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American Solar Electric, Inc. strongly supports the proposed adoption of net metering for residential and non-residential; grid-tied photovoltaic (PV) and small wind systems.

The potential benefits of a switch to net metering are many, and relate directly to the PV sales process, system sizing, system ease of use, and system production predictability for these technologies.

In this report, we provide commission staff with a 'ground level' view of the differences between net billing and net metering, and how a switch to net metering would affect the interaction between PV customers and the companies responsible for the design and installation of PV systems.

Consumer Confusion/Misinformation

For the sales team at American Solar, and presumably for other companies as well, the first step in the sales process is customer education.

This process is greatly complicated by the necessity of explaining how net billing affects a PV system when it is producing more energy than the home is using.

Potential customers are often discouraged to learn that their meter will not be able to spin backwards, and that the excess energy they produce will be worth far less than the electricity they purchase. Currently, there is a three-to-one difference between the retail rate that consumers pay for electricity and the rate at which APS is willing to buy excess electricity generated by PV systems.

Sizing Systems in APS Service Territory

Under the current APS net billing rider, if a PV system is producing less energy than a home is using—meaning that the energy produced by the PV offsets energy usage from APS; causing the meter to spin the normal direction only more slowly—then *the energy the solar system is producing is worth exactly the same retail rate that the customer pays for electricity from APS.* In this circumstance, the PV system simply helps the homeowner avoid using retail-priced electricity.

However; if the PV system is producing more energy than the home is using, then the excess power that is fed back into the grid is worth a much lower, *average avoided cost* that is pre-determined by APS. Because of this feature of net billing, it is important to size a system so that it feeds back into the grid as little excess energy throughout the day as possible.

When a system is sized with these cost efficiencies in mind, the energy the system produces only offsets retail rates, and as a result, is worth retail prices. This means that the time the system takes to pay for itself is minimized. A significant drawback from the customer's perspective is that systems sized to minimize the payback period under the

APS net billing program are often much smaller; and offset a much lower portion of customers' bills, than a typical system installed on an identical house located in a service territory that offers net metering.

This can, and often does, discourage potential customers who were originally attracted to solar by the prospects of being able to both dramatically decrease their power bills and minimize the time it takes their system to pay for itself. Customers who do purchase systems in APS service territory often end up with much smaller systems than they would be willing to pay for.

Finally, smaller systems limit savings associated with economies of scale, and make it more difficult for APS to reach distributed generation requirements set forth in the Environmental Portfolio Standard.

Predictability

A switch to net metering at APS would also help address customer concerns over predictability. With any PV system it is fairly easy to predict how much electricity it will produce over the course of any given month. With net billing, the difficulty lies in trying to predict how much this energy will be worth, and consequently, how much the solar system will reduce the customer's electric bill.

With net metering, the savings are easy to predict. The electricity produced is worth exactly what it would cost the homeowner to purchase electricity at retail rates. This is known as *one-to-one pricing*. Prices are consistent whether or not the homeowner is producing more energy than the home is demanding during certain parts of the day.

As mentioned above, under a net billing scenario, when a system is producing more energy than a home is demanding, the excess energy is worth far less than the solar electricity produced up until the point at which the home's demand is met. Accordingly, the savings provided by a system over the course of a billing cycle is largely determined by the frequency with which the customer produces excess energy. This, in turn, is determined by what time of day, and in what amount, a customer uses electricity. This varies widely from customer to customer and is, at best, unpredictable. From the perspective of a design/installation firm, not being able to accurately predict monthly savings can make a sales staff appear unprofessional and can contribute to an atmosphere of distrust between customer and contractor. It also introduces uncertainty in the mind of the customer, as to the potential savings to be gained from the installed system.

Ease of Use

A further drawback associated with net billing is that it forces homeowners to carefully monitor how and when energy is used. For a customer to minimize the time it takes for a system to pay for itself the customer must try and use up all of the solar energy produced without going over and incurring daytime peak rates. For instance, if a customer realizes that he or she is not using all of their solar capacity they might decide to do a load of laundry that they would normally do at night, during the day. This need to alter energy use habits to get the most out of PV system is unappealing, and represents a road-block to the mainstream acceptance of PV technology. This problem would be completely eliminated by a switch to net metering.

Conclusion

From the perspective of the consumer, the purchase of a PV system is a major commitment. PV systems are a great investment, but they still require sizable outlays of capital, and the net metering issues can be confusing. A switch to net metering will go a long ways toward mitigating these concerns, making the purchase and ownership of PV systems more transparent and effortless. Net metering will make system sizing straightforward, make savings predictable, and eliminate the need for customers to alter their lifestyles in order to take advantage of solar energy.