

Net Metering and Net Metering Aggregation

Description:

Prior to Net Energy Metering (NEM) policies, utility customers who installed a solar or other renewable generation system had two options for dealing with excess generation. One, they could certify it as a qualifying facility under the Public Utility Regulatory Act (PURPA) of 1978 and sell that energy at the utility's avoided-cost rate. As an alternative, consumers could install batteries to store the energy produced by their systems to deliver the power when they needed it. With the advent of NEM policies, the economic incentives for installing distributed energy systems improved, and NEM has become one of the most important policy tools for supporting distributed generation.

Discussion of the Policy:

For generation systems installed on the customer side of the meter, NEM is a policy that allows unused power to be delivered to the grid at a per kilowatt hour (kWh) credit. Customers are credited for any power they deliver to the grid and then after they use power, they are billed only for the "net" power they use over their generation. This allows the grid to operate like a battery for the customer, but also contributes clean generation to the energy mix. NEM saves customers money and helps drive growth in the renewable energy industry by expanding the customer base and simplifying the process.

Traditionally, net metered systems only allow for crediting of generation and use against one meter. However, with some systems - most notably agricultural systems - large energy usage may be on one side of one meter while generation is on the customer side of another meter. NEM aggregation allows for total demand and total generation across meters owned by the same entity to be netted out.

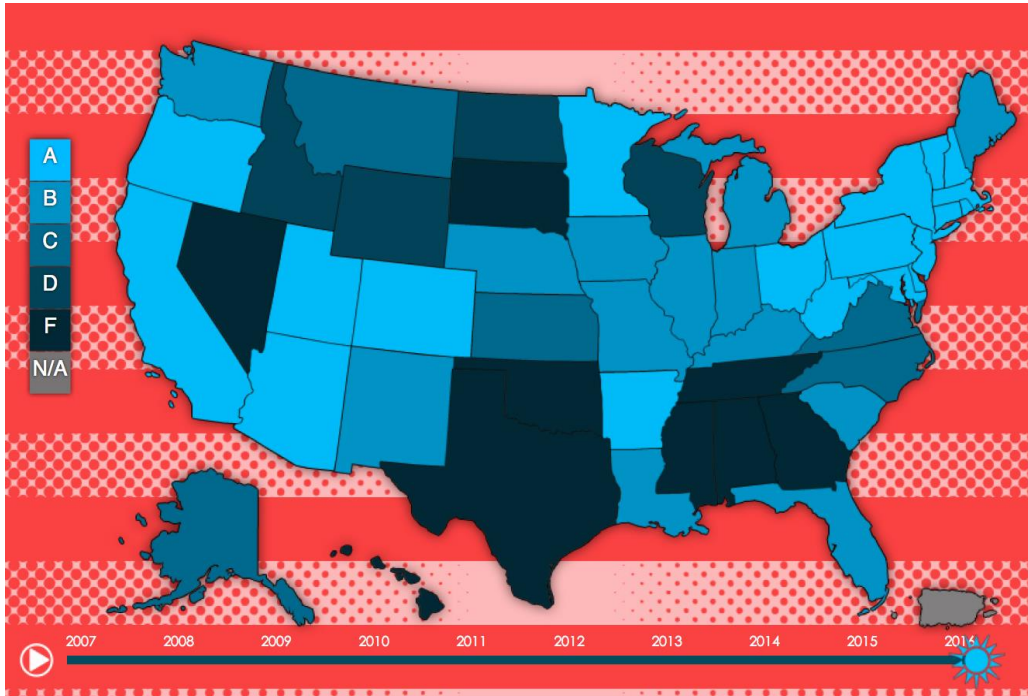
Another key provision of net metering programs is that the customer is not "paid" for power, but "credited" against their use. This is important for tax reasons as revenue to a customer is taxable, while crediting for power is not.

Recently, utilities have begun to push back against NEM policies because they reduce revenue to the utility. Utilities argue that other customers need to pay more for grid infrastructure because net meter customers are not paying the portion of the rate that goes toward infrastructure repayment. However, utilities would need to reach substantial levels of photovoltaic (PV) solar penetration before there would be any noticeable effect on costs to customers (most states are currently below 1% of penetration). Furthermore, the issue surrounding NEM is a symptom of a much larger problem: Utilities operate within an outdated revenue model. See [New Utility Business Model Proceeding](#).

When looking at revising NEM policies, one important factor to consider is whether the retail value of electricity is substantially higher than the cost of solar on a per kWh basis. The purpose of net metering is to credit a customer for their substantial investment in generation at a rate that would allow them to recover the cost of their system. If a customer loses money, solar adoption will certainly lag. For example, if a customer purchases a 5kW system for \$10,000 after incentives and finances that system over 10 years at 5% interest, they will be paying \$106/month for their system. If the system produces energy at a 20% capacity factor, their solar power will cost them 15¢/kWh. If the retail rate for which they are credited is below 15¢, solar adoption will be slower. If the retail rate is above 15¢, solar adoption will be faster. In a state like Hawaii, for example, the retail rate is 35¢/kWh - so the value for a solar customer could be reduced below the retail rate while still making the economics of the investment viable. In Nevada, the retail rate of electricity is 8.5¢/kWh. When the Public Utilities Commission of Nevada reduced the NEM value, solar companies fled the state.

Example State Programs:

To date, 44 states and the District of Columbia have adopted NEM.



Source: [Freeing the Grid](#)

- California Net Energy Metering:
<http://www.cpuc.ca.gov/General.aspx?id=3800>
- Colorado Net Energy Metering:
<http://freeingthegrid.org/#state-grades/colorado>
- New Jersey Net Energy Metering:
<http://freeingthegrid.org/#state-grades/new-jersey>
- Utah Net Energy Metering:
<http://freeingthegrid.org/#state-grades/utah>

Key Components:

While most states already have NEM policies, utilities are seeking to change these policies through a variety of means including:

- Assessing a fixed fee on solar owners to make up for infrastructure costs.
- Assessing a per kilowatt (kW) monthly fee on solar owners.
- Shifting from “net metering” which is a kWh for kWh credit to “net billing” which pays solar customers a reduced rate for the power they put on the grid.

States can determine the best approach based on their policy goals. If a state wants to increase economic activity in the solar sector, expand customer options for financing solar installations, and increase renewable distributed power on the grid, they should have a strong NEM policy combined with advanced rate design, grid modernization, and investigation into new utility business models.

If, instead, a state wants to focus on the costs of the portions of the grid infrastructure an owner/generator is using that are not collected through rates assessed throughout the system, they could identify a per kWh fee for power that is delivered to the grid - this is the power that is using the grid and not paying for the rate portion that goes to grid infrastructure. This is different than the power generated by the distributed system, as some of that power is going directly to meet the demand at the location and never making it to the grid.

A difficulty with the second approach is that it only looks at one side of the cost/benefit equation: the cost of the infrastructure, and not the benefit of the generation. Many states have studied the benefits of certain distributed generation technologies (primarily solar) and found that the benefits far outweigh the costs. See [Value of Energy Tariff](#).

Many states do not provide for meter aggregation. Policies to allow aggregation should address the following:

- Parameters around allowable aggregation of meters - one owner, specific to agriculture, public entities, etc.
- Integration of NEM aggregation with other policies such as shared solar.

More Information:

- Freeing the Grid:
<http://freeingthegrid.org/>
- Interstate Renewable Energy Council: Model Net Metering Rules 2009:
<http://www.irecusa.org/irec-model-net-metering-rules-2009/>
- Interstate Renewable Energy Council: Connecting to the Grid Guide 6th Edition:
<http://www.irecusa.org/connecting-to-the-grid-guide-6th-edition/>
- National Conference of State Legislatures: Policy Overview and State Legislative Updates:
<http://www.ncsl.org/research/energy/net-metering-policy-overview-and-state-legislative-updates.aspx>
- Solar Energy Industries Association: Net Metering:
<http://www.seia.org/policy/distributed-solar/net-metering>