



2.3 kW solar electric system in Redmond

**Q: Does solar work in Oregon?**

**A:** Yes, even in the Willamette Valley. Oregon receives more sun than Germany, which is leading the world in its use of solar energy.

Yes. Energy Trust has helped fund over one megawatt of solar electric generating capacity in Oregon, mostly on people's homes.

Yes. Solar is Oregon's most abundant renewable energy resource.

**Q: What's a solar system?**

**A:** There are two kinds of solar energy systems you can add to your home: solar electric and solar water heating. A solar electric system makes electricity, which can be used by any electrical device in your house and saves you money by reducing the number of kilowatt-hours (kWh) on your monthly PGE or Pacific Power bill.

A solar water heating system preheats the water that goes into your existing water heater, which saves you money by reducing the amount of gas or electricity your water heater consumes.

**Q: How much does solar cost?**

**A:** For a solar electric system, the average cost is \$9,000 for each kilowatt (kW), not including incentives. Incentives, including tax credits, typically cover more than half the cost. The cost depends on the size of the system, and any size system can be installed.

A typical solar water heating system costs \$6,000-\$9,000 before incentives. Incentives may cover over half the cost.

**Q: What size system do I need for my house?**

**A:** Electricity production is directly proportional to system size for solar electric systems. 1 kW of solar electric panels optimally oriented with minimal shade will produce approximately 1,000 kWh per year in Portland. Thus, a typical residential system of 3 kW will supply about 3,000

kWh annually, or ¼ of an average Oregon home's yearly electric usage (an average four-member household uses 12,000 kWh/year).

Hot water is one of the largest uses of energy in your home. Residential solar water heating systems can save 2,000 - 2,800 kWh (100 - 140 therms of gas) per year. That's 60% of the energy used to heat water in an average Oregon home. In the summer, your system may provide 100% of your hot water. During the winter months, solar will still heat the water, but not all the way to 120 degrees.

**Q: Am I an average energy user?**

**A:** The less energy you use, the greater percentage of your usage can be met with solar. Your home may be all electric (you use electricity for lighting and appliances, space heat and heating hot water), electric with gas space heating, or electric with gas space and gas water heating. The table below shows typical monthly Oregon utility bills for each energy usage scenario. If your household consumes more than these values, you should consider other energy efficiency measures in addition to solar.

Electric appliances and lighting, <u>electric</u> domestic hot water, <u>electric</u> space heating			
Electric Bill	2,605 kWh	\$192	total
Gas Bill	--	--	\$192
Electric appliances and lighting, <u>electric</u> domestic hot water, <u>gas</u> space heating			
Electric Bill	729 kWh	\$61	total
Gas Bill	98 therms	\$134	\$195
Electric appliances and lighting, <u>gas</u> domestic hot water, <u>gas</u> space heating			
Electric Bill	495 kWh	\$45	total
Gas Bill	117 therms	\$159	\$204

Monthly utility bills of an average home with various energy mixes.



**Q: Is my house good for solar?**

**A:** Solar works best on south-facing roofs, though east or west oriented low-slope roofs may be suitable as well. There should be no or little shading from trees, buildings, chimneys or roof gables. Remember, locations with no shading in the winter may be shaded by spring and summer foliage, and little trees will grow!

**Q: What is added to my house if I install solar?**

**A:** Both solar electric and solar water heating systems utilize large panels that will most likely be mounted on your roof. Solar water heating panels, called collectors, are 4'x10'. A typical system will have one or two collectors. Photovoltaic panels require 100 square feet for each kW installed.

For your solar water heating system, an additional 80 gallon storage tank will be installed near your existing water heater. Solar water heating systems can also be used in conjunction with a tankless, on demand water heater.

Your photovoltaic system will have a wall-mounted inverter, about the size of a large briefcase, and two, smaller disconnect switches. These can be located indoors near your breaker panel, or outdoors in shaded location. A solar meter that measures the electricity generated by your system will also be installed near the inverter.

**Q: I have radiant floor heating. Can I use solar to heat my house more efficiently?**

**A:** During the heating season, we receive the least amount of sun, so using solar energy for winter heating is not ideal in the Willamette Valley. Energy Trust is doing some studies to investigate how effective solar is for space heating.

**Q: Can I install the system myself?**

**A:** Energy Trust does not provide incentives for homeowner-installed systems. You must use an eligible contractor. However, if you would like to install your own system, you will still be eligible for state and federal tax credits.

**Q: What's the payback for a solar system?**

**A:** As a home improvement project, your solar investment should add value to your home, which you will recover when you sell the home. The Appraisal Journal has estimated this added value to be 20 times the annual energy cost savings. With that assumption, a solar water

heater typically adds more value to your home than your final out-of-pocket cost! In addition to that home equity, you will enjoy reduced energy costs each month. For solar electric systems, the added home value may be half of your out-of-pocket cost. The remaining cost could be recovered from electricity generation over 10 to 15 years.

**Q: What are the benefits of investing in solar energy?**

**A:** Producing your own electricity protects you from future increases in fuel and electricity prices. Solar equipment is exempt from property taxation, so installing solar increases the value of your home without increasing your property taxes.

In addition, there are many non-economic reasons for making the installation of a solar system a personal priority. The environmental benefits of renewable energy are immediate and long-term. A solar energy system contributes to cleaner water and fresher air, and to sustainable use of our natural resources for future generations.



*2.9 kW solar electric system in Beaverton*