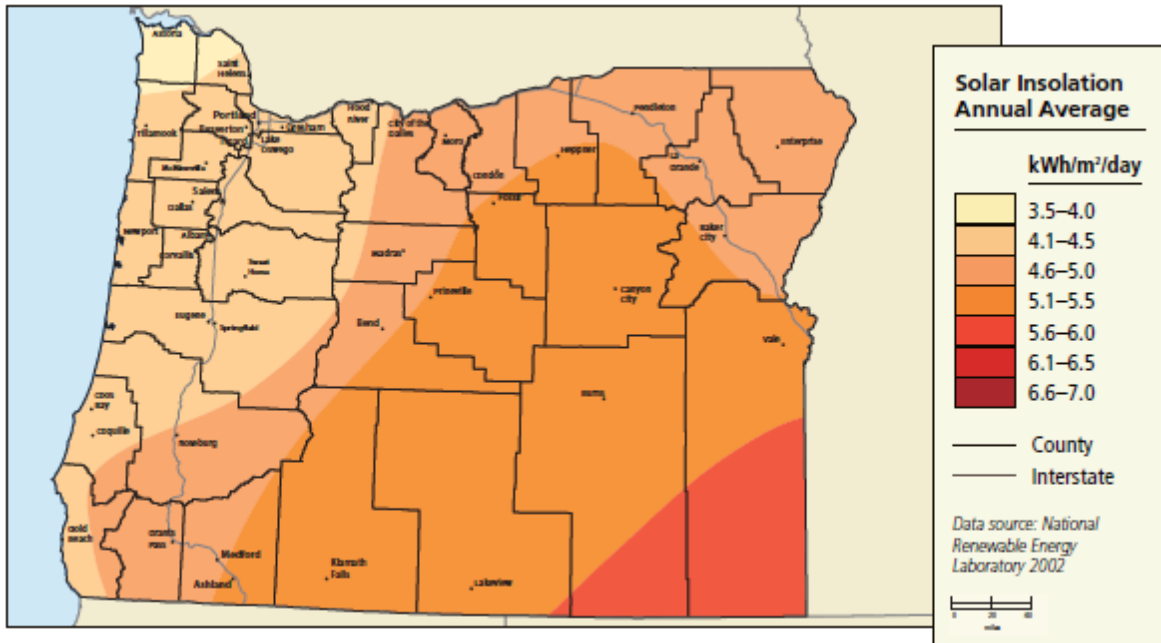


Solar

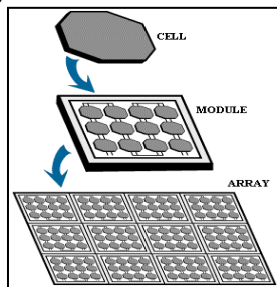
Solar Resource Potential in Oregon



[Figure published in Renewable Energy Atlas of the West, 2006]

Solar energy, because it is produced by the sun's rays, is an abundant resource. There are three primary uses for solar energy: as a direct source of natural light and heat in buildings; to heat water using roof-mounted collectors; and as a source of electricity. Electricity can be produced from solar energy via two mechanisms: photovoltaic devices and concentrated solar power facilities.

Figure 1. Photovoltaic Device



[Figure published by NASA]

Photovoltaic devices (PV) directly convert sunlight to electricity using a series of cells that are grouped together in panels or collections of panels (Figure 1). In general, increasing the

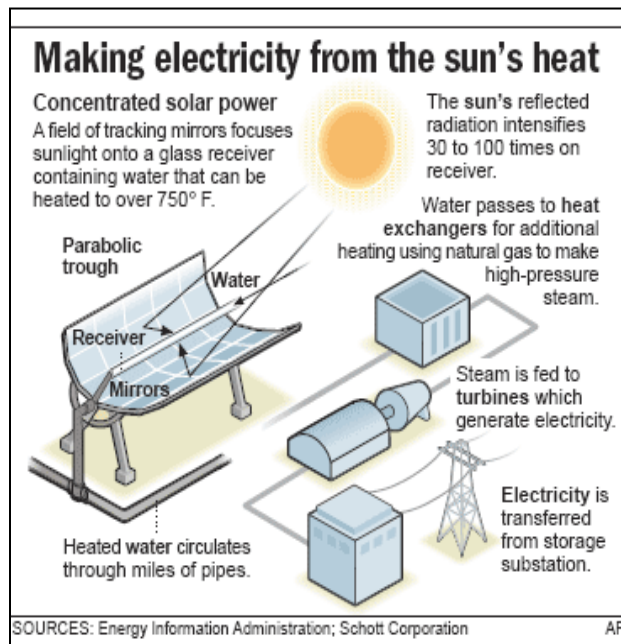
number of cells will yield more wattage of electricity; a typical cell generates between one and two watts of energy.

Concentrated solar power facilities (CSP) generate electricity by heating a high-heat conductive fluid to very high temperatures in order to generate steam, which then powers a generator. There are three primary CSP technologies in use today: the parabolic trough, the solar dish and the solar tower. Currently the parabolic trough is the most commonly used commercial technology (Figure 3).

Figure 2. Solar Panels on Oregon State Capitol



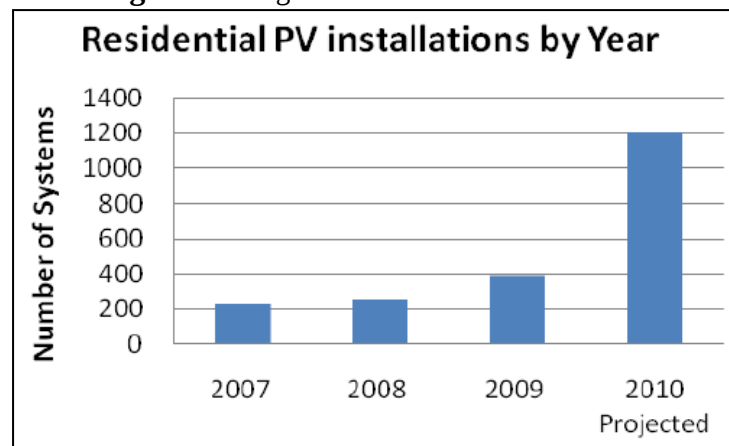
[Oregon Department of Energy]

Figure 3. CSP Parabolic Trough Technology

[Published by SolarEnergyFactsBlog.com]

Use of solar energy nearly quadrupled in the United States between 2000 and 2009; however, it still accounts for only one percent of total renewable electricity generation. Germany leads the world in installed solar capacity, with 9,677 MW installed in 2009, while the United States is ranked fourth with 2,108 MW. Within the United States, California is the top producing state in both PV and CSP. PV is far more common than CSP.

While Oregon does not have any utility-scale solar facilities yet, its residential PV market is growing, from approximately 200 installations in 2007 to an estimated 1,200 by 2010 (Figure 4). The Oregon Department of Energy attributes the expansion of the market to supportive state and federal tax credits, cash incentives from the Energy Trust of Oregon, and declining system costs. Oregon's strongest solar resource potential is in the central, eastern and southeast portions of the state.

Figure 4. Oregon Residential PV Installations

[Figure published in State of Oregon Energy Plan 2011-2013]