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December 6, 2019

Ms. Judith C. Whitney, Clerk of the Commission
Vermont Public Utility Commission
112 State Street
Montpelier, VT 05620-2701

Re: Case Number 19-0855-RULE – Proposed Revisions to Rule 5.100 - Reply Comments of
Norwich Solar Technologies

Dear Ms. Whitney:

Norwich Solar Technologies (“Norwich Solar”) appreciates the opportunity this proceeding has provided to review and understand how Vermont utilities (“Utilities” or “Utility”) perceive the “impact” net metering has on their operations and ratepayers.

This proceeding has shed light onto an important admission that the majority of the Utilities have demonstrated through their filings that: **Vermonters generating their own power have a < 1% impact on rates BEFORE even considering the broader societal benefits of net metering.** As Norwich Solar’s November 1, 2019 comments demonstrated, there are significant values flowing DIRECTLY to taxpayers from net metered systems that are omitted from standard utility cost models.

Above all is the fact that **Vermonters want customer choice through net metering and have no other option available to generate their own power short of going off grid.** Norwich Solar strongly encourages proposals that keep net metering functionally viable for customer choice by homeowners, businesses, non-profits, and communities.

Promoting a strong net metering program has never been more important. Since original comments were filed in November 2019, United Nations Secretary-General Antonio Guterres at the U.N. Climate Change Conference COP25 in Madrid warned that global efforts to combat climate change have been “utterly inadequate,” and that the planet is close to “the point of no return.”ⁱ While individuals may be unable to comprehend the gravity of our situation, their voices should not slow the action and leadership that is needed by society to slow climate change.



Based on observations from the comments that were submitted in November 2019, Norwich Solar's reply comments below focus on three key areas:

- I. Rate cost drivers;
- II. Location based preferred siting and rates; and
- III. Local determination of preferred siting designation.

I. RATE COST DRIVERS

A. A Significant Driver of the “Cost Shift” is Lost Retail Sales, Not Net Metering.

The various models submitted by the Utilities clearly demonstrate that **the rate paid for net metering is not exclusively driving the identified small “cost shift.”** Depending on the Utility and the retail sales being offset, a significant driver of the “cost shift” is lost retail sales or revenue, and that impact increases significantly as higher retail rates are offset. However, **even with lost sales factored in, the cost impact of net metering for most Utilities on their rates is < 1%.**

To illustrate the outsized impact of lost sales on Utility “costs,” Norwich Solar updated Washington Electric Cooperative’s (“WEC”) rate impact model to set the value of solar to \$0.092 /kwh (zeroed out the value of the location and REC adder) as the Department of Public Service (“Department”) calculated. As shown in Table 1 – Updated WEC Model (below), **the resulting impact of solar customer’s being paid “the value of solar” for their generation resulted in nearly a 4% rate increase.** In other words, even if net metering systems receive no compensation, WEC rates will still increase due to decreased retail sales. This clearly is not about the rate being paid to net metered customers, but instead points to **the need to smartly grow our loads.**

This loss of revenue effect is not unique to WEC’s model and is the primary driver in the Vermont Electric Cooperative (“VEC”) and Green Mountain Power Corporation (“GMP”) (GMP to an even lesser extent) models as well. The implications of the lost sales have the same “cost” impact to rates as are encountered for customers installing more efficient lighting or customers turning off the lights when they leave the room.



Total NM kW Installed before 1/1/2017	1,580			
Estimated Gross kWh Generated (13% Capacity Factor)	1,799,110	One Meter for majority of systems - Must apply cap		
Avoided Retail Rates	\$ 0.21219	Total Revenue/Total kWh		
Amount Paid Net Excess Generation	\$ 0.09200	Tail block rate		
Gross Dollar Paid Net Excess Gen	\$ 24,566	<====from finance	14.89%	Percent paid N
Gross Dollar Avoided Retail Sales	\$ 324,911		85.11%	Percent of kWh
Rate Power Supply Savings	\$ 0.0740			
Dollars from power Supply Savings	\$ (133,220)			
Net Impact Loss to WEC Members	\$ 216,258	1		
Net Cost of Legacy NM (\$/kWh)	\$ 0.12020			
Total NM kW installed after 1/1/2017 (thru 9/15/2019)	2,471			
Estimated Gross kWh Generated (13% Capacity Factor)	2,814,510			
Avoided Retail Rates	\$ 0.21219			
Amount Paid Net Excess Generation	\$ 0.0920			
Gross Dollar Paid for Net Excess Generation	\$ 38,555			
Rate for REC and Siting Adjusters	\$ -	Category 1 & 2 Systems (150 kW and less)		
Dollars Paid for REC and Siting Adjuster	\$ -	WEC has one Category 3 system (250 kW) and it was		
Avoided Retail Rates	\$ 0.21219			
Dollar Loss from Avoided Retail sales	\$ 508,288			
Rate Power Supply Savings	\$ 0.0740			
Dollars from power Supply Savings	\$ (208,407)			
Net Impact Loss to WEC Members	\$ 338,436	2		
Net Cost of 2017 Vintage NM (\$/kWh)	\$ 0.1202			
Total Net Dollar Loss All NM Systems	\$ 554,694	=1+2		
Total kWh Generated NM Systems	4,613,620			
Net Cost of NM Systems (\$/kWh)	0.1202			
total kW installed 9/2018	4,051			
Percent Rate Impact	3.96%			

Table 1 – Updated WEC Model

Vermonters have clearly demonstrated their desire for customer choice and have the right to generate their own power. We should collectively focus on how we can intelligently grow our electric usage while simultaneously supporting Vermont ratepayer's strong desire to net meter. It is worth noting that many of the early pioneers that are developing both the heat pump and electric vehicle markets in Vermont started as net metering participants. These Vermonters are helping to create a foundation for strong, intelligent electric growth. Vermont needs consistent forward-looking policies to continue to accelerate this transition from fossil fuels.

B. Category III Net Metering Systems are the Most Cost Effective & Should Not Be Eliminated.

Several comments were made advocating for the elimination of Category III net-metering systems, the most cost-effective type of system. These proposals ranged from caps to ten-year rate structures that would effectively eliminate any potential project financing. Arguing that the



net-metering program needs to reduce costs and at the same time advocating for elimination of the most cost-effective type of net-metering system is contradictory.

Since many of the questions and answers to date have focused on reducing costs associated with net metering, highlighting the different underlying cost structures seems important to the investigation. This comparison can be done by using GMP's net metering cost impact model. By changing GMP's model's allocation to 100% systems over 150kWAC/Category III (modeling impacts 20MW of > 150kW systems), the resulting "cost" dropped by 25.5% over the composite model provided and 20MW of Category III were 34.4% lower in cost than all Category I. Table 2 – Updated GMP Model (below) demonstrates the lower costs associated with Category III systems when exclusively entered into the GMP model.

Table 1.2 - Twenty-five Year Impact of Incremental 20 MW of Net Metering (All Cat III)

<u>NPV of Net Metering Output in MWh</u>	<u>MWh</u>		
Own Use	75,988		
Excess Generation	292,227		
Total Output	368,215		
<u>NPV of Costs \$000s</u>	<u>\$ 000s</u>	<u>Levelized \$/MWh</u>	<u>Levelized cents/kWh</u>
Sales Offset by Own Use	11,645	\$153.25	15.32
Excess Generation	59,542	\$203.75	20.38
Adders/Adjustors (includes RECs)	(5,172)	(\$14.05)	(1.40)
Total Cost	66,014	\$179.28	17.93
<u>NPV of Power Supply Benefits \$000s</u>			
Avoided Power Cost	(17,375)	(\$47.19)	(4.72)
Transferred RECs	(7,131)	(\$19.37)	(1.94)
Avoided Capacity/RNS	(6,180)	(\$16.78)	(1.68)
Total Power Supply Benefits	(30,687)	(\$83.34)	(8.33)
NPV of Net Cost/(Benefit) \$000s	35,327	\$95.94	9.59

Table 2 – Updated GMP Model

Obviously, the cost to install smaller systems necessitates the need for higher residential rates. Likewise, it's important to support residential and commercial ratepayers' desire to generate their own power. These two factors do not appear in a straight cost analysis, and Norwich Solar requests that the inclusion of additional societal benefits like these be part of this rulemaking process.



In addition, Norwich Solar supports the Department's suggestion to raise the net metering system limit from 500 kW to 1 MW. We appreciate the comment for acknowledging our choices as a State have impacts that can run counter to lowest cost.

C. Monthly Net Metering True Ups Are Unnecessary.

The Department's suggestion for monthly true ups to net metering generation seems to unnecessarily complicate the ability for ratepayers to generate their own power. As the Department noted, systems would ultimately be smaller (and more expensive). This suggestion also seems to ignore the seasonal climate in which we live, where customers plan for seasonal variability and the subsequent length of our daylight hours. The rolling twelve-month average was established in just this recognition. Also, one of the benefits of ratepayers being connected through poles and wires is the collective benefit of so many individual loads. Personalizing generation to each ratepayer diminishes the benefits of a portfolio of ratepayers with different loads and generation. At a time when we have a global climate crisis upon us and we have the need for great resiliency, public policy should be supporting self-generation.

D. The National Cost Reduction Data Used by the Department Does Not Reflect Increases in Vermont Costs.

The Department provided data from the National Renewable Energy Laboratory that showed a significant drop since 2015 to the cost of installed solar. While Norwich Solar generally supports national data, this specific national data does not reflect what has occurred in Vermont since 2015. Since 2015, requirements on larger projects (>200 kW) have added significant cost to projects. These costs include:

- \$100,000 to \$150,000 increase in interconnection costs paid by solar owner
- \$20,000 to \$50,000 cost increase to permit systems
- **\$38 / kW** TGFOV fee
- **\$5/ kW application** fee or \$100 for registrations with additional fees for modifications.
- \$10,000 to \$60,000 of site compliance costs

As a result, while some national trends have helped lower costs, recent tariffs and Vermont specific cost drivers have increased the cost of construction.



E. The Value of Solar.

Norwich Solar understands the desire to value generation to comparable generation available. To be consistent however, we should make sure that comparable generation meets all of the same criteria that net metering complies with in Vermont.

II. LOCATION BASED PREFERRED SITING AND RATES

A. The Concept of Preferential Treatment for Solar Generation Located at the Point of Use Requires a Comprehensive Analysis of the Benefits of Pairing Load and Generation.

Several parties supported the concept of preferential treatment for solar generation located at the point of use. While the concept that paired solar generating at the load provides distribution benefits may hold true much of the time, Vermont's distribution and transmission grid has historically been designed, managed, and invested in, based on potential peaks (load or generation). In the case of paired generation and load, modeling will include scenarios with the load idle during generation. Norwich Solar thinks a more comprehensive analysis of the benefits of pairing load and generation should be conducted down to the circuit level to better evaluate the benefits and broader impacts of this proposal.

To be consistent with the broad theme of lowering costs - Norwich Solar strongly encourages all parties supporting this proposal to model the impacts of collocated generation and load in the utility models provided. **Most, if not all, of the models will show a significant "cost increase" due to additional "lost sales" for the same amount of net metering generation. If Vermonters and Vermont businesses not buying power are considered a "cost" to utilities, then Category III virtual net metering is the preferred low-cost option.**

B. Virtual Net Metering Should Continue Instead of Overinvesting in Distribution Upgrades.

Many Vermonters and Vermont businesses are located on circuits that cannot accept additional solar generation. For these ratepayers, virtual net metering is their only option for customer choice aside from costly upgrades to constrained circuits. Likewise, a significant percentage of Vermont's structures cannot support the additional weight of solar or have poor access to solar



resources. Virtual net metering is the only option for these Vermont ratepayers. Norwich Solar supports the option for all Vermonters to generate their own power while not overinvesting in distribution upgrades when existing solutions already exist. As a result, we believe Vermonters should not lose the option to virtual net meter.

C. When Comparing Net Metered Projects with Utility Owned and Standard Offer Projects, More Than the Cost of Carbon Should be Considered.

On Page two of the Department's November 1, 2019 comments it noted that "From a societal perspective, the same carbon reduction benefits as net-metered solar are currently being achieved at significantly lower cost through development of larger-scale solar and it is important that the compensation structure for net-metering reflect the system value being provided." Societal benefits generally include items beyond just cost and carbon, and those items should be incorporated and part of a larger complete analysis before categorically elevating utility owned or Standard Offer projects over net metered projects that provide different and substantial benefits to society. While Standard Offer and utility-owned projects have value, they do not allow Vermonters to generate their own power. **With utilities controlling all aspects of generation it is critical to have an outlet for real, viable generation ownership be provided to Vermonters.** Furthermore, to be consistent, if carbon and cost were the primary societal criteria, we would expect to see extensive support for wind development in the State.

III. LOCAL DETERMINATION OF PREFERRED SITING DESIGNATION

Norwich Solar generally supports the Department's recommendations with respect to preferred siting. Specifically, Norwich supports the continuation of town and regional legislative bodies participation in providing a letter, or letters, of support under PUC Rule 5.103 (7) "A specific location designated in a duly adopted municipal plan... *or a specific location that is identified in a joint letter of support from the municipal legislative body and municipal and regional planning commissions*" (emphasis added).ⁱⁱ This section of the Rule affords further opportunity for local, public engagement in the siting of renewable energy generation as the state collectively moves to achieve our in-state energy mandates. The local/regional letter(s) is a complimentary tool to municipal plans, enhanced energy plans, and regional energy plans pursuant to legislative action, which provide the framework of siting considerations including screening for prime solar locations, potential environmental constraints and local land use planning objectives. While these are more generalized land use planning tools, the opportunity for a specific location within the community to be considered suitable for siting renewable generation through the issuance of a letter identifying a specific site increases the tools available to meet local energy goals and increases the opportunity for local community engagement and dialogue.



From experience, Norwich Solar suggests consideration to clarify that the town and region identify the specific location as a suitable site in the community where the net metering system may be located, rather than “preferred.” Because the local letter(s) is required at the time of the net metering application filing, prior to a full vetting by state agencies and the Commission, we find that issuance of the letter in advance of the full Rule 5.100 review can be interpreted as the *cart before the horse* and communities are placed in the position of providing of a letter designating a location “preferred” -- meaning it is perhaps a better location over another -- without the benefit of the full review. For this reason, Norwich supports the Department’s revision (reprinted below) which gets to this point:

(7) A specific location designated in a duly adopted municipal plan under 24 V.S.A. chapter 117 for the siting of a renewable energy plant or specific type or size of renewable energy plant, provided that the plant meets the siting criteria recommended in the plan for the location; or a specific location that is identified in a ~~joint~~ letter, ~~or letters, of support~~ from the municipal legislative body and municipal and regional planning commissions ~~as preferred for siting projects of the type and scale of the project proposed, subject to review of the relevant siting criteria in Rule 5.100, certificate of public good; proceedings in the community where the net-metering system will be located.~~ as preferred for siting projects of the type and scale of the project proposed, subject to review of the relevant siting criteria in Rule 5.100, certificate of public good; proceedings in the community where the net-metering system will be located.

ENDNOTES

ⁱ U.N. Chief Warns of ‘Point of No Return’ on Climate Change, New England Cable News (Dec. 2, 2019), available at <https://www.nbcnews.com/news/world/u-n-chief-warns-point-no-return-climate-change-n1093956>.

ⁱⁱ (7) A specific location designated in a duly adopted municipal plan under 24 V.S.A. FINAL PROPOSED RULE Vermont Rule 5.100 16P-062 Public Service Board Page 10 of 58 January 20, 2017 chapter 117 for the siting of a renewable energy plant or specific type or size of renewable energy plant, provided that the plant meets the siting criteria recommended in the plan for the location; or a specific location that is identified in a joint letter of support from the municipal legislative body and municipal and regional planning commissions in the community where the net-metering system will be located.