



LPRO: Legislative Policy and Research Office

SOLAR ENERGY

BACKGROUND BRIEF

Direct Normal Solar Radiation - Annual

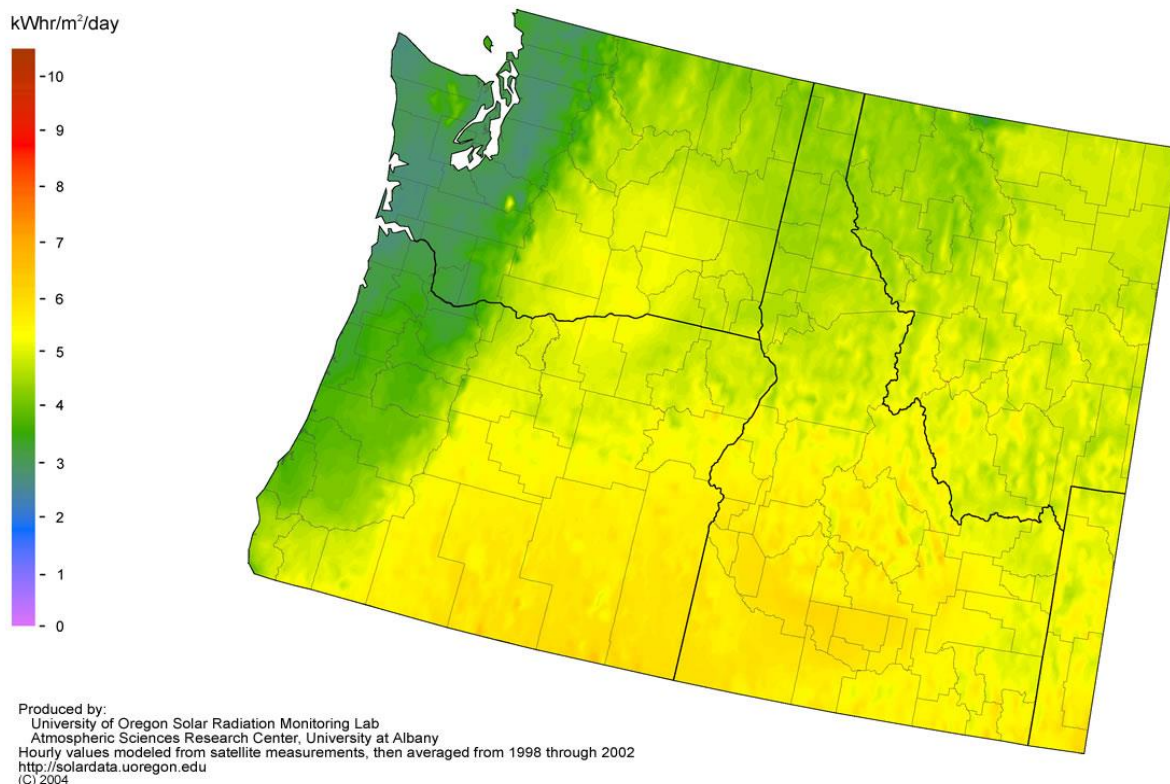


Figure 1: University of Oregon solar map

Solar energy is Oregon's most abundant and available renewable energy resource. The solar resource east of the Cascades is typically 30-40 percent greater than the Willamette Valley or Coast. However, solar energy technologies work throughout Oregon and generate electrical and thermal energy in all parts of the state.

Common solar technologies include daylighting, passive solar space heating, solar water heating and solar electric or photovoltaic (PV) systems. PV systems generate electricity, which is typically back fed to the grid through an electric service panel.

The majority of solar energy projects being installed in Oregon are PV systems. The number of installed PV systems has increased from about 1,000 systems in 2009 to more than 8,000 systems in



2013. Most residential and commercial systems installed in recent years have been developed and financed by third-party companies, meaning solar users pay none of the upfront costs, but pay a lease fee or on-going charge.

PV COST REDUCTIONS

The cost of PV systems, represented in terms of dollars spent per watt installed, has declined significantly in recent years due to declining equipment costs. In 2010, the average cost of a residential PV system in Oregon was \$7.50 per watt. In 2016, the average cost was about \$4.00 per watt. During the same period, the average system size increased from 3 kilowatts (kW) to almost 6 kW (Figure 2).

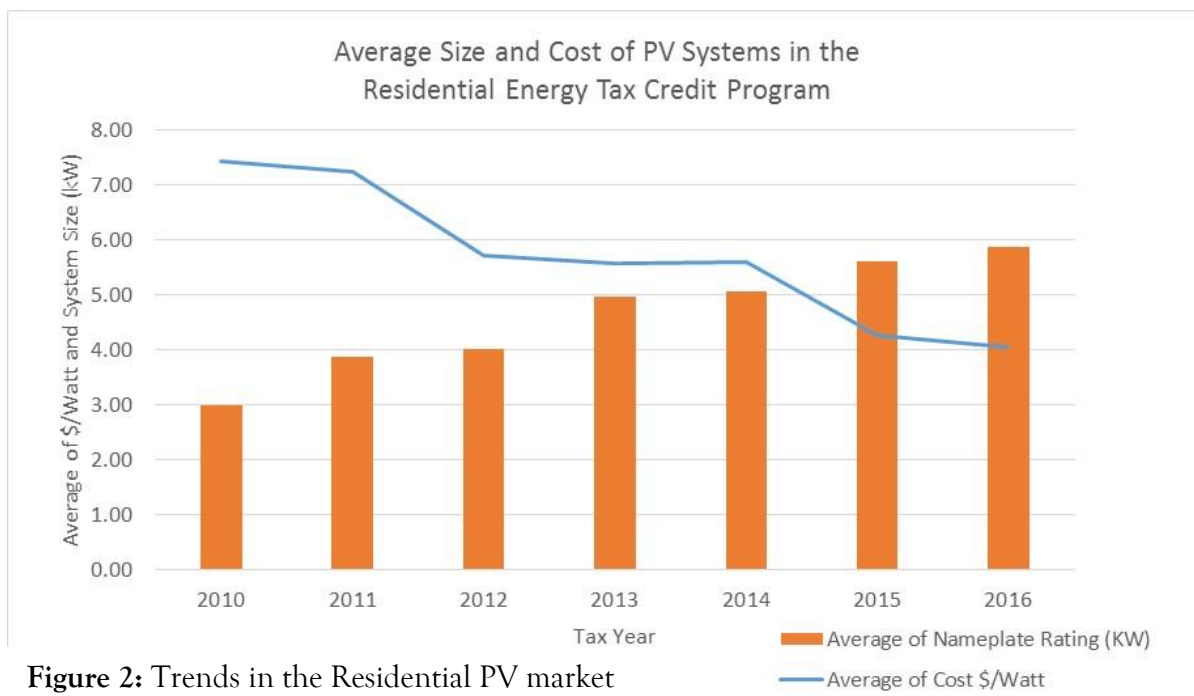


Figure 2: Trends in the Residential PV market

Continuing cost declines for panels and other equipment are projected, but future solar cost reductions are likely to be driven by reduction in non-equipment costs. These “soft costs” include labor, permitting fees and customer acquisition and other administrative costs associated with installing a system.

The National Renewable Energy Laboratory predicts that the average cost of panels will go to \$1 per watt by 2020. The U.S. Department of Energy has set a goal of reducing non-equipment costs to less than \$1 per watt by 2020. If both predictions are accurate, the installed cost of a standard home system will go below \$2 per watt by 2020.

FINANCIAL INCENTIVES

The combination of federal, state and utility incentives has helped to accelerate demand and increase the volume of solar energy projects installed in Oregon. State-supported incentive programs have



included residential tax credits and commercial grants, utility-sponsored rebates and a pilot volumetric incentive rate (VIR) program.

In 2015, the federal investment tax credit was extended through 2022. The state residential energy tax credit is scheduled to sunset on December 31, 2017.

LARGE-SCALE PV PROJECTS

Oregon has not seen much development of large scale PV projects primarily due to the state's lower power costs and, in some regions, a marginal solar resource. The largest project in the state is the Outback Solar project in Christmas Valley, developed in 2012, with a capacity of 5.7 megawatts (MW) (Figure 3). The cost for these large systems has been reported below \$2.00 per watt, which is less than half of the average residential system rate.



Figure 3: 5.7 MW solar installation in Christmas Valley. Photo courtesy of Obsidian Renewables.

Several recent actions may increase the number of large PV projects proposed in Oregon. In 2015, much of the solar industry operated under the assumption that the federal tax credit would expire at the end of 2016. This led developers to initiate permitting of at least a dozen projects primarily in Lake, Klamath and Deschutes counties. In 2016 the federal tax credit was extended through 2022.

Other recent developments at the state level include the passage of House Bill 3492 (2015) and House Bill 4037 (2016). HB 3492 created a fee in lieu of property taxes for large scale solar projects. The fee was set at \$7,000 per megawatt paid by the project developer to the local taxing district on an annual basis. This fee represented a significant simplification in tax assessment and will reduce



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the soft costs associated with assessing and paying property taxes. HB 4037 creates a financial incentive for projects between 2 MW and 10 MW in capacity. The incentive is \$0.005 per kilowatt-hour (**kWh**) generated to be paid to projects for a five-year term.

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