

Offsite Solar

By Bob Epstein

Introduction

Offsite Solar is a new way to finance and operate solar power facilities that expands the economic benefits of solar to renters, people who lack sufficient credit, and those who do not have an appropriate roof for rooftop solar.

It works by enabling an electricity customer to invest in or lease a portion of a shared solar facility in their region and receive the credit from their share of the generated power applied against their own energy usage.

The reason an electricity customer would invest or lease is to immediately lower his or her energy costs and/or lock in a guaranteed price for future energy over the long-term – up to 20 years.

Expanding the Market for Solar

Currently, access to solar power ownership is limited to electricity customers who own their home or building, have a roof that is unshaded and properly oriented to the sun, and have sufficient credit or cash to finance the installation of solar. This is a small percentage of California electricity customers.

Offsite Solar expands the market to everyone. It no longer matters if they are renters since the solar is not attached to the property. For building owners, it provides an alternative for those whose own roof either lacks space or is not well oriented to the sun.

Credit can be a barrier for solar power purchase – either the available loan is very expensive or the owner lacks the ability to get any credit at all. In Offsite Solar, there is no or minimal customer credit required. The developer of a facility typically provides the initial funding and then “sells” the rights to power to interested parties. No equipment is physically attached to the electricity customer’s home or building and thus, it is easy to reassign the rights to a new buyer. If someone no longer needs the service, moves out of state, or fails to make proper payment, the rights can be transferred to another buyer. No physical equipment needs to be moved or changed.

The principal benefit of Offsite Solar is that it expands the available capital for investment in solar by including people who currently cannot participate and/or would like to use more solar than fits on their own building (for example, adding capacity to charge an electric vehicle).

Reducing Energy Costs

In the last two years, the cost of solar photovoltaic (PV) installed as ground-mounted systems in sizes of 1 to 20 megawatts has dramatically fallen. Recent contracts reported by Southern California Edison ([Letter from Southern California Edison to California Public Utilities Commission regarding Procurement of Renewable Energy Contracts, January 31, 2011](#)) were all below “grid pricing” – that is the price one would expect to pay for electricity from a new fossil fuel facility. To understand the price of new power, the California Public Utility Commission establishes what is called the “[Market Price Referent](#)” (MPR). MPR is an

estimate of an equivalent contract for a state-of-the-art, natural gas facility. The contract is a fixed rate (with annual escalator) for power over 20 years. Natural gas is the dominant fuel for new non-renewable electricity in California and much of the United States.

A customer investing in or leasing Offsite Solar is primarily someone looking to manage his or her electricity costs. In many cases, it will lead to an immediate reduction in electricity costs but equally important, it provides a guaranteed price for future energy use. For example, there is no way for fossil fuel power to guarantee its price for 2020. Since solar has no fuel cost and the costs to maintain the equipment can be forecasted, solar can provide a guaranteed, long-term price.

Putting solar in a larger, shared facility at ground level or on large flat roofs (like warehouses), is significantly less expensive than putting it on residential roofs. This is true because: (1) the economies of scale associated with larger facilities, (2) the facility can be located in direct sunlight, (3) the panels can be aligned for maximum solar benefit, and (4) it is less expensive to mount solar panels on a large flat surface than it is to install on a roof. Estimates are that solar installed on shared, ground-level facilities or large flat roofs can require as much as 50% less investment than putting an equivalent amount of solar on residential roofs.

The customer also benefits when he or she changes locations in the same region. Rather than trying to sell or extract the remaining value of the solar when the customer moves, he or she can either assign the Offsite Solar to customer's new residence or sell the power option to another resident. This benefit was one of the two motivators for Property Assessed Clean Energy (PACE) financing (i.e., allowing the solar payments to be attached to the property – not the original owner). Since Federal mortgage agencies have disallowed PACE, Offsite Solar is even more attractive as a model to encourage investment in solar power.

While renewable power has historically been considered primarily for environmental or social reasons, we are now at the point that a customer can justify renewable power for economic reasons alone. (Note: A portion of solar costs is funded through Federal tax benefits. These subsidies will continue through 2016. For solar to be competitive without any subsidies, the costs will need to drop by approximately a factor of 2, the costs of fossil fuel will need to increase by a factor of 2, or some combination of the two.)

City of Davis

The prototype for Offsite Solar can be found in the city of Davis, California ([The Benefits of Solar With the Beauty of Trees](#), New York Times, Nov. 17, 2010.). Years ago, Davis deployed a strategy to cover the city with a tree canopy for aesthetics and to shade buildings from the strong summer sun. The city was concerned that rooftop solar might conflict with this strategy since it depends on direct sunlight reaching the roofs. To avoid any conflict, the city started an experiment to see if it could build solar offsite and contract with government facilities to own the rights to portions of the power. The initial one-megawatt facility is fully subscribed and the city wants to expand the market to non-government customers.

Structure Components

The structure to implement Offsite Solar requires:

1. An organizing entity to create the program and enforce the rules.
2. Multiple developers to invest the risk capital and construct the solar facilities.

3. A utility to manage the distribution (and storage) of power.
4. A billing entity – ideally the local utility.
5. Electricity customers.

In the Davis model and one model being considered in this session of the California Legislature, the organizing entity is a city or county that wants to enable Offsite Solar for its community.

The developer builds the facility and then uses a financial model for customers to buy a percentage of the output of the facility. This can be done through a variety of financial structures designed to maximize the tax benefits and lower the cost of capital. The developer maintains the facility and reports on the actual production and how much each customer should be credited.

The Davis model required that the generator and the benefiting customers be located in the same county. PG&E credited rate payers with the time-of-day retail value of the electricity generated. Offsite Solar could allow the solar facility to be located anywhere that sunshine, distribution availability, and environmental and economic considerations are favorable ([Renewable Energy Transmission Initiative, Phase 2B Final Report, May 2010](#)). For example, coastal residents or communities with relatively few sunny days could own solar generation further inland. The utility would, of course, have to be compensated for the costs of transmitting and distributing the power.

In order to minimize impact on the grid and encourage improvements in the distribution system, Offsite Solar could encourage the solar facility and the customer to be co-located in the same distribution network (typically this will mean the same county). This avoids any additional load on long-distance transmission lines. The local utility needs to be compensated for the costs of distributing the power. In addition, it should have some incentive to invest in local storage so as Offsite Solar grows, an increasing amount of local energy storage is available to even out the demand and compensate for nighttime power usage and cloudy days.

The billing entity, ideally the utility, subtracts the value of the generated power from the customer's bill each month.

The Offsite Solar model has many additional marketing benefits. For example, a wedding gift could be 20 years of electric power given to a happy couple for any residence in the area.

This structure can apply to other sources of power as well, including biomass, wind, fuel cells, etc. The salient characteristics are connection to the same distribution network (and not requiring transmission) and cost-effectiveness.

Conclusion

Offsite Solar is a new way to expand the availability of renewable energy to all while taking advantage of the economies of scale resulting from larger shared solar power facilities. It provides new uses for degraded or idle land, allows Americans to benefit from cost-effective solar energy, provides an opportunity to invest in renewable energy, and creates local jobs.

With the right framework, Offsite Solar can benefit electricity customers, utilities, and, on a broader level, the entire economy.

E2 California is focused on making Offsite Solar a reality through collaboration with Senator Wolk (D-Davis). The Senator intends to offer legislation expanding Offsite Solar in Davis and enabling the concept throughout California.