Before the
Public Service Commission of Utah

In The Matter of the Investigation of the Costs and Benefits of PacifiCorp's Net Metering Program	Docket No. 14-035-114

Sur-Rebuttal Testimony of Tim Woolf

On the Topic of
Net Metering Tariffs

On Behalf of
Utah Clean Energy

August 8, 2017

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1. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, title, and employer.

A. My name is Tim Woolf. I am a Vice President at Synapse Energy Economics, located at 485 Massachusetts Avenue, Cambridge, MA 02139.

Q. Are you the same Tim Woolf that provided direct and rebuttal testimony in this docket?

A. Yes.

Q. On whose behalf are you testifying in this case?

A. I am providing evidence on behalf of Utah Clean Energy.

Q. What is the purpose of your sur-rebuttal testimony?

A. The purpose of my sur-rebuttal testimony is to respond to the rebuttal testimonies of other intervenors in this docket. First, I respond to some rebuttal points made by Rocky Mountain Power (RMP or the Company) regarding the costs and benefits of net metering. Second, I respond to the proposals of the Office of Consumer Services (the Office) and the Division of Public Utilities (Division) for how to replace current net metering practices with an alternative compensation mechanism.

2. SUMMARY

Q. Please summarize your sur-rebuttal testimony regarding the costs and benefits of net metering.

A. From the perspective of the customers as a whole, the Company's COS analysis indicates that the benefits of the net metering program exceed the costs. As indicated in my direct

testimony, the Company's COS analysis indicates that the net metering program will have *net benefits* of $1,328 million, for the one year of the analysis.[1]

From the perspective of the non-NEM customers, i.e., the cost-shifting analysis, the Company's COS analysis indicates that the residential net metering program will have *net costs* of $1.659 million, for the one year of the analysis.[2] However, as I note in my direct testimony, these results are not conclusive because the COS analysis does not account for the long-term benefits of the net metering program.

Q. Please summarize your recommendations at this time.

A. I generally support the logic and the essence of the joint proposal put forth by the Office and the Division (the joint proposal). I agree with replacing the current net metering program, transitioning to a new distributed generation (DG) program that separates compensation for exports from charges for consumption, and opening a docket to determine what the compensation for exports should be.

However, there are several aspects of the joint proposal that I do not agree with:

- The export generation credits should be based on hourly netting, not 15-minute netting, particularly for residential customers.
- The 200 MW cap should be applied only to residential and small commercial customers without a demand charge.

[1] Woolf Direct Testimony, page 13, lines 237-244.
[2] Woolf Direct Testimony, page 13, lines 237-244.

- Net metering should be maintained for all customers other than residential and small commercial customers without a demand charge.

- Existing DG customers should be grandfathered for 20 years. The transition period DG customers and the post-NEM DG customers should be offered export credit values for at least 15-years after the customer DG installation date.

3. COSTS AND BENEFITS OF NET METERING

Q. Please summarize the Company's rebuttal of your testimony on the issue of the costs and benefits of net metering.

A. On this point, RMP makes the following claims:

- That I contend that "the Company's analysis of the costs and benefits of the net metering program is a 'cost-shifting' analysis."[3]

- That my points on costs and benefits are the same that I made in a prior phase of this proceeding, and that I "continue to ignore the additional costs imposed upon non-NEM customers."[4]

- That Utah Code Ann. § 54-15-105.1(1) requires consideration of the impacts to "other customers," which are the non-NEM customers.[5]

- That the "primary cost of the net-metering program is the burden placed on non-NEM customers from participating customers who pay far less than their cost of

[3] Meredith Rebuttal Testimony, page 3, lines 56-57.
[4] Meredith Rebuttal Testimony, page 3, line 61.
[5] Meredith Rebuttal Testimony, page 3, lines 62-63.

service. Ignoring this reality would undermine the purpose of Utah Code Ann. § 54-15-105.1(1)."[6]

Q. How do you respond to these claims?

A. It is generally true that I have described the Company's analysis as a cost-shifting analysis. However, it is not true that I ignore cost-shifting, or the "additional costs imposed upon non-NEM customers" or the "burden placed upon non-NEM customers." I state very clearly in my direct testimony that bill credits are relevant to estimating and understanding the extent to which distributed generation might result in cost-shifting from net metering customers to non-net metering customers."[7] I make the same point again in my rebuttal testimony, because it is such an important point.[8]

Q. Do you agree with the Company's claim that Utah Code Ann. § 54-15-105.1(1) requires consideration of the impacts on non-NEM customers?

A. In its rebuttal testimony, the Company refers to only a part of the relevant statute. The relevant statute in its entirety states the following:

> The governing authority shall: (1) determine, after appropriate notice and opportunity for public comment, whether costs that *the electrical corporation* or other customers will incur from a net metering program will exceed the benefits of the net metering program, or whether the benefits of the net metering program will exceed the costs; and (2) determine a just and reasonable charge, credit, or ratemaking structure, including new or existing tariffs, in light of the costs and benefits. (emphasis added)

[6] Meredith Rebuttal Testimony, page 3, lines 63-66.
[7] Woolf Direct testimony, page 12, lines 224-226.
[8] Woolf Rebuttal Testimony, page 4, lines 69-77.

The reference in the statute to the "electrical corporation" suggests that the cost-benefit analysis should evaluate the costs and benefits to the company, in other words to all RMP customers as a whole. The reference to "other customers" suggests that the cost-benefit analysis should also evaluate costs and benefits experienced by customers who do not participate in the NEM program.

Q. Then what do you think is the appropriate way to assess the costs and benefits of the net metering program, in light of the statute cited above?

A. The statute implies that there are two perspectives of interest: (1) that of the electrical corporation, i.e., all customers as a whole; and (2) that of other customers, i.e., non-NEM customers. The cost-benefit analysis from the perspective of all customers as a whole should be performed using standard economic practices and principles, which requires that bill impacts not be considered a cost. The cost-benefit analysis from the perspective of non-participants should consider cost-shifting impacts, which requires that bill impacts be considered a cost.

This notion of performing two separate analyses to provide two different but important pieces of information is consistent with all my testimonies in the prior phase of this docket and in this docket, and is completely consistent with the relevant statute. It is the Company that is ignoring one of the key elements of the cost-benefit question, not I.

Q. What does the Company's COS analysis in this docket say about these two different perspectives?

A. From the perspective of the customers as a whole, the Company's COS analysis indicates that the benefits of the net metering program exceed the costs. As indicated in my direct

testimony, the Company's COS analysis indicates that the residential net metering program will have *net benefits* of $1.328 million, for the one year of the analysis.[9]

From the perspective of the non-NEM customers, i.e., the cost-shifting analysis, the Company's COS analysis indicates that the net metering program will have *net costs* of $1,659 million, for the one year of the analysis.[10] However, as I note in my direct testimony, these results are not conclusive because the COS analysis does not account for the long-term benefits of the net metering program.[11]

Q. You have emphasized this point about two separate perspectives and two separate analyses throughout your testimonies in this docket and the proceeding docket. Why is this point so important?

A. It is critical for the Commission and others to understand *both* the cost implications for all customers as a whole, and for non-NEM customers. A limited focus on just the non-NEM customers, as the Company would prefer, obscures the key point that DG installations provide net benefits to the system as a whole, and that regulatory policies should be designed *in light of* these net benefits. (Here I am only referring to the utility system benefits, not the additional benefits related to environmental or job impacts.)

If the Commission were to ignore these benefits to customers as a whole, and focus solely on the cost implications to non-NEM customers, then it might design regulatory policies to severely limit or undermine the development of DG installations.

[9] Woolf Direct Testimony, page 13, lines 237-244.
[10] Woolf Direct Testimony, page 13, lines 237-244.
[11] Woolf Direct Testimony, page 24, lines 436-442.

The Commission might wonder: Why promote a program whose costs exceed the benefits?

A better way to design DG policies would include a more thorough assessment of cost implications from both perspectives. That is the only way to design policies that will strike the appropriate balance between maximizing benefits to all customers while mitigating cost-shifting.

4. THE JOINT PROPOSAL OF THE OFFICE AND THE DIVISION

Q. Please describe the elements of the joint proposal that you agree with.

A. As noted in my rebuttal testimony, I recognize that continuation of net metering combined with rapid growth in DG installations might, at some point in the future, result in undesirable levels of cost-shifting, and thus the Commission should consider alternatives to the current net metering program.[12] Consequently, I support the following elements of the joint proposal:

- Close the statutory net metering program to new entrants as of a date certain.
- Transition to a DG compensation mechanism that separates compensation for exports from charges for consumption. DG output that is not exported to the grid (i.e., is consumed "behind-the-meter") will continue to fully offset consumption.
- Open a docket to determine the compensation credit for distributed generation.

[12] Woolf Rebuttal Testimony, page 22, lines 392-394.

- Create a transition period between the close of the NEM program and the conclusion of the compensation docket.
- During the transition period, new DG customers will receive specified credits for exports, equal to 95 percent of the current rate for the relevant customer class.
- After the DG compensation docket, new DG customers will be subject to the export compensation rate determined in that docket.

Q. Are there some aspects of the joint proposal that you do not agree with?

A. Yes. There are several aspects of the joint proposal that I do not agree with:

- The export generation credits should not be based on 15-minute netting.
- There should be no cap on transitional DG customers.
- Net metering should be maintained for all customers other than residential and small commercial customers without a demand charge.
- Existing DG customers should be grandfathered for 20 years.
- The transition period DG customers and the post-NEM DG customers should be offered export credit values for at least 15-years after the customer DG installation date (export credit certainty period).

Q. Please explain why excess generation credits should not be based on 15-minute netting.

A. Currently, generation and consumption are netted on a monthly interval, and most customers only know their total monthly consumption and generation. A shift to *hourly*

netting would be a dramatic change from current practices, would reduce the compensation received by DG customers, and, importantly, would make it much more difficult for customers to estimate the economics of their solar generation. Moving to 15-minute netting would only exacerbate these issues, and would make it exceedingly difficult for customers to estimate the economics of installing DG. As noted in my rebuttal testimony, such uncertainty could hinder the ability of DG vendors to market their technologies, and severely limit customer demand for DG technologies.

Second, we do not have sufficient information at this point to even estimate the impact that 15-minute netting would have on potential DG customers, as the only data that RMP has provided for residential consumption patterns is based on hourly intervals.

Third, 15-minute intervals are too short for future rate design purposes. At some point in the future, it would be ideal to transition all residential customers to time-of-use (TOU) rates. In order to provide customers with price signals that are simple enough for customers to understand and act upon, TOU rates are designed with a few different on-peak and off-peak periods during the day, measured on an hourly basis. 15-minute intervals would be too short for residential and small commercial customers to be able to monitor and manage their electricity consumption patterns to minimize their bills. Therefore, establishing 15-minute intervals for DG export compensation would set the wrong precedent for future ratemaking approaches.

Thus, if the Commission elects to move away from monthly netting, it should only move to hourly netting, rather than 15-minute netting.

Q. Please explain why the 200 MW cap for the transition DG customers should be applied to only residential and small commercial classes.

A. In general, I do not support the use of a cap on net metering or other DG customers. Net metering caps can create confusion and uncertainty among customers and DG developers and can create costly starts and stops in the solar industry. Also, the goal of caps – to mitigate concerns about cost-shifting – will likely be achieved simply through inevitable market constrictions that are certain to result from the transition away from net metering. Given that the joint proposal, and my comparable recommendations, is specifically designed to transition away from net metering and mitigate cost-shifting concerns, there is no need for a cap on the transition DG customers.

Nonetheless, if the Commission decides to apply the 200 MW cap for the transition DG customers, it should be applied only to residential customers (Schedules 1, 2, 3) and small commercial customers without a demand charge (i.e., Schedule 23 customers with demand less than 10 kW).

Q. Why should net metering be maintained for other commercial and industrial customers?

A. RMP's filing shows that there is little to no cost-shifting occurring within these other customer classes. Customers in these classes are subject to a demand charge, which can limit the amount of cost-shifting within those classes, thereby eliminating the need for a cap on their DG installations. In fact, RMP's analysis shows that customers on

Schedule 8 are providing a net benefit to their class, as shown in the table below from Robert Meredith's testimony.[13]

Table 1. RMP's Estimated Net Cost/(Benefit) of Net Metering Program by Class

	Cost (000)	Benefit (000)	Net Cost/ (Benefit) (000)
Residential	$3,540	($1,881)	$1,659
Schedule 23	$504	($405)	$100
Schedule 6	$673	($650)	$23
Schedule 8	$240	($395)	($155)
Schedule 10	$29	($21)	$7

Q. Please explain why existing DG customers should be grandfathered for 20 years.

A. In general, I believe that customers[14] who install DG systems under a specific rate design and compensation system should be allowed to remain on that rate design and system as long as the DG system is operational, for several reasons. First, it is simply unfair to significantly change the economics of a DG system after it has been installed.

Second, it is important to prevent a public backlash from customers who make investments based upon one set of rate designs only to have those designs changed on them suddenly and dramatically. If DG systems are made uneconomic as a result of changing rate designs, then other customers will be less likely to take the risk to install DG systems themselves.

[13] Derived from direct testimony of Robert Meredith, Table 1, page 7.

[14] As noted in my rebuttal testimony, grandfathering should be defined to apply to the meter at the home where a system is installed, rather than to the actual customer. This will protect the value of a rooftop solar energy system if the customer sells his or her home. (For more information, see the direct testimony of Dan Black, page 1, lines 15-18.)

Third, the customers that have installed DG systems to date have generally incurred higher costs for those systems than future DG customers, given the rate at which DG costs are declining. Therefore, they may need net metering for a longer period of time to recover the higher installation costs.

Fourth, the customers that have installed DG to date have probably not created much cost-shifting, given the low amount of penetration from historical DG installations.

Nonetheless, I recognize the Division's and the Office's goal of mitigating cost-shifting as the penetration of DG installations increases. For this reason, I support a grandfathering period of 20 years for existing DG customers. This should allow most existing DG customers to earn their investments back, and also reduce some of the potential cost-shifting.

Q. Please explain why transition and post-NEM customers should be offered export credit values for at least 15 years after the customer DG installation date.

A. Again, my preference would be for transition DG customers[15] and post-transition DG customers to remain on their initial compensation formula throughout the life of the DG technology. This is important to give customers clear, long-term economic signals for making efficient decisions regarding their electricity consumption.[16] Under the current net metering paradigm and current levels of tax credits, the typical residential customer can expect a payback period of approximately 13 years.[17] Under a less generous

[15] Again, the technical application should be to the meter where the solar system is installed, rather to the customer.
[16] This is not to say that the initial compensation formula cannot include a variable element that changes from year to year. My point is that whatever the initial compensation formula is at the time of installation, it should remain the same throughout the lifetime of the facility.
[17] Direct testimony of Melissa Whited, page 12.

compensation mechanism and with the expiration of tax credits, future customers are likely to see even longer payback periods. Without export credit certainty of at least 15 years, it would be very financially risky for future customers to undertake an investment in distributed generation.

Nonetheless, I recognize the Division's and Office's goal of mitigating cost-shifting as the penetration of DG installations increases. For this reason, I support a DG compensation system that remains in place for at least 15 years after the installation date of the DG system. Anything shorter than 15 years would undermine the economics of DG technologies, increase the risks to customers of installing DG, unduly limit customer DG adoption, and unduly limit growth of the DG industry in Utah.

Q. Do you have any additional concerns to express as the Commission considers how to treat transition and post-transition customers?

A. Yes. I believe that all customers that install distributed solar technologies, including net metering, transition, and post-transition customers, should remain in their original rate class, with rates that are consistent with members of the class as a whole.

Q. Please explain why all customers that install distributed solar technologies, including net metering, transition, and post-transition customers, should remain in their original rate class.

A. In her direct testimony Ms. Whited describes several reasons why net metering customers should not be placed in a separate rate class. These reasons are relevant to transition and post-transition customers as well as net metering customers. First, the load shapes for

customers with distributed solar technologies are not so dramatically different from the variety of load shapes that already exist within the residential customer class.[18]

Second, placing distributed solar customers in a separate rate class might have unintended consequences. The Company's analysis in this case indicates that segregating solar DG customers into their own rate class could actually increase the costs to non-distributed solar customers.[19]

Third, creating a new rate class for customers with distributed solar resources is not a sustainable solution. It raises questions of whether additional rate classes should be created for similar customer-sited technologies, such as storage, plug-in electric vehicles, zero energy buildings, and buildings with deep energy efficiency retrofits. Creating separate rate classes for all these different technologies would be logistically challenging and lead to many fractured customer classes with risks of unintended consequences.

DG customers, like customers with various other customer-sited technologies or end-uses, should be able to make investments with some assurance that their rate design for energy consumption will not change dramatically or suddenly or in a manner that differs from their class as a whole.

Q. Does this conclude your sur-rebuttal testimony?

A. Yes, it does.

[18] Whited direct testimony, page 19, Figure 3.
[19] Whited direct testimony, page 22, lines 351-352.