Austin, Texas

Net energy metering (NEM), or net metering for short, has historically been one of the most significant sources of value for electric customers with grid-tied solar energy installations. Although the details vary from state to state and sometimes from utility to utility, in their most basic form, NEM policies effectively allow customer electric meters to "spin backwards" by crediting the customer for excess renewable energy generation at the same retail rate the customer pays for electricity. While discussions of whether or not the retail rate accurately reflects the value of excess customer generation have taken place for years, the growing prevalence of NEM systems has recently brought the issue to the forefront of policy conversations. Opinions differ on whether crediting at the retail rate over- or undervalues solar generation.

In 2012, Austin Energy, the municipal utility servicing Austin, Texas, sought to implement a rate tariff that would move beyond NEM and more accurately measure the tangible and intangible benefits that solar energy systems add to its municipal electric grid. These efforts culminated in the implementation of the utility's Value of Solar (VOS) tariff for residential solar systems in October 2012.

This case study will explain the design, development, implementation and basic math behind Austin Energy's VOS. It will also examine how replicable the tariff could be for state and local governments looking to encourage solar energy development.

What is the VOS?

The VOS tariff was designed by Austin Energy in collaboration with Clean Power Research and approved by the Austin City Council in June 2012.[i] The VOS is available for all past, present and future residential solar customers beginning October 1, 2012. It replaces net metering for residential solar photovoltaic (PV) systems no larger than 20 kilowatts (kW). [ii]

Under this new tariff, residential customers are credited on a monthly basis for the total amount of electricity generated by their PV system. The tariff rate is calculated by using algorithms and web-based calculations developed by Austin Energy and Clean Power Research. The rate was initially set at $0.128 per kilowatt hour (kWh) and will be adjusted annually, beginning with each year's January billing month.[iii]

To arrive at the electric bill for an individual property, Austin Energy first calculates the residential electric charge as if no solar energy installation existed (i.e., metered usages multiplied by the retail rate). Next, the utility calculates a credit for the residential customer based on the solar tariff value multiplied by the total solar energy production.[iv] Both the solar energy used on site and the solar energy exported to the grid

[i] Austin Energy and Clean Power Research. "Designing Austin Energy's Solar Tariff Using A Distributed PV Value Calculator". March 2012.
[ii] Database of State Incentives for Renewables and Efficiency (DSIRE). "Austin Energy – Value of Solar Residential Rate." http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=TX139F&re=0&ee=0
[iii] Austin Energy and Clean Power Research.
[iv] Ibid

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is used to calculate the solar energy production.

Any amount of excess solar credit per residential property is carried forward and applied to the following month's electric bill. Any and all carryover credits are automatically reset to zero in the first billing month of each calendar year.[v]

A VOS is Born

Tim Harvey, Conservation Program Coordinator with Austin Energy's Solar Programs, recalls the inception and evolution of the municipal utility's VOS rate:

> "In thinking about residential solar tariff design, it is useful to pretend for a moment that we have not had traditional net metering in the United States for almost thirty years. Instead, a good place to start might be with clean slate, asking what features would accompany an "ideal" residential solar tariff. We wanted a design that would allow us to collect for the cost of service and allow us a reasonable opportunity to earn a rate of return."
>
> "We considered scenarios that strayed from net metering as we recognized that it was limiting us from doing what we wanted to do, not only did it seem to undervalue solar, especially under the newly-proposed monthly service charge heavy rate design, but under a tiered rate structure, it also allowed the solar value to fluctuate across different consumption profiles. High energy users received greater benefits as it would offset the higher rate tiers. So we started to design a solar rate tariff we felt would be better suited to meet the needs of all stakeholders."

With the overall goal of meeting the needs of "all stakeholders" in mind, Austin Energy set out a series of specific priorities for the VOS rate. They wanted the rate design to:

- Be fair to all customers. Non-solar customers should neither pay nor benefit from solar customers' investments;
- Reflect the intrinsic benefits of solar generation without including a subsidy;
- Allow Austin Energy to implement consumption rate designs needed to encourage energy conservation and recover recurring energy delivery costs;
- Live beyond grid parity without needing to be restructured;
- Be defendable, intuitively sound, and administratively simple.

According to Mr. Harvey, the tariff development was aided by existing utility analytical efforts.

> "It just so happened that we had been performing the Value of Solar study annually since 2006. This study was initially performed to identify the point at which the utility is cost neutral as to whether or not we buy

[v] Database of State Incentives for Renewables and Efficiency. Accessed May 2013. http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=TX139F&re=0&ee=0

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> DG solar power or deliver an equal unit to the point of consumption. The number was intended to be used as a benchmark to judge the value of proposed power purchase agreements. It seemed to fit the bill perfectly. Pun intended."

The result was a VOS rate based on a variety of factors, including: line loss savings, energy savings, generation capacity savings, fuel price hedge value, transmission and distribution capacity savings, and environmental benefits.[vi] Taken together, these savings are intended to reflect the all-inclusive value of distributed solar energy to the utility - a "break-even" value for a specific kind of distributed generation resource. It essentially represents the value at which the utility is economically indifferent to whether it supplies a given unit of energy to the customer or obtains it from the customer.[vii]

Influence on State Policy

Some state legislators appear to have faith in the wider adoption of VOS policies, and are introducing VOS legislation in their 2013 legislative sessions.

Texas Senator Jose Rodrigues of El Paso introduced Senate Bill 1453 (SB1453) in March 2013. Most notably, S.B. 1453 authorizes statewide "Value-of-Solar-Generation Rates and Credits" and outlines the computation of such rates and credits in a manner that mirrors the VOS. Under S.B. 1453, utilities would annually review the Value-of-Solar-Generation rate based upon these factors:[viii]

- The delivery rate charge for solar energy generated to the distribution grid;
- Any avoided costs of purchased power, generation, generating capacity, transmission and distribution capacity, and transmission and distribution losses that otherwise would be necessary to provide electricity equivalent to the solar-generated electricity;
- The environmental value of the on-site solar generation as compared to other generation by the utility's generation facilities;
- The net long-term resource value, represented by the present value of a 30-year stream of distributed solar generation to the utility, the utility's customers, and the community at large.

Minnesota is also considering a VOS rate. Lisa Trudeau, an Engineer with the Minnesota Department of Commerce, Division of Energy Resources, reports that for the last two years, the Minnesota Division of Energy Resources has conducted workshops on distributed generation topics and meetings with stakeholders to identify priorities for state solar policy development. The discussions and recommendations coming out of these workshops have lead to several legislative proposals. Most notably, an October 2012 workshop identified the VOS rate as an area of interest among Minnesota stakeholders.

[vi] Database of State Incentives for Renewables and Efficiency. Accessed May 2013. http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=TX139F&re=0&ee=0

[vii] Austin Energy and Clean Power Research.

[viii] Texas Senate Bill 1453, March 7, 2013. http://www.capitol.state.tx.us/tlodocs/83R/billtext/html/SB01453I.htm

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As a result, the Minnesota State Legislature has been examining the implementation of a state-level VOS rate. Two legislative proposals are currently being circulated in the 2013 legislative session: H.F. 956 and S.F. 901. Similar to the established VOS in Austin and the proposed VOS in the Texas legislature, Minnesota's policy would require the distributed solar value to be reviewed annually and requires the valuation methodology to, at a minimum, account for the value of energy and its delivery, generation capacity, transmission capacity, transmission and distribution line losses, and environmental value.[ix] The legislation also includes a deadline of January 2014 for the development of the solar value tariff.

Replicating the VOS

While policymakers across the nation are currently debating the replicability of Austin Energy's VOS tariff, Mr. Harvey of Austin Energy offers this advice to other jurisdictions interested in adopting similar bill credit mechanisms:

- First, make sure the infrastructure is in place. To implement the VOS tariff as Austin Energy does, the utility must employ multiple meters for each solar customer - a two-way revenue meter and a solar meter.
- Properly vet issues through a stakeholder process.
- Pre-rollout communication with all stakeholders is key to managing expectations and allowing concerns to be vetted. Failure to do so will result in both upset customers and stakeholders.
- The VOS calculation should be both transparent and defensible to all stakeholders and should not be considered a subsidy. It is likely that advocates will want to add value for local economic growth etc., but in Mr. Harvey's opinion, some factors are better left out of the VOS calculation. The Austin VOS rate is calculated with the intent to identify the price at which the utility is cost neutral as to whether or not it buys distributed solar generation or an equal unit of power from another power source and delivered to the point of consumption. This process may involve third-party validation and stakeholder feedback on VOS inputs.
- Make sure the solar contracting community is well-informed; they will be the first to explain the new rate to solar customers.

Not every local government has a municipal utility as proactive as Austin Energy in terms of solar policy. However, Austin Energy's experience in developing a VOS rate structure is yet another example of the ability of local governments to be innovative and to encourage residential solar energy development outside of traditional net metering policies.

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[ix] Minnesota Senate Bill 901. April 6, 2013. https://www.revisor.mn.gov/bills/text.php?number=SF901&version=1&session=ls88&session_year=2013&session_number=0.

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