



October 15, 2021

Ms. Holly Anderson, Clerk
Vermont Public Utility Commission
112 State Street, 4th Floor
Montpelier, VT 05620

RE: Case No. 19-0855 RULE, Proposed Revisions to Vermont Public Utility Commission
Rule 5.100
Sunrun Inc. Post-Workshop Comments on Net Metering Compensation

Dear Clerk Anderson,

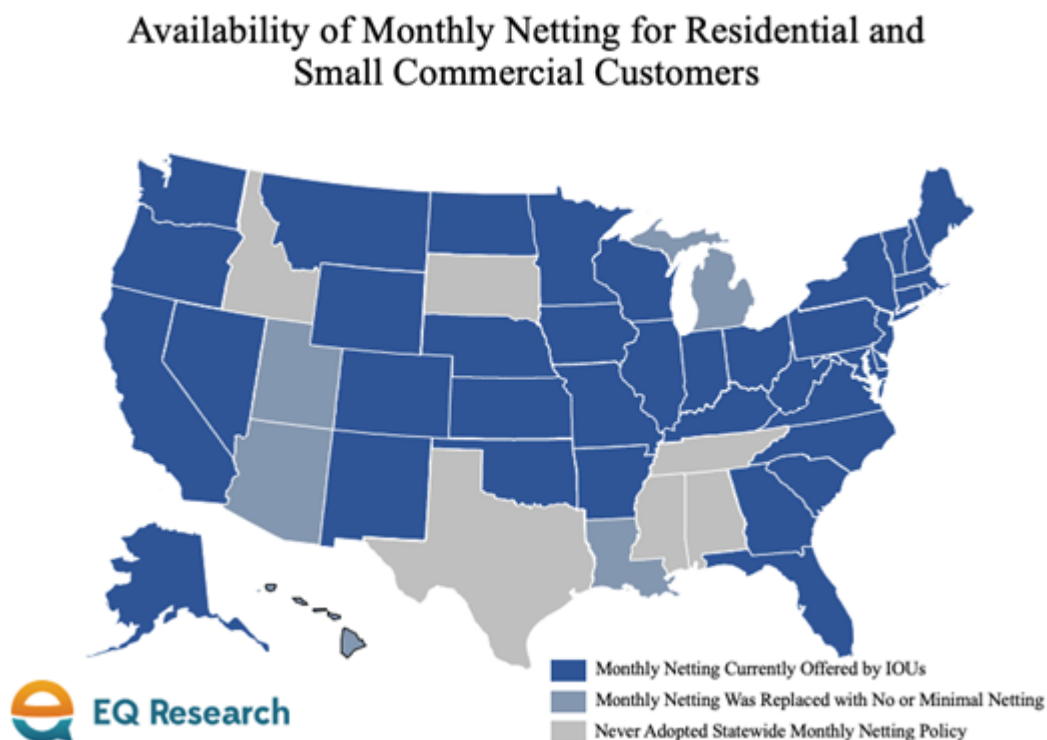
These comments were filed in response to the third workshop for Case No. 19-0855-RULE which was held on September 16, 2021. In addition to these comments, Sunrun supports the positions and recommendations made by Renewable Energy Vermont and Aegis Energy.

Net Metering

Net metering has been an effective, simple, and flexible policy for the deployment of solar energy systems in Vermont and across the country. Net metering remains the most popular form of compensation for solar customers nationally (see Table 1, below), as the structure allows small scale customers to net their solar production and usage within the monthly billing period. The net metering structure in Vermont does not need replacement. Rather, it should be augmented to increase the deployment in the state while also increasing access to underserved communities and low-income households.

The relatively simplistic structure of net metering is understandable for customers at large. Typical customers do not think deeply about their electric bill and the various rates and charges that comprise their bill prior to considering solar. Educating customers on their energy use, how net metering works, and the value proposition of solar can take a significant amount of time and is already challenging even with a simple net metering structure. Moving to a more complicated, and potentially uncertain, compensation structure introduces a significant amount of real and perceived risk for customers; which will in turn lead to lower customer adoption rates and decreased customer satisfaction.

Table 1: Availability of Monthly Netting for Residential and Small Commercial Customers¹



Importantly, while net metering is a simple structure, it also is flexible and can be adapted over time to achieve evolving policy objectives. In fact, the net metering structure in Vermont has exhibited this flexibility with the various compensation adders or subtractors for certain types of projects, REC value, and the Energy Efficiency Charge that went into effect a few months ago. Other states, as described below, have also made modifications while retaining the general net metering structure as their solar markets have evolved. Maintaining monthly netting and a compensation structure tied to the retail rate has been critical in ensuring those solar markets remain robust.

As demand response programs, time-of-use rate options, and electrification efforts are developed, net metering should be considered as the foundational policy that preserves the ability for those other price signals to be sent to customers to incentivize beneficial actions. More

¹ Kentucky Public Utilities Commission, Case 2020-00350, *Direct Testimony of Benjamin D. Inskeep on behalf of Kentucky Solar Industries Association, Inc.*, p. 50 (March 5, 2021) (showing states with monthly netting policies as of March 5, 2021).

complex and uncertain solar compensation structures can end up sending conflicting price signals to customers, which will undermine the policy outcomes of those various programs or rates.

For example, consider a customer with solar and energy storage on a time-of-use rate, participating in an active demand response program, and where the solar compensation structure values all instantaneous exports to the grid at the avoided costs rate. This customer is being sent a price signal by the instantaneous export value that they should self-consume as much of their solar production as possible to maximize the economic value. The battery is charged in the morning and then once the battery is full the customer would be incentivized to shift their usage to those afternoon and early evening hours to maximize their self-consumption. However, shifting their usage to those afternoon and early evening hours could conflict with the price signals sent by the time-of-use rates to instead shift usage to the morning or late evening hours. The active demand response price signal may also encourage the customer to shift their load to the evening hours, because if their load is low and the battery is exporting to the grid then the customer would be receiving the much lower avoided costs rate for their solar production. In all, the customer is left with conflicting information and no clear understanding of how they should operate their solar and storage system or how to shift their consumption behavior. Net metering solves this problem by providing a consistent value for their solar production so that the customer can focus on the TOU and demand response price signals.

Examples from Other States

California: Net Metering 2.0

After California reached a substantial level of solar penetration, the California Public Utilities Commission (“CPUC”) implemented the net metering 2.0 (“NM 2.0”) structure. While maintaining the core tenets of net metering, the CPUC required new solar customers to take service under certain time-of-use rate plans. Critically, California has retained monthly net metering within the time of use (“TOU”) periods (*e.g.*, if a kilowatt-hour (“kWh”) is exported during an off-peak period, an “off-peak credit” is earned, and if a kWh is exported during an on-peak period, an “on-peak credit” is earned). These rates have encouraged solar to be coupled with energy storage to maximize the value for both the homeowner and all ratepayers. Additionally, California implemented small non-bypassable charges on all imports from the utility to cover certain public purpose program costs.

While the California market has continued to thrive under NM 2.0, it has brought new challenges in educating customers about the more complex structure and how to adjust energy consumption patterns in response to it. More sophisticated energy users - and particularly users that have coupled their solar installation with battery storage and other technologies that enable load-shifting - have been able to shift their energy consumption to better align with the new TOU

periods. However, for many customers without sophisticated energy management tools or the ability to invest in additional enabling technologies, the NM 2.0 structure presents significant challenges for customers in adjusting energy consumption patterns. As noted by the Regulatory Assistance Project regarding the Hawaii TOU rate structure, even a net zero usage customer can have a sizable utility bill which can create challenges in accurately determining the value proposition for individual customers.² This demonstrates a very important lesson from California: complex tariff designs must be well designed with customer bill impact in mind (and preferably piloted prior to widespread adoption) and should be accompanied with a customer education campaign.

*New York: Value of Distributed Energy Resources (“VDER”)*³

As part of the Reforming the Energy Vision initiative, the New York Public Service Commission (“NYPSC”) opened a “Value of Distributed Energy Resources” proceeding in December 2015 to establish a more granular methodology for determining compensation for distributed energy resources (“DERs”). After painstaking analysis and deep stakeholder engagement, particularly with the solar industry, the NYPSC issued a “Phase One” order in March 2017, establishing a net metering successor program for non-residential systems. The established VDER “value stack,” provides compensation to large-scale DERs over 750 kW for energy, capacity, environmental benefits, avoided demand, and locational value.

Importantly, the 2017 order did not apply to “mass market” (residential and small commercial customers) as the NYPSC determined that more time was necessary in a “Phase Two” process to design and implement a net metering successor program for these customers. The “Phase Two” process consisted of a working group with PSC staff, utility representatives and DER providers, and considered myriad net metering successor program options, from demand charges to TOU rates. Ultimately, in a July 2020 decision, the PSC retained a net metering structure and declined to adopt mandatory TOU rates, demand charges, or the valuing of exports at a rate lower than the retail rate for residential and small commercial customers, reasoning:

*Phase One **NEM remains a simple and effective mechanism for smaller DER projects.** As discussed in the whitepaper, **applying the Value Stack or a similarly complex mechanism to these projects would, in many cases, require extensive metering and would require mass-market customers to understand a complex crediting framework that is very different from the billing models they are familiar with.** Furthermore, unlike in the case of [community distributed*

² Regulatory Assistance Project, *Rate Design and Net Metering Reform Presentation to the Vermont Public Utility Commission*, p. 28 (September 16, 2021).

³ NYSERDA, Solar Program (NY-SUN), The Value Stack, <https://www.nyserda.ny.gov/All%20Programs/Programs/NY%20Sun/Contractors/Value%20of%20Distributed%20Energy%20Resources>.

generation] CDG, it would be difficult or impossible for a third party, like a CDG sponsor, to act as an intermediary and take responsibility for reviewing credits received and ensuring that customers benefit.⁴

In lieu of the more complex compensation structures, the NYPSC ultimately adopted a small monthly fixed charge based on the DC capacity of a solar project in order to recover costs for certain public benefit programs. While this charge will reduce the overall compensation for solar customers, the primary structure and value of net metering was preserved.

Connecticut

The northeastern state that has most recently made changes to their net metering program is Connecticut. In 2018 a bill passed that would have ended the net metering program in 2019 and replaced it with a feed-in tariff option or an instantaneous export crediting option. The export rate for the instantaneous export crediting option was expected to be well below the retail utility rate. The legislature readdressed the issue in 2019 and extended net metering through 2021 and allowed the Public Utilities Regulatory Authority (“PURA”) to consider retaining the monthly net metering structure.

In February 2021, PURA issued its order following an extensive process pursuant to the legislation enacted in 2019. PURA adopted a NM 2.0 structure that maintains monthly net metering at the retail rate as fair compensation so that solar customers could receive a “reasonable rate of return.” PURA will conduct an annual “rate setting” process to determine whether the compensation levels are resulting in reasonable rates of return, and will apply either a REC incentive value on a \$/kWh basis or a non-bypassable charge depending on whether the customer value from NM is deemed too high or low. For systems that are installed in 2022, PURA adopted a \$0.0318/kWh REC incentive value for 20 years for Eversource customers and declined to adopt a REC incentive for United Illuminating customers (due to their higher utility rates and thus higher NM value). No non-bypassable charge was approved for either utility.

PURA evaluated an instantaneous export crediting option as well but rejected this structure, reasoning:

*Based on the foregoing, the Authority finds that **an instantaneous netting tariff currently presents a significant barrier to the deployment of behind-the-meter solar PV systems for residential customers** in Connecticut. Further, the implementation cost and timeline for instantaneous netting is similar to monthly netting. In accordance with the fourth Residential Tariff objective, the netting interval should not only seek to minimize costly changes to the EDCs’ billing*

⁴ Case 15-E-0751, *Order Establishing Net Metering Successor Tariff*, pp. 14-15 (July 16, 2020).

*systems and metering infrastructure, but should also be easy for customers to understand and provide customers with the ability to reasonably estimate the economics of their solar PV system before purchase or signing a lease. Indeed, a netting interval that is not compatible with estimating system economics and individual customer benefits would likely impede, if not entirely prohibit, robust customer participation. Finally, a monthly netting interval preserves the ability to send customer price signals to change their intraday usage through time-varying rates and to incentivize the deployment of electric storage through a performance-based incentive program.*⁵

The Connecticut NM 2.0 program also includes mechanisms to increase equitable access to solar. To help meet the program goal of 40% of systems being deployed to benefit low-income households, environmental justice communities, or distressed municipalities, PURA authorized additional 20-year incentive adders that could be paid directly to the system owner rather than applied as a bill credit. The incentive adder for low-income households is \$0.025/kWh and projects located in distressed municipalities or environmental justice communities receive a \$0.0125/kWh adder. This approach should drive development to those communities and make the program more equitable, and we recommend Vermont consider a similar approach.

New Hampshire: Monthly Netting

The New Hampshire Public Utilities Commission (“NHPUC”) opened a docket to consider net metering successor programs in May 2016. The NHPUC specifically decided against adopting an instantaneous netting structure, finding that it would cause “customer rate shock and confusion” and “adverse consequences.”⁶ Instead of moving to instantaneous netting, the NHPUC decided to make incremental changes to the net metering program while allowing time to collect additional data to inform future changes to the program. The Commission moved from annual netting, where kWh credits roll forward from month to month over an annual period, to monthly netting, where any excess credits at the end of each month are monetized at a rate lower than the retail utility rate. Customers receive the full generation value for their excess energy, but only a portion of the transmission and distribution values. In addition, New Hampshire also adopted a small non-bypassable charge, like California, for all energy delivered to a customer.⁷

*Nevada: Monthly Net Metering*⁸

⁵ Connecticut Public Utilities Regulatory Authority, Docket No. 20-07-01, *Interim Decision*, p. 12 (Feb. 10, 2021).

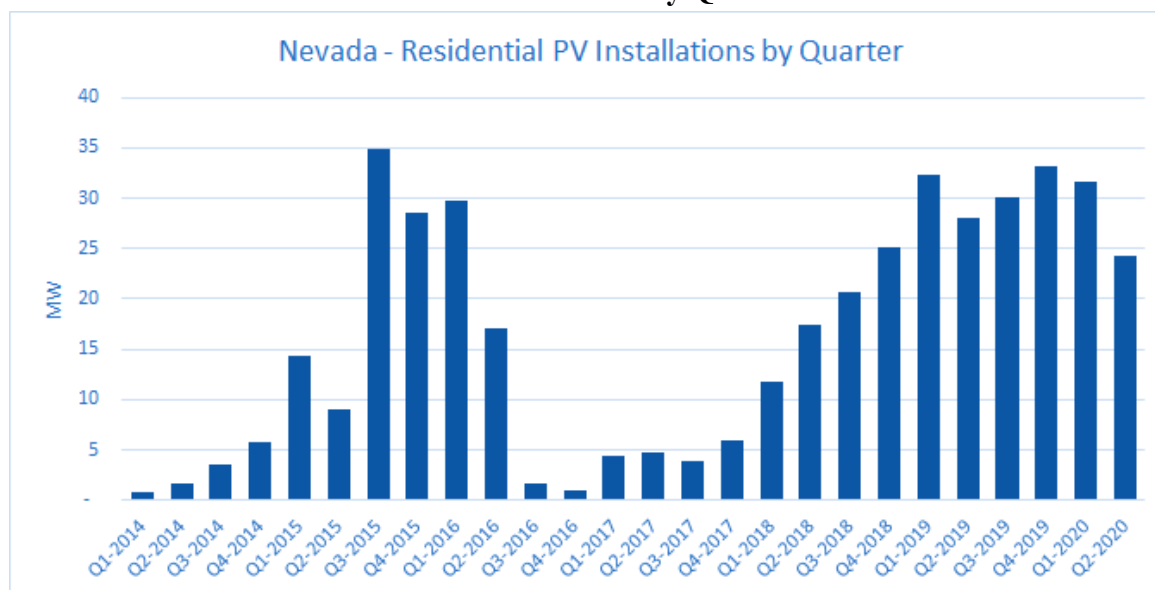
⁶ Public Utilities Commission of New Hampshire, DE 16-576, *Order No. 26,029* (June 23, 2017).

⁷ *Id.*

⁸ Nevada Public Utilities Commission, Net Metering in Nevada, http://puc.nv.gov/Renewable_Energy/Net_Metering/.

Prior to adopting the current net metering regime, Nevada made dramatic changes to its net metering policy with disastrous consequences for solar customers and the solar industry as a whole. In 2015, Nevada implemented one of the most regressive solar policies in history by replacing net metering with an instantaneous netting regime that valued solar PV export at the utility avoided cost rate and included high monthly fixed charges for solar customers. The changes were extremely unfavorable to customer economics; and as demonstrated in Table 2 below, caused the collapse of the state's solar industry overnight.⁹

Table 2: Nevada - Residential PV Installations by Quarter¹⁰



Source: Wood Mackenzie Power & Renewables/SEIA U.S. Solar Market Insight Report

Note: Data reflects completed projects, thus policy changes are reflected 1-2 quarters after they occur.

Following intense public backlash, Nevada adopted a modified version of net metering, which remains in place today. The current net metering program allows for monthly netting, with monthly net excess generation credited at a gradually declining rate as 80 MW tranches are filled. Initially the monthly excess credit value was 95% of the retail rate, declining to 75% in the final block. As demonstrated in the data above, this structure was successful in restarting the state's solar market.

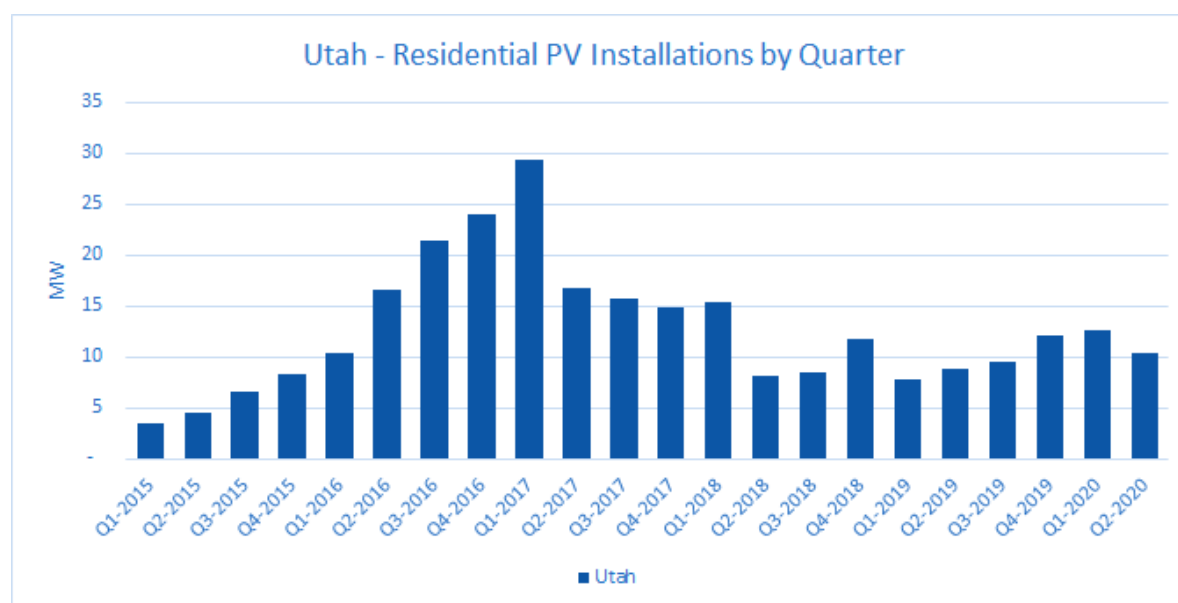
⁹ Hernandez, Dan, *Nevada Solar Industry Collapses After State Lets Power Company Raise Fees*, The Guardian (January 13, 2016) available at <https://www.theguardian.com/environment/2016/jan/13/solar-panel-energy-power-company-nevada>.

¹⁰ Wood Mackenzie Power & Renewables/SEIA U.S. Solar Market Insight Report Q3 2021, available at <https://www.woodmac.com/research/products/power-and-renewables/us-solar-market-insight/>.

Utah: Instantaneous Netting

Utah provides an instructive case study on the impacts of instantaneous netting on a solar market. At the end of 2016, the state's investor-owned utility, Rocky Mountain Power, proposed segregating solar customers into their own rate class with punitive monthly fixed and demand charges, coupled with a low volumetric charge. The combination of these changes would have resulted in extremely unfavorable customer economics to the point where a system would likely only break-even after 30 years. Following the filing of the utility's proposal, residential solar installations dropped approximately 40% between Q1 2017 and Q2 2017, as shown in Table 3 below, due to the chilling effect the proposal had on the market. Companies were no longer confident that Utah would be a long-term market and smaller installers began to diversify their footprint to other states, resulting in sharp declines in investment in Utah.

Table 3: Utah - Residential PV Installations by Quarter¹¹



Source: Wood Mackenzie Power & Renewables/SEIA U.S. Solar Market Insight Report

Note: Data reflects completed projects, thus policy changes are reflected 1-2 quarters after they occur.

Subsequently, over the following year, the governor's office, regulatory agencies, the utility, environmental advocates and the solar industry sought to develop an alternative net metering successor program that would allow the state's solar industry to remain viable. The final

¹¹ Wood Mackenzie Power & Renewables/SEIA U.S. Solar Market Insight Report Q3 2021, available at <https://www.woodmac.com/research/products/power-and-renewables/us-solar-market-insight/>.

settlement included instantaneous netting with an export rate which was equivalent to 90% of the retail rate, for a 15-year fixed term. Any solar production that was simultaneously consumed by a customer would remain at the retail rate. The settlement also included an agreement to extend the state's solar tax credit. Taken together, the overall compensation was not significantly different from net metering despite the more complex rate design. The settlement went into effect for systems applying for interconnection in November 2017.

The data shows that throughout the negotiation window the solar market stagnated due to the uncertainty. Then after the settlement went into effect (best reflected starting in Q2 2018 given the natural lag due to development cycles) the market further deteriorated despite the value being similar to before. The perceived uncertainty and risk for both customers and installers prevented the market from recovering. The solar industry was hopeful that the settlement would provide a workable market framework and compensation structure for customers; however, the data show that was not the case as solar investments remain at significantly depressed levels compared to levels prior to the changes initially proposed by Rocky Mountain Power at the end of 2016.

Conclusion

Substantial changes to the net metering structure in Vermont are not necessary at this time. Vermont has relatively low levels of solar PV penetration that do not justify major changes to the current net metering policy and the need to increase renewable energy deployment to meet the state's climate and emissions targets as detailed by Renewable Energy Vermont underscore the need for a net metering structure that will encourage sustained customer investment in clean distributed energy resources. Vermont's current net metering structure already includes several components that other states in similar situations have adopted. As such, Sunrun urges the Commission to focus any changes to the current policy on ways to stabilize the solar industry, encourage the deployment of battery storage coupled with solar PV, and ensure more equitable access to clean distributed energy resources for all Vermonters. Time-of-use or dynamic pricing structures that could help align customer behavior with system needs should be explored as options on an opt-in basis, particularly for customers with energy storage or electric vehicles.

Respectfully submitted,

/s/ Kyle Wallace

Kyle Wallace

Senior Manager, Public Policy

Sunrun Inc.

225 Bush Street, Suite 1400

San Francisco, California 94104

E: kyle.wallace@sunrun.com