

Bellingham Environmental Learning Center Solar Project



With the donation of the solar installation at the Bellingham Environmental Learning Center, Puget Sound Energy is recognizing the city's visionary efforts to achieve a sustainable future for its citizens.

About the Project

A new demonstration solar installation is shining a light on the City of Bellingham's commitment to clean, renewable energy. A 2040-watt solar electric power system has been installed on the roof of the city's Environmental Learning Center at Maritime Heritage Park. The project educates visitors to the center on the functions and benefits of solar electric power, while providing clean energy to help offset a portion of the facility's electricity use.

The solar installation was funded by Puget Sound Energy's (PSE) Green Power Program, and installed through a unique partnership with the Bonneville Environmental Foundation (BEF), as part of the organizations' cooperative efforts to raise awareness about and promote the use of renewable energy.

The installation of the twelve solar panels has completed the transformation of the Environmental Learning Center, once the site of a landfill, into a state-of-the-art educational facility. An interactive, flash-animated kiosk located at the center, later to be moved to Bellingham's City Hall, further increases the educational value of the project. The kiosk details the live and historical performance of the system and visually depicts how solar electricity is generated.

PSE donated this solar power system in recognition of Bellingham being named the

nation's most successful Green Power Community by the U.S. Environmental Protection Agency. The city received that distinction at the conclusion of a six-month "Green Power Community Challenge," a citywide campaign to promote the use of renewable energy.

During the six-month challenge, which was a collaborative effort between the city, Sustainable Connections, and PSE, the Bellingham community nearly doubled its green power purchases and quadrupled its goal of adding 9,000 MWH of green power. The City of Bellingham and Whatcom County governments, along with Western Washington University, also now purchase 100 percent green power from PSE for all of their facilities. The City of Bellingham's green power buy is the nation's largest 100 percent green power purchase by a municipal government.

In addition to the gift of the solar project, PSE has awarded the city a \$20,000 grant for installation of another renewable energy facility in Bellingham. "Bellingham's citizens and businesses have shown overwhelming leadership and support in making a difference in our environment through voluntary contributions and purchases of Green Power from Puget Sound Energy," said Cal Shirley, PSE vice president of Energy Efficiency Services. "The solar system and grant for additional investments in renewable energy will make the community even greener," added

Shirley. “We’re proud to be working with the greater Bellingham community on these projects.”

With the support of PSE and BEF, Bellingham officials and citizens are setting a national example for environmental stewardship and sustainable development.

How Photovoltaic Power Works

The generation of electricity using sunlight is called photovoltaic or PV power. The term “photovoltaic” describes semiconducting materials that generate electricity when exposed to light. PV technology does not require bright sunshine to produce electricity because it absorbs light photons, which have the same amount of energy regardless of how bright the light is. When sunlight shines on a solar PV cell, the cell material absorbs some of the photons. When photons are absorbed, electrons are freed from the photovoltaic material, which is made out of silicon. This release of electrons is what generates a flow of electricity.

PV technology produces electricity cleanly and silently, with no moving parts and no emissions. It is virtually maintenance-free, and is so reliable that it is used routinely in remote and demanding applications, such as powering marine navigational aids and space satellites. Although PV technology is still more expensive than other electricity sources, recent progress in reducing the cost of the technology has made it affordable for more conventional applications.

What Happens to the Electricity?

The electricity produced by a utility-connected solar power system, such as the one installed at the Bellingham Environmental Learning Center, combines with utility power to supply the customer’s electricity needs through what is called a ‘net metering’ arrangement. When the system is meeting only part of the customer’s total electric needs, the installed equipment automatically draws power from the utility to supply the customer’s loads. When the system is supplying more power than the customer

needs, the excess power is “banked” within the utility grid and used to offset the customer’s electric needs when the system is not meeting their total demand.

Project Partners

The City of Bellingham will own the solar power system and will use the electricity it produces to meet part of the electricity needs at the Environmental Learning Center. Bellingham is located 90 miles north of Seattle, Washington, and an hour south of Vancouver, British Columbia. Learn more about what the city is doing to create a more sustainable future at www.cob.org.

Puget Sound Energy (PSE) provided funding for the installation, collaborated on the interconnection of the system, and made available the “net metering” arrangement that allows delivery of any excess solar power back to the utility system. Funding for the project was made possible by PSE’s Green Power Program and its participants. Learn more about PSE’s commitment to developing renewable energy resources in the Pacific Northwest at www.pse.com/energyEnvironment/RenewableEnergyLanding4.aspx.

Technical Details

The solar power system at the Bellingham Environmental Learning Center includes 12 Sharp NE-170U1 modules and one 1800-watt SMA inverter. The system is expected to generate more than 2,000 kilowatt-hours per year of renewable electricity. The data acquisition and monitoring system, from Fat Spaniel Technologies, Inc. allows project partners to collect system performance information for presentation and analysis.