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-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**

REBUTTAL TESTIMONY OF THOMAS PLAGEMANN FOR VIVINT SOLAR, INC.

July 25, 2017

Submitted on behalf of Vivint Solar, Inc.

/s/Stephen F. Mecham

Q. Please state your name and business address.

A. My name is Thomas Plagemann. My business address is 1800 West Ashton Boulevard Lehi, Utah 84043.

Q. For whom are you testifying in the proceeding?

A. Vivint Solar, Inc. ("***Vivint Solar***").

Q. Have you testified previously in this proceeding?

A. Yes, I previously filed direct testimony in this docket on June 8, 2017.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to rebut or support certain aspects of testimony filed by the Office of Consumer Services (the "***Office***") and the Division of Public Utilities (the "***Division***").

Q. Please provide a summary of the items discussed in this testimony.

A. A summary of the items addressed in this testimony are as follows:

i. Grandfathering of net metering ("***NEM***") customers;

ii. Separate rate class for NEM customers;

iii. NEM program;

iv. Netting period and export credit rate; and

v. Facilities fee.

<u>Grandfathering</u>

Q. Please briefly summarize the Office's and Division's filed testimony on grandfathering?

A. The Office's position on grandfathering for current and future NEM customers is found on lines 571-575 of Michele Beck's testimony, as well as in several other places

throughout her pre-filed direct testimony. The Office recommends establishing a transition period of approximately twelve years, with existing NEM customers being grandfathered only for that specific transition period.

The Division's position on grandfathering current and future NEM customers is found on lines 508-516 of Dr. Artie Powell's testimony, as well as in several other places in his pre-filed direct testimony. The Division recommends that the NEM program be closed, starting January 1, 2018, and all customers transition to a new unknown rate regime after approximately seven years. The transition period ends on January 1, 2025 under the Division's proposal. The Division argues that given the Commission initiated the current docket with its notice of a technical conference, dated August 29, 2014, current NEM customers will have been on notice of possible changes in the NEM program for more than ten years. Vivint Solar disagrees that NEM customers were "on notice" since 2014, particularly because at that time the considered change to the NEM program was a small monthly charge which ultimately was rejected by the Commission. Based on the scope of the proposed change and the subsequent denial, it would not be reasonable to expect that NEM customers (and prospective NEM customers who may not have even been interested in solar in 2014) should have foreseen the scope of the changes, or complete elimination of NEM, currently before the Commission. changing the NEM program prospectively for new participants is very different from changing the NEM program retroactively to affect participants under the original NEM program – there is no amount or "notice" that justifies retroactively changing the rules of a NEM program. The NEM program was available to customers for almost 12 years prior to any proposed changes and the NEM cap of 20% of the 2007 peak demand provided clear guidance to consumers

that it would continue to be available for many years to come. Regardless of whether new customers were "on notice," changing the NEM program prospectively for new participants is very different from changing the NEM program retroactively to affect participants under the original NEM program – there is no amount of "notice" that justifies retroactively changing the rules of a program that was created as an incentive to homeowners to make an investment in solar. Vivint Solar strongly disagrees with the Office and the Division because both grandfathering time-frames are not adequate in giving current NEM customers an adequate time frame to achieve the potential benefits envisioned when they made their investments in 30-year solar energy generation assets.

Q. Why are these grandfathering time-frames not adequate?

A. While there is agreement among the Division, the Office, and Vivint Solar in principle that current NEM customers should be grandfathered, the time-frames proposed by the Office and the Division are insufficient and inconsistent with the original intent of establishing the NEM program. Solar assets have a 30-year useful life and any investment in solar energy generation (whether made by a residential customer, a residential solar company such as Vivint Solar, or a utility such as Rocky Mountain Power ("***RMP***") under an IRP) requires some level of certainty, transparency, and the expectation of a consistent framework for a 20 to 30-year period to recover that long-term investment. Note that this is not the same thing as guaranteeing prices for fuel and operating costs, or energy rates generally, or removing the risk to the investor for asset performance. The NEM framework does not guarantee owners of solar energy systems a specific economic outcome, because the residential class rate, which they are credited, can go up, stay flat, or go down – each of which would have different economic

outcomes for the solar owner. Owners of a solar energy system are also exposed to weather and other operating and performance risks for the 30-year life of the solar energy generation asset. Rewriting NEM rules in the middle of that 30-year investment, when NEM was enacted to incentivize rooftop solar investment, is akin to yanking the rug out from under these customers and could be viewed as a public taking of private property by significantly devaluing a customer's 30-year asset. Any effort to revoke, reverse, or substantially amend the rules established to incentivize solar infrastructure investment is inherently anti-business and has the potential to stunt private investment. Private investors, who are taking the risk of residential class rates changing, were clearly incentivized to construct and operate a rooftop solar energy system based on the bargain struck when the NEM rules were implemented. Therefore, grandfathering customers for less than 20 to 25 years would (i) be against the public interest, (ii) be anti-private investment, and (iii) expose NEM customers to the potential of a stranded investment by hindering a NEM customer from recouping and benefiting from their 30-year solar investment. The Commission should ensure that NEM Customers remain on the rate regime that existed at the time the NEM customer made their long-term investment. For additional context please see Dan Black's pre-filed rebuttal testimony.

Q. Why should a residential customer's long-term investment in a solar energy system be grandfathered?

A. It is a significant financial decision for a residential customer to invest in a solar energy system; one that is not without many risks beyond the regulatory rate regime (see above). Other than their home, and depending on the size and cost of the system, it may be one of the most expensive purchases a customer makes in their life. Utah's solar market has a

very low level of penetration and is still in its infancy, with most of the installations occurring in the last few years. NEM customers are clearly the state's early technology adopters. Their faith in an enduring NEM program is what convinced them, in part, to pay an initially higher price for their systems, which in turn allowed the solar industry to scale in Utah, which will benefit future NEM customers and the economy of Utah. These customers had no reason to believe that RMP would try eliminate the NEM program in an effort to suppress competition, eliminate consumer choice, and protect RMP's shareholders from potential stranded costs. The grandfathering periods offered by the Division and Office are not in line with fundamental principles that are required to support long-term infrastructure investments relied on in the capital markets for financing.

To be clear, a typical solar customer does not save money by installing a solar energy system in the first 12 years of their investment. Many NEM customers make their long-term investment with an expectation that they will achieve an adequate benefit from their solar system investment over its 30-year useful life, and often savings are more heavily weighted to the back-end of the solar energy generation asset's life, after the investment cost has been amortized and the customer is receiving power with no incremental payments. To be clear, in such a scenario, even with 20 years of grandfathering under the current regulatory regime (retail NEM), a NEM customer is exposed to significant uncertainty in the final years of the assets useful life, specifically during years 21 through 30.

When NEM customers made the financial decision to invest long-term in a solar energy system, they did so with a reasonable expectation that the then current regulatory regime

(retail NEM) would continue to be available. On lines 214 to 215 of Dr. Powell's direct testimony he states "customers make rational decisions assuming reasonable stability and predictability of electric service rates". Vivint Solar strongly agrees. Each of these NEM customers made a rational long-term investment decision assuming just that, reasonable stability and predictability of their electric rates as well as the enduring applicability of the NEM program. While customers understood that their utility rates (volumetric charge, minimum bill, and fixed charge) would change, over time, with the entire Schedule 1 residential class, they had no reason to believe the entire NEM rate regime could change, creating a new financial playing field for their long-term investment The policies implemented by the Commission and the State of Utah supported and encouraged a customer's long-term investment in a solar energy system, consumer choice, and energy independence.

Q. How has the State of Utah encouraged investment in solar and participation in the NEM program?

A. In 2002, through legislative action, the state enacted a NEM bill. The NEM statute reads "(2) An electrical corporation *may discontinue making a net metering program available to customers not already participating in the program* if: (a) the cumulative generating capacity of customer generation systems in the program equals at least .1% of the electrical corporation's peak demand during 2007" (emphasis added).[1] This language strongly suggests that customers in the NEM program would remain in the program, even once the NEM cap was reached. This implied that the legislative understanding was that NEM customers would be provided a period of time to recoup and benefit from their

[1] Utah Code 54-15-103 (2)

investment in a solar energy system and the legislative intent to provide a regulatory regime which allowed that to occur. Consistent with all long-dated infrastructure investment, it is likely that the intent was to provide the necessary period of time to recoup such an investment - the entire 30-year useful life of the solar energy generation asset. In 2009, the Commission chose to increase the NEM cap to 20% of 2007 peak demand, a clear signal to the market that NEM was encouraged. Additionally, the 2009 order specifically stated "whatever cap we select is not a target or a goal, rather it is simply a point at which the utility may discontinue the net metering program *going forward*"[2] (emphasis added). This specifically suggests once again that customers in the NEM program would be grandfathered under the NEM rate regime that existed at the time they made their long-term investment. This decision was relied upon by both customers and the solar industry to form a reasonable expectation that an investment in a rooftop solar energy system was encouraged and protected by the Commission and the State of Utah. Currently, in Utah, where the residential customer base is rapidly growing, there is less than 2% residential solar penetration. Even when one includes commercial rooftop projects, the state is not even 20% of the way to achieving the current NEM cap, as set by the Commission in 2009.

Up until the most recent legislative session, a $2,000 state income tax credit was available to any resident who purchased and installed a solar energy system at their residence. With no sunset date initially, the state legislature encouraged continued investment by its residents in solar energy systems that participated in the NEM program.

[2] Utah Public Service Commission Order, Docket No. 08-035-78, issued February 12, 2009.

The purpose of each of these policies was to support and encourage customers to make a long-term rational financial decision to invest in a solar energy system. Enticing customers to invest in a solar energy system with policies that make the investment economically viable over a 20 or 30-year horizon and then dramatically altering the regulatory regime without adequate grandfathering, amounts to a bait and switch.

Q. Why is 20 to 25 years, as a minimum, the necessary length of time to grandfather NEM customers?

A. The Commission should consider how a shorter grandfathering period affects the existing financing contracts for residential solar energy projects. For a 7-kW rooftop solar system, the cost to the customer will be approximately $30,000. While a cash purchase is always an option for those customers that have $30,000 readily available to invest, more often, customers will elect to finance their solar energy systems for 20 years. Alternatively, in 2015 to 2016, a customer could enter into an arrangement where Vivint Solar owns the rooftop solar system and the customer "leases" the use of the rooftop solar system for 20 years. Vivint Solar was the only provider in the state of Utah to offer customers the lease financing option and currently has hundreds of owned assets deployed throughout Utah. Should the grandfathering period be less than 20 to 25 years, with an economic framework such as RMP has proposed, it could significantly undermine the economic value to these customers, as the benefits they receive would shrink relative to the fixed costs they are incurring, thus increasing the probability of customers defaulting on their financing arrangement, whether loan or lease. In addition to the negative impacts this would have on the customer, it would have a substantial impact on the financing company, loan providers, and investors. Failure to provide an

adequate grandfathering period consistent with the various financing vehicles would undermine the ability of lenders to continue to offer financing for distributed generation in the state, because it sends a clear signal to the capital markets that the State of Utah does not adequately protect the rights given to investors under a program like NEM.

Q. Do other states protect consumers through grandfathering provisions?

A. Yes, as detailed in Dan Black's testimony, grandfathering customers for 20 years or more is common in states who have moved beyond a traditional NEM program. Utah will be the national outlier and certainly be at risk for harsh public outcry, which occurred in Nevada when prior NEM customers were not grandfathered for 20 years and instead were placed on a transitional rate plan. Note that Nevada Energy is a sister company to RMP and both are owned and controlled by Berkshire Hathaway Energy ("Berkshire"), a company with an $85 billion balance sheet and had operating cash flows of $6 billion in 2016. We believe that Berkshire, a company heavily invested in regulated utilities and in contracted renewable generation under long-term contract in other utility service territories (supported by the ratepayers of those utilities), is acting in its own narrow interests and not in the best interests of the ratepayers of Utah and the general public interest.

Separate Rate Class

Q. What is the Division's recommendation on creating a separate rate class for NEM customers?

A. On lines 58 to 61 of Dr. Powell's direct testimony it states that the evidence regarding whether NEM customers should be a separate class is "mixed." The Division recommends that if the Commission determines that NEM customers belong in a separate

rate class that it should be done inside of a general rate case and not in the current proceeding. In direct contrast, the Division's witness, Mr. Faryniarz, on lines 576 to 590 and 610 to 618 provided a load factor and unit cost analysis (respectively) which showed minor differences in the cost of service for NEM customers versus non-NEM customers, which support the position that segregation is unnecessary.

Q. Which of the Division's positions does Vivint Solar support?

A. Vivint Solar strongly supports the Division's expert witness and agrees that segregating NEM customers into a separate rate class is unnecessary and unwarranted. The results are not "mixed", because there are minor differences in the cost of service between NEM and non-NEM customers. Furthermore, if in fact NEM customers create different load factors and unit costs, it would have to be proven that those variances fall outside of the "normal" variances that can be found in any set or subset of residential customers. It would be discriminatory to create a separate rate class for residential customers by virtue of their efforts to reduce their own energy usage.

Q. What is the Office's recommendation on creating a separate rate class for NEM customers?

A. Ms. Beck, as testified on lines 70 to 74 and 70 to 706, does not believe that a separate rate class is necessary. Ms. Beck also proposed an alternative rate design which would not require a new segregated NEM rate class, further supporting the Office's position.

Q. Does Vivint Solar support the Office's position?

A. Yes, Vivint Solar agrees with the Office that it is unnecessary to segregate NEM customers into their own rate class.

Q. Why is separating NEM customers into their own class problematic?

A. NEM customers reduce their reliance on RMP because NEM customers self-generate a large portion of their power needs and, as a result, reduce load and demand for RMP's product. This poses a potential threat to RMP's shareholders because, as a result of this behavior, revenue is reduced and ROE is potentially lower. RMP has an incentive to maintain its monopoly power and extract as much revenue from NEM customers as possible to discourage additional customers from adopting a new, innovative, and lower cost technology. Punishing NEM customers for reducing their consumption of RMP's product by placing them in a segregated rate class would not only be discriminatory, it would also deal a blow to innovation and the rights of Utah customers to exercise their right to energy choice.

NEM Program

Q. What were the recommendations from the Office and the Division regarding the NEM program and NEM capacity limit?

A. The Division recommended in Dr. Powell's direct testimony on lines 89 to 99 and 462 to 466, that the NEM cap should be reduced to a level equal to the estimated interconnected capacity as of January 1, 2018, and all new customers would transition over a 7-year period to the new program for small-scale residential solar.

The Office recommended, in Ms. Beck's direct testimony, two options on where to set the NEM cap limit (i) on lines 323 to 331, Ms. Beck proposed reducing the NEM cap down from 20% to 10% of 2007 peak demand and (ii) on lines 618 to 625, Ms. Beck proposed, in conjunction with the Office's proposed rate design and transition plan, to set the NEM cap at the anticipated level for the rate effective period for the next general rate case or January 1, 2020.

Q. What is Vivint Solar's position on these proposals?

A. Vivint Solar is supportive of reducing the NEM cap to 10% of 2007 peak demand, anticipating that by that time a successor program would be adequately developed and communicated to customers to ensure transparency. This would provide time for a proper evaluation of the long-term benefits of a solar energy system to RMP's grid and ratepayers as a whole, while allowing the industry to adapt to the changing regulatory landscape without encountering a regulatory cliff. For additional context please see Richard Collins' pre-filed rebuttal testimony.

Due to the small penetration level of residential NEM customers, relative to the residential class, we believe that there is no need to rush into a new rate design and agree with Ms. Beck's statement on lines 116 to123 that the Office does not agree with the "magnitude and urgency" of the problem suggested by RMP. It is highly improbable that a docket to determine the value of exported energy would be concluded, or even substantially progressed, by January 1, 2018, thus creating an unnecessary category of customers who would be required to transition to a new compensation rate without any knowledge of what that rate will be, or even what items would be considered for their new export credit rate. That level of regulatory uncertainty and lack of consumer transparency would be problematic for prospective solar customers and the health of the solar industry.

Netting Period and Export Credit

Q. What were the recommendations from the Office and the Division regarding changes to the netting period?

A. Both the Division and the Office recommend moving away from a monthly netting period to an hourly netting period or less. The Division believes "monthly netting too crude a tool to properly recover costs and compensate customers" (lines 457 to 459 of Dr. Powell's direct testimony), but does not explicitly recommend a new interval of measurement for exported energy.

The Office, as part of its proposed "post net metering rate design," advocates to "[m]easure excess energy to receive this new compensation on an hourly or smaller, reasonably metered interval" (lines 367 to 368 of Ms. Beck's direct testimony).

Q. What challenges does an hourly or less interval pose for distributed generation customers and developers?

A. The primary challenge of shifting the distributed generation paradigm from monthly intervals to hourly or less is the lack of available data at those intervals. Residential customers are billed based on a monthly basis and the usage data available to customers, and in turn solar installers, is provided in monthly periods. There is no available insight into a customer's hourly, or less, usage patterns and load profiles, which makes it very difficult (i) for a customer to understand, due to the lack of transparency, hourly netting and (ii) for a solar installer to properly design a system for a customer.

The implications from this lack of data transparency, at the appropriate interval level, poses very real practical problems for solar customers and solar installers, and has the potential for leading customers to make investment decisions based on incomplete or inaccurate assumptions. Currently, the monthly customer usage totals provide an adequate amount of data to properly size a customer's system given the monthly netting periods and annual cancellation of credits to prevent over-sizing. Without hourly data

available, designing systems to meet the customer's needs and minimize exporting energy to the grid is much more difficult and may be prone to error, exposing future customers to risk. The combination of an hourly period and an export credit rate below the retail rate will require the solar installer and customer to have clear and transparent hourly usage data.

The move to an hourly period would be a major change that introduces a large amount of volatility to the economics of a distributed generation system. Even if the appropriate interval data was available to customers so that systems could be designed with better guidance, the potential variability in a customer's hourly usage behavior over the 30-year life will create incremental risk for rooftop solar investment.

An hourly netting period also does not allow a customer to make behavioral changes to minimize the export of solar energy to the grid and maximize their instantaneous onsite behind-the-meter consumption of self-produced solar energy. A customer will never know in the moment that they are using energy where that energy is coming from and whether it is economically advantageous for them. Currently, there is no transparency provided to the customers to understand and handle an hourly netting period.

Q. What did the Office and Division recommend regarding setting the export credit rate?

A. The Division, in Dr. Powell's testimony, recommends that the value of the export credit rate be determined in a separate docket (lines 479 to 487). Until the conclusion of the export credit rate docket, the Division recommends that, if necessary, a transitional export credit rate could be set halfway between the retail rate and avoided costs (approximately 7 cents). The Office, in Ms. Beck's testimony, suggests that the export

credit rate could be set in either (i) a GRC or (ii) a separate export credit docket (lines 391 to 403). Vivint Solar strongly supports setting the export credit rate in a separate export credit docket, where the long-term net benefits of solar can accurately be captured and calculated.

Q. Why does Vivint Solar support determining the export credit rate in a separate proceeding?

A. Vivint Solar believes that the COS framework used in the current proceeding is inadequate to develop a long-term export credit formula and rate. As discussed at length in previous testimony filed by many parties, the COS suffered from several irredeemable flaws, including; (i) a 1 year test period, (ii) treating lost revenue from behind-the-meter consumption as a cost, (iii) failure to account for a number of quantifiable benefits of distributed generation, and (iv) an inadequate NEM production and load sample size, see Richard Collins' direct testimony for more detail. Even the Division's expert witness, Mr. Faryniarz, addresses the potential benefits that were not included or properly captured in RMP's COS framework and analysis (lines 914 to 948 of Mr. Faryniarz's direct testimony). Any analysis of the costs and benefits of residential solar must take a long-term view and Vivint Solar would recommend a minimum of 20 years, provided that such costs and benefits are supported by evidence.

Q. Are there other concerns regarding the export rate?

A. Yes, one possible concern arose from the Office's post NEM rate design which mandated time-of-use ("***TOU***") rates for solar customers (Ms. Beck, lines 377 to 380), and from the Division's recommendation of a TOU rate option (Dr. Powell, lines 80 to 81). The concern is that the scenario could arise that the export rate would be set as a flat rate for

all energy exported, regardless of the time (peak, mid-peak, or off-peak) it was provided to RMP's grid, while the energy billed to the customer would be time-differentiated. Vivint Solar is supportive of decoupling the import and export rates, however, both rates should still be fundamentally compatible with the overall rate regime. Meaning, that if the time at which energy is drawn from the grid impacts the cost of that consumed grid energy (consistent with all residential customers), so should the time the solar energy is exported to the grid impact the value for that exported solar energy (assuming the full solar value stack of that exported power). Currently, under the tiered rate structure a flat export credit rate is reasonable, but under a TOU rate it may require time-differentiated solar export rates. TOU rates are designed to create an incentive for customers to adjust their behavior to lower the overall class peak, thus if a solar customer can adjust their behavior that allows them to export solar energy and reduce the residential class peak, that solar customer should be compensated at a higher rate than if the energy is being exported during an off-peak period. It would be fundamentally irrational and unfair to customers to simultaneously hold contradictory positions on whether the timing matters regarding imports and exports of energy. Additionally, this is reasonable if the goal is to develop cost-based rates for both the import and export of energy. Finally, consistent with prior statements made, TOU rates should not be applied to solar customers any different than from other residential class customers when it comes to the power that solar customers import from the grid to avoid discriminating against solar customers. In other words, if TOU is mandatory for NEM customers it should also be mandatory for all residential customers. As previously described in Richard Collins' pre-filed direct

testimony, RMP and the Commission must consider all of the long-term net benefits of residential rooftop solar.

Facilities Fee

Q. Where was a facilities fee proposed, and what is Vivint Solar's position on the proposed fee?

A. A facilities fee was proposed as part of the Office's rate design and transition plan, from Ms. Beck's testimony on lines 576 to 585 with 576 to 579 quoted below:

> "Implement a facilities fee for net metering customers. The fee would be calculated on a per installed kW basis and be designed to collect all appropriate costs associated with serving the net metering customers."

Vivint Solar does not agree that a facilities fee would be an efficient or fair mechanism for recovering costs from NEM customers. The facilities fee is problematic because (i) decoupling rates for imported and exported energy should allow for adequate cost recovery, especially with the mandatory time-of-use rates proposed by the Office, (ii) fixed fees are an inefficient price signal, (iii) the "appropriate costs" are undefined and thus impossible to support, and (iv) assessing a fee based on system size has no correlation to actual costs to RMP.

Fixed fees provide an inefficient price signal to customers and they are providing a problematic incentive to utilities. In short, increases in fixed fees alter the risk-reward formula for utilities as they guarantee fixed-cost recovery, which effectively means they guarantee profits because a utility's authorized rate of return is a component of fixed costs. This is a clear example of "de-risking", as further explained in Mr. DeRamus's direct testimony. Fixed charges provide the utility with less risk and less accountability,

which can lead to waste and unnecessary costs being born by each ratepayer. As such, increases in fixed fees, such as the proposed facilities fee or increase in the customer charge, should be evaluated thoroughly.

Additionally, assessing a per kW facilities fee based on a system size is not an efficient way to recover costs to RMP. System size is based on a variety of factors (usage, home size, optimal roof space, financing limitations) which do not necessarily correlate to added costs for RMP. For example, an 8-kW system for one customer may export less energy to the grid than a 4-kW system for a different customer because their usage and load profiles are different, but the customer with the 8-kW system will be paying a higher facilities fee. As previously discussed in Richard Collins' pre-filed direct testimony and in my pre-filed direct testimony, an arbitrary fixed charge, as suggested by the Office, is not an appropriate mechanism to recover the actual cost to serve a customer. Vivint Solar strongly disagrees with the Office's proposed facilities fee.

Q. Does this conclude your rebuttal testimony?

A. Yes.

CERTIFICATE OF SERVICE

I hereby certify that on July 25, 2017, I sent a true and correct copy of the foregoing pre-filed rebuttal testimony of Thomas Plagemann of Vivint Solar, Inc. in Docket No. 14-035-114 by email to the following:

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