



Washington Electric Cooperative, Inc

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sent by ePUC

November 1, 2019

Ms. Judy Whitney, Clerk
Vermont Public Utility Commission
112 State Street, 4th floor
Montpelier VT 05620-2358

RE: Case No. 19-0855-RULE Request for Additional Information and Discussion of Next Steps
Order Dated 08/22/2019

Dear Ms. Whitney:

Please find comments from Washington Electric Cooperative, Inc. ("WEC"), regarding the
Public Service Board's net metering order dated August 22, 2019

WEC is a longtime supporter of renewable power and it is committed to assuring its members
use electricity as efficiently as possible. It is proud to offer its members one hundred percent
(100%) renewable power today, which WEC has achieved well before the state plan of 90
percent renewable by 2050. WEC seeks to continue to promote renewable power and offer a net
metering program to all of its members in manner that is fair among all its membership and
meets the requirements of Act 99.

The PUC in its order requested information on the following questions.

**1. Is the current net-metering compensation system causing a cost shift between customers
who net-meter and those who do not? Please quantify this cost shift and provide all
calculations supporting your response.**

Yes, there is cost shifting between customers from those that net meter to those that do not. The
costs are summarized into two areas; power supply related costs and administrative costs.

Power supply costs include payments to net metered systems for net excess generation, savings
from avoided power supply related expenses, and the impact of loss of retail sales revenue from
loss of load. WEC calculated the current year net metering cost has grown to a net loss of
\$711,563 which is a 5.08% rate impact. These dollars do NOT include added cost for billing,

staff, and administering the program (these items are addressed in more detail in the next section). WEC calculated power supply related savings of \$0.074 per kWh. Cost for net excess generation, siting and REC adjusters were also calculated based on the state's current net metering rates. To follow is a summary of the analysis. A copy of the supporting excel file is being provided in WEC's filing as WEC Exhibit 1.

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 capacity factor to estimate gross production							
Avoided Retail Rates	\$ 0.21219	Total Revenue/Total kWh							
Amount Paid Net Excess Generation	\$ 0.25341	Tail block rate							
Gross Dollar Paid Net Excess Gen	\$ 67,906	<====from finance	14.89%	Percent paid Net Excess Generation					
Gross Dollar Avoided Retail Sales	\$ 324,894		85.11%	Percent of kWh then used for avoided retail rate					
Rate Power Supply Savings	\$ 0.0740								
Dollars from power Supply Savings	\$ (133,220)								
Net Impact Loss to WEC Members	\$ 259,580	1							
Net Cost of Legacy NM (\$/kWh)	\$ 0.14428								
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	\$ 0.1517								
Gross Dollar Paid for Net Excess Generation	\$ 63,585								
Rate for REC and Siting Adjusters	\$ 0.0350	Category 1 & 2 Systems (150 kW and less)							
Dollars Paid for REC and Siting Adjuster	\$ 88,543	WEC has one Category 3 system (250 kW) and it was removed to calculate dollars paid for REC and siting adjuster							
Avoided Retail Rates	\$ 0.21219								
Dollar Loss from Avoided Retail sales	\$ 508,262								
Rate Power Supply Savings	\$ 0.0740								
Dollars from power Supply Savings	\$ (208,407)								
Net Impact Loss to WEC Members	\$ 451,983	2							
Net Cost of 2017 Vintage NM (\$/kWh)	\$ 0.1606								
Total Net Dollar Loss All NM Systems	\$ 711,563	=1+2							
Total kWh Generated NM Systems	4,613,620								
Net Cost of NM Systems (\$/kWh)	0.1542								
total kW installed 9/2018	4,051								
Percent Rate Impact	5.08%								

WEC found the current version of net metering (those systems coming online after January 1, 2017) also known as Net Metering Vintage 2017 is more expensive to WEC non-net meter members than the prior version (WEC's Legacy Net Metering plan which applied to those systems coming online before 2017). The Legacy program net cost to WEC and its members is \$0.14428 per kWh generated which is equal to a cost of shift of \$259,580 to non-net metered members. The Vintage 2017 program results in a loss of \$0.1606 per kWh which is a cost of \$451,983 to non-net metered members. The power supply savings are the same in both cases (offset for power supply is \$0.0740 per kWh). The aggregate cost combining both net metering programs is a loss to WEC of \$0.1542 for every kWh generated by Net Metering systems for a total cost shift of \$711,563.

One important finding in this analysis is that the revenue paid to net metering members is greater under the Vintage 2017 program than the Legacy program. The primary reason for this is due to payments for the siting and REC adjuster on **gross** generation rather than net excess generation. This has made the Vintage 2017 program more expensive to WEC and its members. Conversely, it has made the program more financially attractive to people installing net metering systems while the cost of solar is on the decline making the returns and payback more attractive to build. This explains why the pace of installations ramped up so significantly after January 2017. Prior to the Vintage 2017 program's implementation, WEC had 252 members participating in net metering totaling 1,580 kW (roughly 10% of WEC's peak). In 2017 we had the largest single

year increase with 131 new systems coming online accounting for 911.57 kW of additional net metering. In 2018 we had another 97 participate for 1,068.20 kW. As of September 15, 2019 we have 56 new participants bringing on line an additional 491.70 kW in 2019 thus far. As of September 15, 2019, WEC has 501 members in the net metering programs with total installed generation of 4,051.47 kW. This is over 25% of WEC's peak.

The next area of expenses that WEC incurs are administrative related. In this section, costs include direct and indirect expenses related to installing meters, billing systems, programing, answering member questions regarding bills, calculating and verifying bills, as well as staff time to implement and run the program. WEC estimates annually based on actual data from 2014 through 2018 that it costs \$86,945 per year to administer and run the net metering program. Please see WEC Exhibit 2 for a summary and accounting of administrative related costs.

WEC Admin and Indirect Costs							
Installation Costs for 2nd Meter -							
Description of Charges	2014	2015	2016	2017	2018	YTD Aug 2019	Total
Labor & OH's	\$ 915	\$ 1,603	\$ 1,233	\$ 12,490	\$ 9,649	\$ 5,933	\$ 31,824
Materials (Meter)	\$ 1,739	\$ 3,185	\$ 1,702	\$ 19,079	\$ 20,112	\$ 11,942	\$ 57,759
Transportation & Misc OH's	\$ 611	\$ 948	\$ 828	\$ 7,140	\$ 5,550	\$ 3,562	\$ 18,639
Total Charges	\$ 3,265	\$ 5,736	\$ 3,763	\$ 38,710	\$ 35,311	\$ 21,437	\$ 108,222
Member Payment for Meter and Install Costs	\$ (2,473)	\$ (4,609)	\$ (2,671)	\$ (28,488)	\$ (21,811)	\$ (10,746)	\$ (70,797)
Sub Total	\$ 792	\$ 1,127	\$ 1,092	\$ 10,222	\$ 13,501	\$ 10,691	\$ 37,425
						Average	\$ 5,347
Other Costs - Activity Code 415 Net Meter							
Description of Charges	2014	2015	2016	2017	2018	YTD Aug 2019	Total
Legal	\$ 8,715	\$ 2,759	\$ 4,440	\$ 464	\$ 1,519	\$ -	\$ 17,897
Billing (NISC Programming)	\$ 3,900	\$ -	\$ -	\$ 7,838	\$ 1,725	\$ -	\$ 13,463
Misc Exp Net Metering	\$ 45	\$ 22	\$ 126	\$ -	\$ -	\$ -	\$ 193
Total	\$ 12,660	\$ 2,781	\$ 4,566	\$ 8,302	\$ 3,244	\$ -	\$ 31,553
						Average	\$ 6,311
Internal Labor Estimate for Billing and other NM Issues							
Description of Charges	2014	2015	2016	2017	2018	YTD Aug 2019	Total
General Manager (10% of total)	\$ 20,012	\$ 22,717	\$ 25,328	\$ 26,214	\$ 28,934	\$ 19,298	\$ 142,503
Billing Supervisor (50% of 903.07)	\$ 22,617	\$ 31,190	\$ 39,745	\$ 46,349	\$ 49,760	\$ 36,981	\$ 226,642
Director of Prod & Serv (10% of 908.01)	\$ 10,462	\$ 11,563	\$ 13,148	\$ 14,066	\$ 14,333	\$ 9,792	\$ 73,364
Total	\$ 53,091	\$ 65,470	\$ 78,220	\$ 86,629	\$ 93,027	\$ 66,072	\$ 442,508
						Average	\$ 75,287
						Total Average	\$ 86,945

Tallying up the total cost (power supply and administrative expenses), WEC's non-net metering members pay \$798,508 (summation of \$711,563 + 86,945) per year for the net metering program. This is roughly a 5.70% rate impact to non-net meter members.

2. Please quantify the effect of current net-metering compensation on your retail rates. Please provide all calculations and information supporting your response.

WEC estimates its retail rates are 5.70% higher due to net metering or a loss of \$798,508 per year. See WEC Exhibits 1, WEC Exhibit 2, and WEC's response to Q1 above for more detail.

3. If current net-metering compensation is having a significant effect on retail rates, please describe how compensation should be changed so that the net-metering program does not have a significant effect on retail rates.

WEC supports net metering and believes the state should continue offering this successful program. However, the rates of compensation paid for net metering are far too generous as measured by the effect of cost shifting to non-net metered members (for WEC this equates to a cost shift of \$798,508). WEC notes the requirements of Act 99 as identified in 30 V.S.A. §§ 8010(c)(1)(A) through (G) address the need for net metering programs to meet certain criteria. The requirements of the law call for, among other things, that future net metering programs achieve the following elements:

- avoid cost shifting,
- account for all cost and benefits of net metering,
- ensure everyone has an opportunity to participate,
- balance the pace of installations over time,
- balance the impacts on rates, and
- account for technology cost changes.

Several criteria of Act 99 are not being met by the Vintage 2017 program design. Specifically, WEC is experiencing cost shifting to non-net metering members and the pace of installations under the 2017 plan is more aggressive than the pace under the Legacy plan. WEC does not find the Vintage 2017 program achieves balance relative to the impacts on rates, and it does not account for technology cost changes. WEC has quantified that it has significant cost shifting occurring in the amount of \$798,508 to non-net metered members, rates are higher by 5.70% and the pace of installation is unsustainable. As the installed cost of solar, which makes up almost all net metering installations, continues to decrease, the rates paid should be adjusted and lowered. However, the WEC finds that under the Vintage 2017 plan it actually pays more for solar than net metering programs rolled out previously. Therefore, several of the criteria of Act 99 are not being met by the current program including not accounting for falling price of technology, avoiding cost shifting, balancing pace of installations over time, and impact on rates.

WEC supports paying its net metering customers at a rate close to what the power is worth in terms of avoided power supply expenses. Savings to WEC from avoided power supply expenses (as measured by energy, capacity, transmission, and ancillary market charges) equates to \$0.0740 per kWh in 2018 (see WEC Exhibit 1). WEC supports paying net metering members at the avoided power supply rate; this value has ranged from \$0.0702 to \$0.0957 per kWh over the past four years. (See WEC Exhibit 1).

WEC also notes that as more solar is installed we are moving away from being able to capture transmission related savings from peak periods, as the peak has moved to nighttime and evening hours when solar is not producing energy. Therefore, the value of the next increment of solar is worth less than that which was installed previously due to lower amounts of transmission savings benefits. This will further reduce the power supply savings as more solar is installed.

4. Please state the amount of new net-metering capacity the utility will need to meet

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Vermont's Renewable Energy Standard in total and on average per year.

WEC is a utility that qualifies as 100% renewable and therefore meets the exemption status of the statute for Tier II under the RES. As an exempt renewable utility, WEC must offer a state approved Net Metering program but it does not have to meet the kWh targets of the RES. However, in the event WEC's renewable status were disallowed, the RES Tier II requirements would apply. Therefore, the annual targets of the RES remain important to WEC.

A summary of WEC's annual energy estimates is provided in the table below. WEC's Tier II requirements increase from 604 kW in 2107 to 6,190 kW by 2032. WEC already has 2,135 kW that qualifies under the RES Tier II program (systems online as of 7/2015 count toward Tier II), and WEC has therefore more than its requirement in the current year.

		WEC Retail	Tier II	
	Tier II	Load (kWh)	Requirement	kW
			(kWh)	Nameplate
2017	1.0%	68,821,561	688,216	604
2018	1.6%	70,493,884	1,127,902	990
2019	2.2%	70,493,884	1,550,865	1,362
2020	2.8%	70,493,884	1,973,829	1,733
2021	3.4%	70,493,884	2,396,792	2,105
2022	4.0%	70,493,884	2,819,755	2,476
2023	4.6%	70,493,884	3,242,719	2,847
2024	5.2%	70,493,884	3,665,682	3,219
2025	5.8%	70,493,884	4,088,645	3,590
2026	6.4%	70,493,884	4,511,609	3,962
2027	7.0%	70,493,884	4,934,572	4,333
2028	7.6%	70,493,884	5,357,535	4,705
2029	8.2%	70,493,884	5,780,498	5,076
2030	8.8%	70,493,884	6,203,462	5,447
2031	9.4%	70,493,884	6,626,425	5,819
2032	10.0%	70,493,884	7,049,388	6,190

5. Please identify all the benefits that net-metering provides (for example, energy, capacity, reduced regional network service charges, etc.).

WEC estimated the benefits from lower power supply related savings total \$0.0740 per kWh. The estimate is summarized below by energy, capacity, transmission, and ancillary market savings.

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Net Metering

Summary Solar Impacts Power Costs Reduction

Category	Updated 2018	
	Dollars/kWh 2018	
Energy	\$	0.0408
Forward Capacity Market	\$	0.0270
Ancillary Market Products	\$	0.0031
ISO-NE Transmission	\$	0.0015
GMP Transmission	\$	0.0012
VELCO Transmission Cost Avoidance	\$	0.0004
Grand Total Reduction in Power Costs (\$/kwh)	\$	0.0740

For more detail see answer to Q1 and WEC Exhibit 1.

6. For each benefit identified, please state whether the value of the benefit accrues to the net-metering customer, ratepayers, the utility, or society in general.

All cost and benefits are noted from the utility perspective which in turn those costs are transferred onto ratepayers that are non-net metered members. As previously discussed in WEC's response to Q#1 – Q#5, net metering is resulting in a monetary cost to WEC and its membership in the amount of \$798,508. This translates into rate impact to WEC ratepayers of higher rates in the amount of 5.70%.

7. For each benefit, please describe how the Commission should estimate the value of that benefit. Please identify what data sources the Commission should use to make such estimates. If you have an estimate of the value of a particular benefit, please provide the estimate, along with supporting documentation showing how the estimate was derived.

In terms of power supply benefits, the avoided costs are captured in terms of savings to a number of power related markets that WEC accounts for its power supply costs and markets administered by the ISO-NE. These markets include energy, capacity, transmission (ISO-NE transmission,

VELCO transmission, and GMP transmission), and ancillary markets administered by the ISO-NE (reserves, settlement charges related to load, regulation, ISO-NE tariff expenses related to load, GIS expenses, etc). The benefits of net metering to the utility are captured in these market products. As noted earlier, savings to WEC from avoided power supply expenses (as measured by energy, capacity, transmission, and ancillary market charges) equates to \$0.0740 per kWh in 2018 (see WEC Exhibit 1). WEC supports paying net metering members at the avoided power supply rate; this value has ranged from \$0.0702 to \$0.0957 per kWh over the past four years. (See WEC Exhibit 1).

8. When estimating the value of the benefits of net-metering, what time horizon should the Commission consider? Why?

The commission should be looking at the net value of solar today and also what it is worth into the future when valuing benefits. The value of the next increment of net metering changes relative to its impacts on the grid and energy market system. As WEC notes in response to Q3, the more solar that is installed, the less of an effect it has to reduce transmission and other peak related savings. This is due to the fact that peak periods for transmission and other peak driven markets are moving to later hours in the day (night and evening hours) when solar is producing very little if any energy. Therefore, the value of the next increment of solar is worth less than that which was installed previously. As transmission savings benefits decrease it will further reduce the power supply savings as more solar is installed. The PUC should consider lowering the rates paid for net metering due to the decline in benefits. If the PUC does not lower the rates utilities pay, the net cost of net metering to the utility will increase which causes more cost shifting to WEC's non-net metered membership.

9. Please identify all costs of net-metering. Please describe how the Commission should account for these costs so that they can be compared to the benefits of net metering.

WEC estimates the total net cost (power supply and administrative expenses), WEC's non-net metering members pay is \$798,508 (summation of \$711,563 + 86,945) per year for the net metering program. This is roughly a 5.70% rate impact to non-net meter members.

See response to Q1 and Q3 WEC Exhibit 1 and WEC Exhibit 2.

10. For each cost, please identify who pays the cost (ratepayers, the utility, society).

The extra cost incurred by WEC of \$798,508, the utility pays for this added expense. In turn these costs are recovered and transferred to ratepayers and society through higher rates. See response to Q1 and Q3 WEC Exhibit 1 and WEC Exhibit 2.

11. Please compare the benefits of net-metering to the cost of net-metering under the current net-metering rule.

WEC concluded from its analysis that the cost of net metering far exceeded the benefits. The gross total cost which includes the value paid for net excess generation, siting and REC adjusters, and loss of sales from lower retail load is \$1,053,190. WEC's cost to the administer and run the program is \$86,945 per year. Meanwhile, the benefits of reduced power supply related expenses only totaled \$341,627. The net effect is a **cost** to WEC, ratepayers, and society of \$798,508.

Gross Total Payments and Cost From Lost Retail Sales	\$	1,053,190
	Gross Total Admin Cost	\$ 86,945
	Gross Total Power Supply Benefit	\$ (341,627)
	Net Cost (Benefit)	\$ 798,508

For more detail please see responses to Q1 through Q3, and WEC Exhibit 1 and WEC Exhibit 2.

12. If the current net-metering compensation system does not balance the costs and benefits of net-metering, please describe how the compensation system could be changed to better balance costs and benefits.

WEC supports paying its net metering customers at a rate that is aligned with what the power is worth in terms of avoided power supply expenses. Savings to WEC from avoided power supply expenses (as measured by energy, capacity, transmission, and ancillary market charges) equates to \$0.0740 per kWh in 2018. WEC supports paying the true savings to net metering members and this value has ranged from \$0.0702 to \$0.0957 per kWh over the past four years. See responses to Q1, Q3, and Q9.

13. Would using time-of-use retail rates to set net-metering compensation better align the costs and benefits of net-metering? Should the Commission require net-metering customers to be on time-of-use rates?

It is unclear how and if a time-of-use rate would better align costs and benefits for net metering consumers. Energy prices are fluid and move with market conditions. Solar produces power based on sunlight hours and is not a power source that can ramp up and down with real time pricing and other market conditions that require timing.

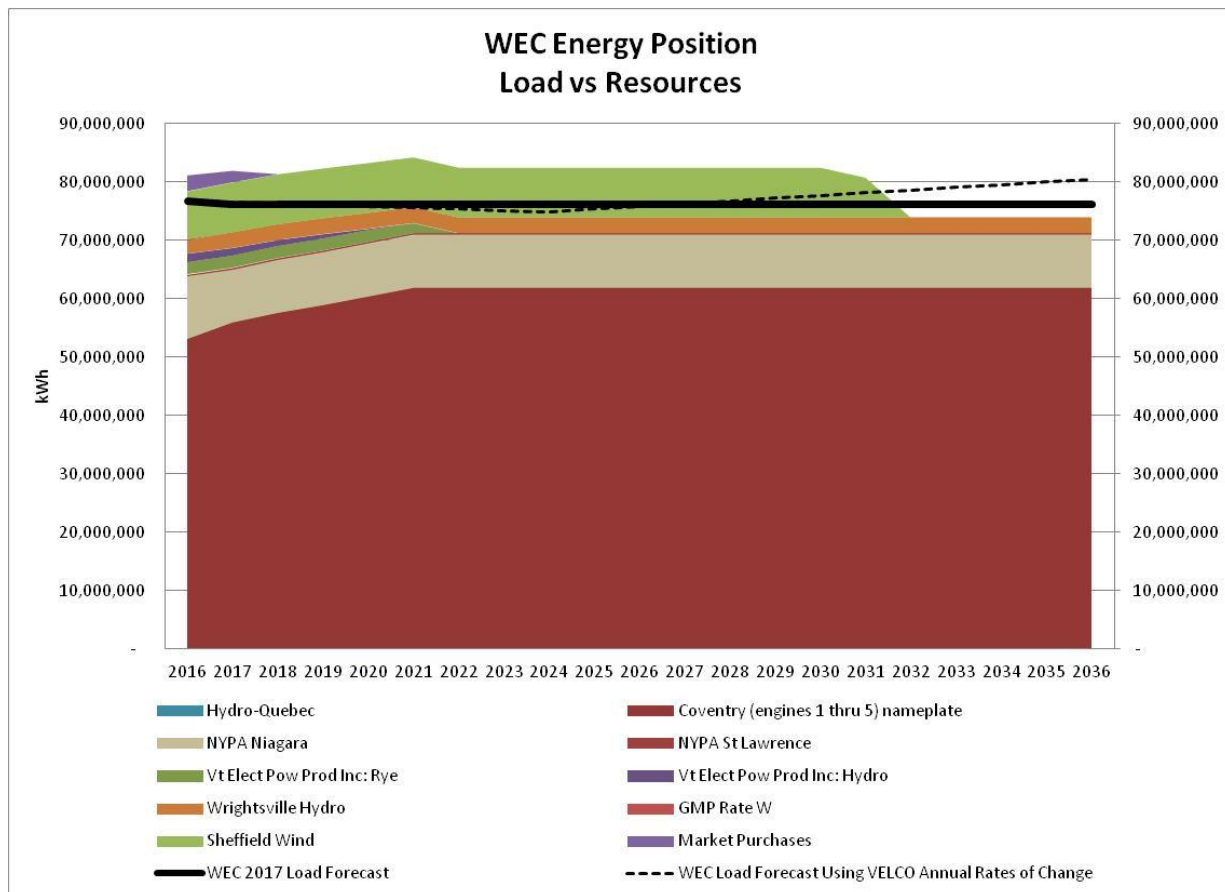
WEC also believes a time-of-use rate would be difficult for net metering members to implement as they are making use of monetized hours of excess generation rather than working to control loads at their home or business. WEC essentially acts as a battery or a bank on behalf of the net metered member.

WEC asserts that lowering the amounts paid for net metering generation is the best means to align the true benefits with costs. See response to Q3 and Q12. The administrative complexity of billing for a time-of-use rate would also be an issue. WEC has limitations as to what it can do in

terms of a time-of-use rates due to its AMI system limitations (WEC reads daily load rather than hourly load).

14. Should the Commission allow utilities that provide their customers 100% renewable energy to propose alternative net-metering tariffs? If so, what minimum requirements should the Commission adopt for such tariffs?

WEC's power supply mix is 100% renewable and WEC has more renewable power than it needs to meet its membership's energy load requirements over the course of a year. As noted in WEC's last IRP and summarized in the following graphic, WEC is excess renewable power for the foreseeable future.



Therefore, any power produced from net metered systems is simply avoiding the use of other renewable forms of power in WEC's resource mix. Therefore, a net metered system has far less value to WEC as a 100% renewable energy provider like WEC that is long and excess power for the upcoming 20 years.

WEC supports being allowed to offer an alternative net metering program as it is 100% renewable but does note this can cause consumer confusion as members and developers may

have difficulty navigating various net metering programs among utilities. However, if the rate was set such that what was paid for the value of net metering matched what WEC saved, then WEC would be indifferent as it would be financially neutral and shifting of costs would not occur.

15. Should the Commission adopt a limit on the amount of new net-metering resources? If so, how should the Commission determine the amount?

Yes. WEC asserts that a cap for net metering systems is appropriate and warranted due to the magnitude and number of installed systems. WEC currently has over 4 MW of installed net meter systems while WEC's peak is 16 MW of load. Therefore, WEC has 25% of its peak in installed net metering systems. WEC supports reinstituting a cap to the program.

Also, many new systems coming online are causing WEC to charge interconnection costs due to ground fault over voltage issues on the lines and equipment. Rather than creating savings relative to infrastructure costs, we are finding more net metering systems are triggering and causing expensive upgrades to the distribution system grid.

B. Preferred sites

The Commission proposed to remove joint letters of support from the definition of "preferred site" for two reasons. First, we have heard concerns about whether the current regulation fails to provide standards or criteria for regional and local bodies to apply when determining whether a site is "preferred." The second reason is that Rule 5.103 did not provide any procedures for local bodies to follow before designating a site as preferred. The Commission wants to ensure adequate notice and opportunity for input from the public. We request additional comment on the specific topics identified below. We will schedule a workshop to discuss these issues at a future date.

16. What standards or criteria should regional and local bodies apply to determine whether a site should be designated as "preferred"?

The impact of net metering on many communities is growing due to aesthetics and the sheer volume of systems coming online across the state. WEC supports local community involvement to determine suitability of installations that are consistent with local town ideals and desires for orderly development. WEC defers to communities to express their particular town's interest in this issue. As power generation becomes more dispersed and distributed, local impacts and considerations from communities is imperative.

The definition of preferred site should be amended to take into account various areas of the grid that have constraints. In areas of the grid that have constraints (too much generation, limited loads, and limitations from the grid such as the SHEI region in northern Vermont) additional power development is creating issues for existing renewable power plants. Development in constrained areas should not receive a preferred site designation. Adding new generation in

already constrained areas worsens the situation and causes further erosion of value for existing renewables.

17. Which entity should be responsible for making a determination that a preferred site meets the applicable standards and criteria? Should it be the local planning body, the regional planning body, or the local legislative body? Or all three?

WEC believes the determination of preferred site should be made by the PUC but all voices should be allowed to express their concerns in an orderly way.

18. What procedures should regional and local bodies follow before designating a site as preferred? Should notice be provided to adjoining landowners and the public before this decision is rendered?

WEC supports transparency and involvement in siting issues and therefore, supports notice being provided to adjoining landowners and the general public. The impact of net metering on many communities is growing due to aesthetics and the sheer volume of systems coming online. WEC supports local community involvement to determine suitability of installations. WEC defers to communities to express their particular town's interest in this issue.

19. What information should applicants be required to provide to regional and local bodies before a site is designated as preferred?

WEC does not have a detailed opinion on this matter but supports local community involvement to ascertain what is necessary in terms of drawings and detailed information that should be provided.

20. Should a local determination that a site is or is not a preferred site be subject to review by the Commission? If so, what procedures should the Commission use to review such determinations?

Yes. WEC believes this should be determined by the PUC but all voices should be allowed to express their concerns in an orderly way.

C. Administrative Issues

The Commission is seeking to streamline the net-metering registration/interconnection process and to reduce the need for amendments to net-metering registrations. Attached to this order is a worksheet (Attachment B) with questions related to the fields contained in the net metering registration form. The goal is to determine whether the form is collecting necessary information and whether any fields should be altered, added, or removed.

The net metering registration form is very useful and generally adequate for WECs interconnection needs. With the rise of new technologies, we are seeing frequent pairing of net meter systems with other home electricity related technologies (such as batteries, electric vehicle charging equipment, cold climate heat pumps, etc). WEC seeks to add information to the registration form that will help WEC to install appropriately sized transformers and other grid interconnection equipment. It would be helpful to know if the member has or is planning to install battery system (type and size). It would also help to know about certain high loads such as electric vehicle charging and cold climate heat pumps.

If you need additional information do not hesitate to contact us.

Sincerely,

A handwritten signature in blue ink, appearing to read "Patricia H. Richards", is positioned above the typed name.

Patricia H. Richards
Washington Electric Cooperative
General Manager