



Importance of Public-Private Partnerships in the Solar Industry

Climate Change – A New Economic Driver

The earth's climate is warming and the Intergovernmental Panel on Climate Change has linked, with a high probability, a portion of this global warming to human activities that increase greenhouse gas emissions in the atmosphere. According to the Environmental Protection Agency, 79% of U.S. greenhouse gas emissions are due to the production of energy from fossil fuels, such as oil, coal and natural gas. Federal and state governments are working with the private sector to invest in renewable energy development to reduce greenhouse gas emissions and slow the effects of global warming.

Renewable Energy Development and the Solar Opportunity

Solar energy is the most abundant renewable energy resource in Oregon. Renewable energy is energy that produces zero greenhouse gas emissions during its generation. According to the *Renewable Energy Atlas of the West*, Oregon has a 68 million megawatt-hour solar generation potential and could generate its annual energy use of 48 million megawatt-hours with partial development of these resources. Solar power also presents the opportunity to produce Oregon energy locally rather than relying on imported fossil fuels for energy production.

The Oregon Department of Transportation (ODOT) has recognized this solar potential and is facilitating innovative public-private partnerships to develop solar projects along suitable sections of the 16,000 lane-miles of right-of-way owned by the state. It has been calculated that the development of only 120 lane-miles of this right-of-way would produce 45 million kilowatt-hours of solar electricity, the amount of electrical energy used by ODOT on an annual basis. Based on the Pacific Northwest grid mix, ODOT has the potential to reduce greenhouse gas emissions by over 17,500 metric tons of carbon dioxide equivalent per year through development of 120 lane-miles of "solar highway." This is the same as the annual greenhouse gas emissions produced by 3,200 passenger cars on the road.

Developing solar projects in the right-of-way is a significant new market that has been realized in the international arena but not yet in the United States. Oregon will be a leader in solar innovation and sustainable resource development by demonstrating this solar potential with 16,000 lane-miles of right-of-way in Oregon and 8 million lane-miles in the United States.

Public-Private Partnerships and Infrastructure Development

Public-private partnerships are critical to the incubation of a new industry – especially those that directly serve the public good. Public-private partnerships are projects in which there is cooperation between government agencies and private companies in the financing, development, construction, operation and ownership of infrastructure assets. These partnerships are quite common in water, power, waste and transportation infrastructure development. In these partnerships, there is almost always a very significant human or environmental need, such as the need for clean drinking water, to be addressed on a national or local level and in a short period of time. The public sector commonly provides the policy framework, the mandate for change and financial incentives to the private sector projects that fulfill the need and serve the public good.

In this way, government is able to capitalize and support the early stages of market development, when the scale of the efforts is too small to financially stand on its own. The private sector brings additional capital, knowledge, expertise and technology to the development and becomes established in the new market. After the new market has reached a self-supporting threshold, government can reduce its investment and allow the new market to flourish on its own. The profits from the new enterprises ultimately return value to the general fund through corporate taxes and personal income taxes.

Importance of Public-Private Partnerships in the Solar Industry (continued...)

Public Sector Support for Private Solar Development

Since the generation of solar electricity does not produce greenhouse gas emissions, large-scale solar development projects could be a key component of reducing emissions. Solar energy is essential to helping Oregon utilities meet the targets of Oregon's new Renewable Portfolio Standard which requires that 25% of the electric load be met by qualifying renewable energy such as solar by the year 2025. Solar energy must also play a key role in meeting the greenhouse gas reduction targets established by Oregon House Bill 3543 – more ambitious than the Kyoto Protocol. The clean energy potential of solar power is aligned perfectly with two of Oregon's economic stimulus tools, the Business Energy Tax Credit (BETC) and the Residential Energy Tax Credit (RETC).

Oregon tax credits. BETC and RETC are tax credits provided by the state of Oregon to those who invest in energy conservation, recycling, renewable energy resources and less-polluting transportation fuels. According to the 2007 ECONorthwest study of the economic impacts of these incentive programs, \$73.8 million in tax credits and program administrative costs were assigned to BETC/RETC projects completed in 2006. These projects will prove a solid return on investment in the Oregon economy. Over the *next 15 years alone*, economic outputs will increase by \$178 million; wages will increase by \$70 million; 2,090 new jobs will be created; business income will increase by \$9 million; local and state tax revenues will increase by \$10 million; and annual energy cost savings will reach \$60 million. It is estimated that 80% of the projects completed in 2006 would not have been developed without the BETC/RETC incentive. These tax credit-supported solar projects contribute to the state of Oregon's goals set forth in House Bill 3543 to reduce state greenhouse gas emissions.

Power purchasing agreements. Tax credits are not the only public sector support for private solar development. Power Purchasing Agreements (PPAs) are also playing a key role in financing the electricity generating assets of these projects. PPAs are contracts involving the generation and sales of electricity, in this case, between the private sector solar energy developer and the public sector buyer of the electricity. These agreements allow solar energy to be sold based on energy production rather than up-front payment for the entire system. This model allows for investors to front the capital development cost in exchange for a fixed term power purchase contract with the "host" of the system - usually for 20 years. This model works for both parties involved because the power rate is fixed and known for a long period of time, which brings financial certainty to the buyer and a modest fixed rate of return for the investors. In 2007, approximately 50% of national commercial and institutional solar development projects were developed using PPAs, up from 10% in 2006.

What lies ahead. Oregon's solar energy market remains in the early stages. There are still complex issues to be addressed such as improving standardized permitting, technician training, the identification of best practices and consumer awareness. The success of incubating solar development projects using BETC and PPAs is also dependent on the continuation of the federal solar Investment Tax Credit (ITC), which is up for renewal at the end of 2008. If the lifespan of these incentives is too short to encourage significant industry growth and cost reductions, their expiration or reduction could accelerate the loss of employment and investment opportunities. In the case of the ITC, non-renewal after 2008 could result in a loss of 39,400 jobs and \$8.1 billion in investments through 2009 according to a 2008 study prepared by Navigant Consulting for the American Wind Energy Association (AWEA) and the Solar Energy Research and Education Foundation (SEREF).

Long-term market support is essential to reducing the cost of solar energy, as it creates stable market conditions that allow solar companies to make investments that drive down costs through economies of scale. Assisted by market supports in place today, solar manufacturing costs have decreased by 18% with each doubling in production. Additionally, the manufacturing of solar panels which used to require more energy than the panels would generate in their lifespan, is now, using new technologies, showing an energy payback period ranging from 1 to 4 years. Oregon government supports local solar development projects and solar manufacturing in order to build a strong market base that will result in solar power as a cost-competitive option over fossil fuel generated power.