

Creating Energy Solutions



WSU Energy Program staff have assisted in developing and preparing a clean energy workforce.

The **Washington State University (WSU) Energy Program** is a self-sustaining department within the University. Operating much like a consulting firm, we provide expert technical assistance to help our customers address energy challenges.

Our Expertise

Building Efficiency • Provide technical support on residential sections of the Washington State Energy Code. Design and evaluate energy-efficient homes. Support residential and small commercial energy efficiency retrofits and upgrades.

Industrial Efficiency • Provide technical assistance to maximize the efficiency of industrial resource use. Lead the Northwest CHP Technical Assistance Partnership, promoting technologies and practices useful for industrial and commercial facilities.

Our Mission • To advance environmental and economic well-being by providing unmatched energy services, products, education and information based on world-class research.

About Us • Our staff of energy engineers, energy specialists, technical experts, software developers, and energy research librarians work out of our Olympia and Spokane offices. To learn more about the WSU Energy Program, contact:

Jake Fey, Director
feyj@energy.wsu.edu • 360-956-2000

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Agricultural Efficiency • Implement the Washington Farm Energy Program with federal, state and industry partners. Perform energy assessments for agricultural operations and develop farm energy software that analyzes cost-effective energy-saving measures.

Renewable Energy • Help certify solar energy systems that qualify for state production incentives. Lead the Pacific Region Bioenergy Partnership. Support the use of biofuels and electric vehicles.

Public Facilities Support • Home of the Plant Operations Support Consortium, which advocates best practices, organizational standards and use of surplus/salvage materials. Facilitate Resource Conservation Management programs. Assist schools and Pacific Northwest tribes in improving energy efficiency and indoor air quality.

Software and IT Services • Develop software to evaluate potential energy savings and greenhouse gas emissions reductions. Design and implement websites and databases.

Workforce and Economic Development • Evaluate workforce, education and training policies that support energy workforce development. Guide state-wide Community Energy Efficiency Programs that provide energy-efficiency upgrades and develop the energy workforce.

Research and Evaluation • Contract with the Bonneville Power Administration to identify new technologies that save electric energy. Research cost-effective ways to upgrade and prepare biogas to meet standards for use as vehicle fuel. Partner with the WSU Composite Materials and Engineering Center's laboratory to test the heat, air and moisture-transport characteristics of exterior walls.

Energy Information • Home of one of the nation's few full-service energy libraries. Operate energy information centers. Compile research about emerging energy trends of interest to industrial, agricultural, and public sector customers.





IN THE SPOTLIGHT

Supporting Bioenergy Development

Bioenergy is a growth industry. Washington state is laying the groundwork for statewide bioenergy industries by investing in research, legislation, incentives and public-private partnerships. With our vast supply of renewable biomass, Washington is well positioned to help offset fossil energy use by converting these resources into bioenergy.

Using combined heat and power to produce energy 24/7

Clean, baseline renewable power can be produced through combined heat and power (CHP) using biogas or biomass as feedstock. Electricity produced by CHP using biomass as feedstock could potentially replace other fuels that have traditionally provided baseline electricity, such as coal and natural gas.

The Combined Heat and Power Technical Assistance Partnership

for the Northwest region, led by the WSU Energy Program at the request of the U.S. Department of Energy, assists those who are considering a CHP development in the Northwest and across the country.

<http://northwestchptap.org/>

Saving energy in agriculture

Through the Washington Farm Energy Program, we help agricultural producers reduce on-farm energy use.

Our energy engineers perform efficiency assessments and train others to conduct these assessments. Each efficiency assessment includes a list of recommendations – from simple equipment adjustments to capital investments – that can help the producer save energy and reduce costs.

Software products developed by the WSU Energy Program help producers evaluate their energy use and define specific cost/ benefit relationships as

they consider capital investments to produce or use renewable energy.

Agriculture Matters is a searchable database of energy information useful to the Northwest agricultural community.

www.energy.wsu.edu/EnergyLibrary/AgricultureMatters.aspx

Harvesting clean energy to support agritourism

The Bountiful Byway in rural Thurston County (south of the greater Olympia area) invites visitors to take a closer look at agricultural processes and buy



local products from rural vendors.

To solve the problem that occurs when visitors and farm smells collide, our bio-energy

team is evaluating potential digester projects that would use organic materials from farms to produce marketable energy from biogas.

Using biomass to heat schools

The Washington State Legislature in 2013 took steps to encourage schools to shift away from fuel oil or propane and instead use wood pellets (densified biomass) as heating fuel.

In response, our renewable energy specialists designed a pilot program to demonstrate the feasibility of using densified biomass to heat public schools.

A database of schools that use fuel oil or propane for heating was used to select

the two candidate schools – one on each side of the Cascades.

When the densified biomass heating systems are installed at the pilot schools, our energy experts will collect data to determine the extent to which emissions are reduced and overall energy savings compared to the fossil fuel heating systems that were replaced.

Supporting the development of biomethane as vehicle fuel

Most biogas produced in anaerobic digesters is burned to generate electricity, but it can also be used as a vehicle fuel.

First, the biogas must be scrubbed to remove carbon dioxide (CO₂), which reduces the heating value of the gas, and hydrogen sulfide (H₂S), which is corrosive. WSU researchers are building on the success of existing biogas purification technologies to remove CO₂ and H₂S.

The **Pacific Region Bioenergy Partnership**, led by the WSU Energy Program, encourages the development and use of bioenergy technologies that are technically feasible and cost effective.

<http://pacificbiomass.org/>

For more information

Biopower, CHP

Dave Sjoding

SjodingD@energy.wsu.edu

360-956-2004

Biofuels

Jim Jensen

JensenJ@energy.wsu.edu

360-956-2083