



How States are Grappling with Solar Panels, Net Energy Metering, and the Evolving Electric Utility Industry

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“Net energy metering policies” are hotly debated in many U.S. states. Under this policy, an electricity customer who would like to own his or her own solar panel is allowed to connect the panel to the shared electricity grid, and give and consume electric power as needed. When their panels produce more electricity than customers need, they can send the extra electricity to the grid and receive credit for the generation at the going retail rate for electricity. When their panels do not produce enough, customers can instead purchase the extra electric power they need from the grid at the regular retail price. Distributed solar energy – which is solar energy produced near where it is used in homes or businesses – is a growing form of electricity generation in large part because of net energy metering policies.

But net metering policies are opposed by powerful interests. In December of 2015, Nevada’s Public Utilities Commission redesigned that state’s net metering policy, so that an owner of a solar system now receives a lower level of compensation (based on the wholesale rate rather than retail rate for electricity) and also faces additional fixed monthly charges for connecting to the shared grid. The Nevada Commission also chose not to grandfather existing customers who had purchased energy systems through the former policy regime, and instead ruled that both past and future customers would operate under the new billing model. Under the new rules joining the net metering program, installing distributed solar panels in a home is no longer cost effective. To outweigh financial losses, homeowners would have to be highly motivated by non-fiscal concerns such as environmental conservation.

Although in Nevada public protests and recommendations from the governor’s office prompted the Commission to reverse its decision against grandfathering in September of 2016, that state’s shift in its net metering policy is one of the more drastic the U.S. has experienced in recent history. Yet Nevada is not alone. Over the last two years, more than half of the states have either revisited their net metering policies or produced distributed solar valuation studies under general scrutiny about the value of solar, or taken both steps. In 2015, 27 of the 41 states with net metering policies made some form of legislative or regulatory modifications.

Why Solar Energy Growth Leads to New Policy Battles

A thriving U.S. solar energy industry has provided at least part of the impetus for states to revisit their net energy metering policies or consider the value of distributed solar systems more generally. Over the last decade, the price of distributed solar energy has dropped steeply, and the number of residential solar photovoltaic applications has simultaneously grown. In May 2016, the U.S. hit one million solar installations and it is expected to reach two million by 2018. This rapid growth has led many states with net metering policies to reach an initial cap on total system capacity that comes from distributed solar they previously set

for total solar capacity in their programs. As states reach their caps, many have taken the opportunity to reevaluate their programs' cap as well as the program more broadly.

Meanwhile, the electric power industry is reacting to solar developments, asking questions such as what is the value of solar? Do customers who participate in the net metering program receive appropriate compensation for their generation? And do these customers pay appropriate rates to have access to the grid? Electric utilities are concerned, because greater use of distributed solar energy could reduce their electric sales at the same time that their fixed costs remain the same or increase. Utility companies and public officials worry that non-participants may end up subsidizing net metering participants, and that as prices for energy rise, more customers will purchase their own private solar energy systems, which could cause general prices to rise still further, kicking off what is colloquially called a "utility death spiral."

Given the varied economic and social interests at work, when state governments revisit their net metering policies – by choice or by necessity – they face increasing resistance to simply extending and expanding the previous programs. Various interests, including utility companies, push for legislators and commissions to redesign rates in ways that minimize any subsidies to private solar generators and prevent trends toward a utility death spiral.

Emerging State Policy Choices

Nevada responded to these rising counter-pressures by, in effect, dismantling its net energy metering policy and stifling the solar industry in its state. It is not yet clear whether many other states will follow Nevada's lead and fundamentally alter their net energy metering policies. So far, states are taking quite varied approaches. At one point, California and Colorado appeared to be heading in the same direction; but both have decided to either maintain their program or modify it only slightly. Hawaii, on the other hand, instituted changes to its policy that are closer to Nevada's modifications – by instituting a minimum electricity charge that could resemble Nevada's fixed charge and lowering compensation for solar generation toward the wholesale rather than retail price for energy. Nevertheless, Hawaii's new policy has several attributes that differ from Nevada's in ways that favor distributed solar investment.

Although the future of net metering policies and states' evolving views on the value of solar energy are not yet clear, now is an appropriate time to consider changes in the electric industry and whether its market structure and rate designs have become outdated. Electric utility industry practices are potentially outdated because they cannot accommodate customer-owned solar generation very well, and also because of growing societal efforts to reduce greenhouse gas emissions and the spread in distribution markets of "prosumers" (who simultaneously consume and produce electricity). It is entirely appropriate to reflect on whether some consumers are subsidizing others, and how to prevent this, and also to wonder whether citizens and businesses can trust governments to maintain policy consistency. Nevada responded to emerging challenges by abruptly changing course, slapping on new rules that effectively drove the solar industry out of the state. Yet, actively engaging the underlying issues and conflicts of interest involved in market regulation and rate designs does not necessitate an approach such as Nevada's. The issues can be addressed by state authorities and other stakeholders without taking an aggressive stance against distributed solar energy production.

Read more in Sanya Carley and Lincoln Davies, "Nevada's Net Energy Metering Experience: The Making of a Policy Eclipse?" Brookings Institution Report, forthcoming; and Lincoln Davies and Sanya Carley,

"Net Energy Metering: Nevada's Experience in Context." *The Electricity Journal* (forthcoming).