/grandcoulee/gcvc/tour.html



Grand Coulee Dam

Kettle Falls Generating Station

Location: North of Kettle Falls, Washington

Hours: Open year round except during maintenance shutdown in May or June.

Comments: This thermal generating facility, an Avista subsidiary, is fueled by wood waste from sawmills and pulpmills. Maximum group size: 20

Schedule: Call at least one day in advance.

Contact: (509) 738-2449

Milgard Manufacturing

The plant makes energy-efficient windows.

Location: Tacoma, Washington

Hours: Tours available October through May, Tuesday-Friday, 8 a.m. to 2:30 p.m.

Comments: No cameras or other sight or sound recording devices. Grades 3-12.

Schedule: Call at least two weeks in advance

Contact: 1-800-MILGARD (Connects directly to the Tacoma plant)

Rocky Reach Hydroelectric Project

Part of the Chelan County Public Utility District

Location: On Highway 97A seven miles north of Wenatchee, Washington.

Hours: Visitor Center: 9 a.m. - 4 p.m.

Museum: 9 a.m.- 3:30 p.m.

Park: 9 a.m.- 4:30 p.m.

2008 dates of operation: March 15 - October 31

Comments: Self-guided tours of historical galleries, exhibit areas, and fish viewing.

Schedule: Call 10 days in advance to schedule school tours or reserve picnic shelter.

Contact: Visitors Center (509) 663-7522

www.chelanpud.org/visitor-center.html

Seattle City Light

Seattle City Light has hydroelectric generating facilities in scenic and accessible regions of the state.

The Boundary Hydroelectric Project is located in northeastern Washington on the Pend Orielle River, about 107 miles north of Spokane. See turbines and electrical generating facilities, plus a visitor center in a limestone cavern. Guided school-group tours are available with a reservation.

The Skagit River Hydroelectric Project includes three dams: Gorge, Diablo and Ross, and is on the National Register of Historic Places. The project is about 140 miles north of Seattle off the North Cascades Highway (State Route 20) near Newhalem, Washington. The utility offers commercial tours, but visitors can also take self-guided walks to attractions such as the Gorge Powerhouse and Ladder Creek Falls. Due to security concerns, there is no public access to Ross and Diablo powerhouses, the Incline Railway and Diablo Dam.

For more information, see Seattle City Light's website:

www.cityofseattle.net/light/tours/

Snohomish County Public Utilities District

The Snohomish County Public Utilities District offers classroom tours of its Operations Center, near Everett's Paine Field. Learn about how meters work, tree trimming and other energy topics depending age group and interest. The utility also opens the **Henry M. Jackson Hydroelectric Project** each spring to students in grades 5 through 12. Visitors learn about construction, project operations, and how water is used to generate power.

The utility also offers a wide assortment of projects, programs and materials for schools. For more information, send e-mail to education@snopud.com or see the Education section of the utility's website:

www.snopud.com/Education.ashx?p=1104

Spokane Waste-to-Energy Facility

Owned and operated by the City of Spokane, this facility burns municipal refuse.

Location: S. 2900 Geiger Blvd., Spokane, Washington.

Hours: Wednesdays & Thursdays at 10 a.m. and 1 p.m.

Comments: Grades 1-12. Tour takes about 1½ hours.

Schedule: Groups of 10 or more must call to reserve an appointment.

Contact: (509) 625-6580

<http://spokanewastetoenergy.com/WastetoEnergy.htm>

Stateline Wind Project

Tours leave from owner-operator Florida Power & Light Company's office.

Location: Touchet, Washington, on U.S. 12 west of Walla Walla.

Hours: 8 a.m. to 4 p.m.

Comments: All age groups welcome. Tours take about 1½ hours. Participants walk among more than 450 windmills and see the inside of a turbine.

Schedule: Call for reservations.

Contacts: Call (509) 394-0163, dial #0 to make reservations.

Tacoma Power

Location: Cowlitz River Project: near Mossyrock, Washington.

Location: Cushman Project: near Hoodspport, Washington.

Location: Nisqually River Project: near Eatonville, Washington.

Hours: Monday-Friday, 8 a.m. - 3 p.m.; year round except holidays.

Comments: Each tour includes a powerhouse visit to see a penstock, a generator and the control room. A trip to the top of the dam is also included.

Schedule: Call (253) 502-8759 to schedule a tour

Contact: Randy Sternes, e-mail: rstearne@cityoftacoma.org

www.ci.tacoma.wa.us/Power/education.htm

Other places to visit in your own backyard

- Your local sewage and wastewater treatment facility may be using waste heat or sludge for renewable energy production.
- Your local landfill may be using garbage or other waste to produce renewable energy.
- Your local utilities can tell you where they get electricity and if those facilities are open to visitors.
- Your local Master Builders Association may be able to arrange a tour of an energy-efficient home.
- Your local recycling center might offer tours.

Tips and Tools for the Homeowner

Analyze Your Use – Home Analyzer

A useful tool to analyze home energy use. Users are given a choice of a fast track or an in depth analysis. Recommendations on ways to save energy are provided.

www.energyguide.com/audit/HAintro.asp

BPA'S Do-It-Yourself Home Weatherization Guide

Information for the homeowner on insulation or ceilings, floors, walls, pipes and ducts, as well as weather stripping, caulking, vapor barriers and storm windows.

www.bpa.gov/Energy/N/Energy_Tips/weatherization/

BPA's How to Save Energy

The BPA provides simple steps to cut energy consumption. Subjects include appliances, workplace, heating, cooling, lighting and water, and windows and doors.

www.bpa.gov/Energy/N/Energy_Tips/save_energy/

Do-It-Yourself Home Energy Audit

A step-by-step guide from Seattle Light for identifying and improving your home's energy efficiency.

www.seattle.gov/light/printdocs/DoltYourselfHome.pdf

Energy Efficient Rehab Advisor

This tool is based on the U.S. Department of Housing and Urban Development's guidelines for conducting energy efficient housing rehabilitation. Individual profiles are created based on type of building, climate, age of building. Projects can be narrowed to specific areas of the home. Project recommendations are analyzed by cost, savings, payback, and benefits.

www.rehabadvisor.pathnet.org/index.asp#

Fact Sheet: Selecting Energy Efficient Windows in Washington

Information for the homeowner, includes benefits and performance of energy efficient windows in Seattle and Spokane.

www.efficientwindows.org/factsheets/washington.pdf

The Home Energy Saver

This is an internet-based tool for calculating energy use in residential buildings. It is designed to help consumers identify the best ways to save energy in their homes, and find the resources to make the savings happen.

<http://hes.lbl.gov/>

FAQs

Where can I find information on BioEnergy or Solar Energy?

BioEnergy Washington

www.bioenergy.wa.gov/

The Northwest Solar Center

<http://northwestsolarcenter.org/Faq/faq.html>

How can I locate energy conscious businesses and professionals?

Green Pages

The Northwest EcoBuilding Guild's directory of ecologically sustainable professional services

www.google.com/url?q=http://ecobuilding.org/fck_files/File/currentgreenpages.pdf&ei=EafXSveYNla0sgOn4vSEBg&sa=X&oi=nshc&resnum=1&ct=result&cd=2&ved=0CA8QzgQoAQ&usg=AFQjCNH8pJH7a-2fjFAXxeMzWuk14iNRqQ

Northwest Green Directory

A search tool to help building industry professionals and consumers find green building products and services in Idaho, Oregon, Washington, and British Columbia.

www.nwgreendirectory.com/

“Washington State Energy Marketplace”

Published in 2008 and updated regularly, this is a comprehensive directory of renewable energy and energy efficiency companies.

www.commerce.wa.gov/DesktopModules/CTEDPublications/CTEDPublicationsView.aspx?tabID=0&ItemID=5008&MIId=1266&wversion=Staging

Where can I find definitions of terms relating to energy?

Energy Information Administration's Energy Glossary

www.eia.doe.gov/glossary/index.html

Green Building Glossary

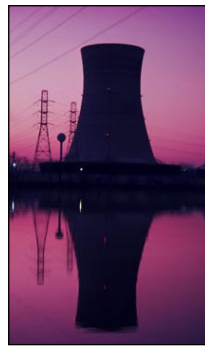
www.cityofseattle.net/dpd/GreenBuilding/OurProgram/Resources/Greenbuildingglossary/default.asp

Where can I find answers to questions about household energy use?

Home Energy Answer desk

Answers to commonly asked questions about heating and air conditioning, computers, water heating, comfort and indoor environment, windows and lighting.

http://hes.lbl.gov/hes/answerdesk_dat.html



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www.energy.wsu.edu