



Getting Solar Pricing Right

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The integration of distributed resources and renewable energy is well underway. Distributed generation (DG) resources, such as rooftop solar systems, are growing and comprise a larger share of the energy resources on the nation's power grid. As the costs of DG decline, it is critical that these resources are priced appropriately and that the subsidies that support DG are transparent to all parties—customers, regulators, legislators, solar providers, and DG advocates.

The Institute for Electric Innovation's (IEI's) recent issue brief, "Net Energy Metering: Subsidy Issues and Regulatory Solutions," illustrates the subsidy created by current net energy metering (NEM) practices based on a typical residential customer in Southern California with a rooftop solar photovoltaic (PV) system. The results show that the size of the NEM subsidy in California today is overly generous and not transparent; most of the NEM subsidies go to affluent households (and are largely paid by less affluent households through their electric bills); and when a customer chooses to lease—rather than own—rooftop solar, most of the NEM subsidy is transferred to the leasing company. These are unintended consequences and need to be modified.

When a DG customer produces onsite energy, this

reduces the amount of energy the customer purchases from the local utility. The customer avoids paying the portion of the energy rate that is designed to recover that customer's share of the utility's fixed costs for grid services. Hence, the source of the NEM subsidy is that DG customers do not fully pay for the grid services that they use. In addition, this NEM subsidy is mostly paid by non-DG customers. While the IEI issue brief looks specifically at the size of the NEM subsidy using California as an example, the lessons learned can be applied to other states with NEM policies.

Undo the Unintended Consequences

The legitimate purpose of a subsidy is to provide an incentive to pursue a desirable public policy. Subsidies should not be overly generous; the amount of the subsidy should be transparent; and the recipient of the subsidy should be clearly identified. The issue brief demonstrates that the current NEM approach in California fails all three tests.

DG customers who lease rooftop solar or enter into power purchase agreements (PPAs) with solar leasing companies accounted for about 75 percent of all new residential rooftop solar PV in California in 2013. Unfortunately, these customers receive only a small fraction of the NEM subsidy; the bulk of the subsidy goes to rooftop solar leasing companies.

According to the issue brief, the NEM subsidy alone is more than \$20,000 for a 4-kilowatt (KW) rooftop solar PV facility that costs about \$14,500 in California. This far exceeds what is necessary to incent rooftop solar PV. Combining both the NEM subsidy in California and the federal tax credit of roughly \$4,300 (about 30 percent of the purchase cost),



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when a DG customer purchases rooftop solar, that customer receives more than \$24,000 in subsidies for that rooftop solar PV facility.

It is important not just to understand the magnitude of the subsidy, but also to clearly identify the subsidy recipients. When a customer leases that same 4-KW rooftop solar PV facility, the entire federal tax credit of roughly \$4,300 goes to the leasing company, and the NEM subsidy is distributed between the customer and the solar leasing company. Of the \$24,000 in combined subsidies, the solar leasing company receives more than \$17,000 (from both the NEM subsidy and the federal tax credit) and the customer receives about \$7,000 (from the NEM subsidy).

Use Available Regulatory Tools

Regulatory tools are available today, and in use in some jurisdictions, to reduce the unintended and excessive NEM subsidies to both customers and solar leasing companies, while also reducing the cost shifting onto non-DG customers.

- ▶ The most straightforward regulatory approach is to require DG customers to pay for more of the grid services they use through a higher monthly customer charge and to simplify the tiered-rate structure in California. Increasing the monthly customer charge significantly reduces the NEM subsidy.
- ▶ A “buy-sell” approach where DG customers purchase all of the power they use onsite at the utility’s retail rate and sell all of the solar power produced onsite at the utility’s avoided costs could eliminate the NEM subsidy and the cost shifting. However, the subsidy and cost shifting would be eliminated only if the prices paid for the solar energy produced by the DG facility were truly equal to the utility’s avoided costs.

The issue brief provides estimates of how much the NEM subsidy would be reduced by using available regulatory tools, such as increasing the monthly customer charge (coupled with replacing the tiered-rate

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structure in California with a single energy rate) or implementing a buy-sell approach for DG customers.

The time to change net metering is now, and regulatory tools are available to do so. In fact, several states across the United States are now considering “value of rooftop solar”

(VOS) approaches to DG; the VOS approach is a version of the buy-sell approach.

Moving from NEM to VOS

The VOS approach has two parts. First, the DG customer purchases all of the energy he or she consumes onsite from the utility at the utility’s retail rate. This ensures that the DG customer fully pays for the grid services he or she utilizes. Second, the utility purchases all of the solar energy produced onsite by the DG facility at the VOS rate (which hopefully represents the utility’s avoided costs). As indicated earlier, the subsidy and cost shifting are eliminated only if the prices paid for the solar energy produced by the DG facility are truly equal to the utility’s avoided costs.

Both the components of avoided costs and how to value each of them are highly controversial issues. In terms of the components of avoided costs, most would agree that avoided costs include: energy costs; transmission and distribution energy losses; and generating capacity costs. However, controversy typically arises over how to compute avoided transmission and distribution capacity costs and whether avoided environmental costs are appropriate to include.

The components of avoided costs, the value of each cost component, and using consistent valuation approaches are equally important for a fair analysis.

VOS may be one approach for addressing the unintended consequences associated with NEM. However, the devil is in the details. To date, many of the proposed VOS approaches have resulted in simply swapping the NEM subsidy for the VOS subsidy. If the goal is to make progress toward pricing solar right, creating a new set of subsidies under VOS is not the answer. **EP**

