

The Vermont Legislative Research Service

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Renewable Energy Incentive Policies

As more households and businesses install renewable energy systems and begin taking part in net metering (NEM), Vermont will continue inching towards filling its 15% peak demand cap. Vermont is projected to reach its cap by 2019. Additionally, in order to reach the Comprehensive Energy Plan's goal of being 90% renewable by 2050, Vermont will want to explore ways to incentivize homeowners and businesses to install renewable energy systems. Thus, this report will discuss actions that other states have taken to accommodate increased energy flows through net metering and net metering alternatives.

What is Net Metering?

The power generated by a building's renewable energy system is allocated to the energy needs of the building. Any extra power that is generated by a renewable energy system that is not used by the home or commercial building is fed back into the electric grid of the building's utility meter. The power that is fed back into the grid acts as credit that is used on cloudy days when the renewable energy system is not generating enough energy to meet the energy needs of the building. Thus, net metering is a financial incentive for homeowners and businesses to install renewable energy systems.

¹ J. Heeter, Gelman R, and Bird, L., "Status of Net Metering: Assessing the Potential to Reach Program Caps, National Renewable Energy Laboratory NREL/TP-6A20-61858, Golden, Colorado, U.S. Department of Energy, September 2014, accessed April 20, 2015, <http://www.nrel.gov/docs/fy14osti/61858.pdf>.

² "State Renewable Energy Goals Public Service Department January 1, 2015 accessed April 20, 2015. http://publicservice.vermont.gov/topics/renewable_energy/state_goals.

³ "Vermont Solar Consumer Guide: Solar Photovoltaic," Renewable Energy

Peak Demand and the 15% Cap

The state of Vermont defines peak demand as “the highest monthly peak reported in either the electric company's FERC [Federal Electric Reporting Commission]...or the electric company's Electric Annual Report to the Vermont Department of Public Service for the Year.”¹⁴ In other words, peak demand refers to the maximum amount of energy that could possibly be needed at one time from a specific utility company. Thus, Vermont’s 15% of peak demand cap refers to the maximum amount of ~~excess~~ energy sent back into the grid for which that a utility company will reimburse a resident.

Energy Act of 2011; this provision was passed with the support of the state's largest electricity provider, Green Mountain Power⁸

An electrical customer has the ability to net meter in Vermont once the customer has been granted a Certificate of Public Good. The maximum size of a system that Vermont allows for net metering is 500 kilowatt (kW) for photovoltaic, wind turbines, anaerobic digestion of agricultural products, by-products or waste, biomass, and fuel cells. Vermont's net metering program also allows for virtual net metering, which is a type of community solar program that allows customers to purchase solar panels from a large, existing array of panels not located on their homes or buildings. The program allows these customers to reap the same benefits of net metering even though the source of renewable energy is not on their property.¹⁰

Utilities provide net metering services to customers on a first come, first serve basis. Vermont regulates net metering based on percent of peak capacity. In Vermont, peak capacity is calculated with respect to the inverter capacity of a system, which is lower than installed capacity. The inverter capacity is the maximum watts of energy the system has the ability to convert from solar generated power to usable energy for the building. Therefore, considering inverter capacity allows for more systems to participate in net metering compared to if installed capacity was considered. In Vermont, utilities must allow net metering up to 15% of the utility's peak capacity. This regulated percentage was increased from 4% (42 megawatts [MW]) to the current 15% (126 MW) in 2012. This regulated percentage was increased from 4% (42 megawatts [MW]) to the current 15% (126 MW) in 2012.

Currently, New Hampshire has a system capacity limit of 1 MW and an aggregate capacity limit of 50 MW.²² Net Excess Generation is credited to the customer's next bill and carried forward indefinitely.²³ Installing rooftop solar has been growing as a business in New Hampshire, and has become so popular that New Hampshire has nearly exceeded the number of customers legally permitted to sell their excess electricity back to the grid.²⁴

defines aggregate peak demand as “the sum of individual customer peak demand.”³⁰ The current net metering cap is 5% of total aggregated peak demand during any calendar year. According to the National Renewable Energy Laboratory, as of September 2014, California’s cap was estimated at 5,258 MW statewide.³¹

California is projected to reach its 5% total aggregate peak demand cap in 2017. The state has legislation (AB 327) in place requiring utilities to provide net metering to all of their qualified customers until July 2017 or until the cap is met (whichever comes first). The California Public Utilities Commission (CPUC) is responsible, under AB 327, for developing a standard contract or tariff for utilities to abide by when one of these two events occurs and the current net metering program ceases to exist.³² The new standard contract or tariff plan, which is an alternative program to net metering (explained in greater detail in Texas: Value of Solar Tariff [VOST] section below), is still being developed but the CPUC did announce (on March 27, 2014) that all solar customers who have installed or will install their systems before July 2017 (or before the utility reaches their cap), will continue to reap the benefits of net metering for a full 20 years from the date the system was installed. California is considering a Value of Solar Tariff (VOST) to replace its current net metering program. (Texas currently has a VOST program in place, which is explained in the “Alternative to Net Metering” section below.)³³

Trigger Mechanism New Jersey

Instead of a cap, a few states have implemented trigger mechanisms, which act as alarms that prompt a review of net metering policies and standards. New Jersey, Maine, and Minnesota have implemented trigger mechanisms. New Jersey and Maine base their trigger on percentage of peak demand. New Jersey's trigger is 499 MW, or 2.5% of peak demand.³⁴ Trigger mechanisms prompt "regulatory discussion about the status of net metering," without requiring utilities to suspend net metering or requiring states to take immediate action to update net metering policies.³⁵ New Jersey surpassed its trigger in 2013, and as of March 2014, was at 174.1% of peak demand. suak demandm

Act 2420 was introduced in the New Jersey Senate in September 2014, to triple the trigger to 7.5% of peak capacity³⁶. The bill passed the Senate in December 2014 and was referred to the Assembly Telecommunications and Utilities Committee in January 2015.

Alternatives to Net Metering

Value of Solar Tariff (VOST) Texas

Texas implemented a Value of Solar Tariff (VOST) program in 2006 as a way to benefit its photovoltaic (PV) solar panel customers (the program does not apply to other renewable energy sources) as a policy alternative to net metering. A VOST program is similar to a net metering system. The customer receives an electric bill for energy consumption, the customer is credited a set amount for every kW a renewable energy system generates, and this credit is subtracted from the customer's electric bill. The difference between net metering and a VOST program

energy use. There are some drawbacks to the calculation technique of VOST programs. For example, it is difficult to find a consensus on the methodology for determining customer compensation per kW generated. Additionally, the rate is recalculated annually, therefore, the extent of the benefit a PV system customer will experience in any given year is not guaranteed and a lot of room for uncertainty exists. Another difference of the VOST system, compared to net metering, is that the customer receives credit based on utility-specific benefits, and not fixed retail sale rates of electricity. In net metering programs there also are concerns of cross-subsidizing; in contrast, in a VOST program the cost of transmission and distribution are included in the rate calculation, and therefore concerns of cross-subsidizing are eliminated.⁴¹

Interconnection Study Requirements for Circuits That Have Reached Specific Penetration Levels Hawaii

According to Solar Electric Power Association, Hawaii has the highest percentage of customers with rooftop solar PV systems. Thus, Hawaii has been innovative in altering its net metering program to minimize safety and reliability risks created by the amount of energy feeding into the system.

Hawaii's NEM system is based on circuit penetration and daytime minimum load (DML). Circuit penetration is the amount of energy that a given system feeds into a given circuit. Daytime minimum load (DML) is defined by Hawaii Electric as the energy generated by a given system between 9AM and 5PM.

Prior to installing a renewable energy system, property owners must check the status of the circuit that their property connects to using a Locational Value Map, which is provided by Hawaii Electric. Depending on how much distributed generation is currently on the circuit, system interconnection "may require further review and/or upgrades."⁴³ There are three possible phases of review a customer must pass in order to become part of Hawaii's NEM program and interconnect to the local circuit. There is an Initial Technical Review (ITR) of the customer's NEM agreement (paperwork) and the proposed renewable energy system. If the system is eligible for immediate interconnection, then the customer may continue with the city and county interconnection permitting process. If the system is not approved the process progresses to the Supplemental Review (SR) phase, where Hawaii

⁴¹ Natio

Electric determines what modifications are necessary for the system to be interconnected. Then Hawaii Electric can require that an Interconnection study (IRS) be conducted, which is "an in-depth safety and reliability study that establishes specifications for linking a PV system with Hawaiian Electric's distribution grid."