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** **Surrebuttal Testimony of Philip Hayet** **On Behalf of the Utah Office of Consumer Services**

September 29, 2015

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, TITLE AND COMPANY.

A. My name is Philip Hayet and my business address is 570 Colonial Park Drive, Suite 305, Roswell, Georgia, 30075. I am Vice President of J. Kennedy and Associates, Inc. (Kennedy and Associates),

Q. PLEASE STATE ON WHOSE BEHALF YOU ARE TESTIFYING.

A. I am appearing on behalf of the Office of Consumer Services ("Office").

Q. DID YOU PREVIOUSLY FILE TESTIMONY IN THIS DOCKET?

A. Yes, I filed direct testimony on July 30, 2015, and rebuttal testimony on September 8, 2015 on behalf of the Office.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my surrebuttal testimony is to respond to the rebuttal testimonies of PacifiCorp's (also referred to as "Rocky Mountain Power" or "the Company") witnesses, Ms. Joelle Steward, Mr. Paul Clements, and Mr. Douglas Marx, the Joint Parties' witnesses, Mr. Tim Woolf, Ms. Pamela Morgan, and Mr. Ben Norris, the Division of Public Utilities' ("Division") witness, Mr. Robert Davis, and Vivint Solar, Inc.'s witness, Mr. Dan Black.

Q. PLEASE SUMMARIZE YOUR SURREBUTTAL TESTIMONY.

A. My surrebuttal testimony reaffirms that the Office believes its proposed framework to determine the costs and benefits of PacifiCorp's net metering program on the utility, as well as on non-net metering customers, is reasonable. The framework includes identifying the appropriate costs and benefits to use in the analysis, determining the appropriate time period for the analysis, which could vary depending on the study objectives, computing the

net benefits by subtracting the costs from the benefits, and calculating a net present value of the net benefit results. In order to be considered in the analysis, costs and benefits would have to be quantifiable and verifiable, which I discussed at greater length in my prior testimonies. If the objective of the analysis is to determine the long-term cost and benefit impacts on the utility and its non-net metering customers, then inputs more typical of a long-term economic resource evaluation should be used in that evaluation. If the objective of the analysis is to determine the short-term cost and benefit impacts, then inputs typically used in a short-term ratemaking analysis should be used in that evaluation. Our recommendation is for the evaluation of the impact to non-net metering customers to be performed over a short-term horizon as it better matches the time horizon upon which rates are set. However, we would not object to the evaluation also being performed over a longer-term horizon, but only for informational purposes not for determining inputs that will be used for setting rates, charges, or credits. I also believe that the Company's and Division's proposals are similar to the Office's, and could be adopted as well, as long as they adhere to the principles that the Office has recommended, with one being that no or little cost shifting to non-net metering customers should occur. I continue to believe that the Joint Parties' framework appears to be somewhat similar to the Office's, though it is clear that the Joint Parties' conclusions are considerably different.

II. OVERVIEW OF PARTIES' POSITIONS

Q. PLEASE PROVIDE AN OVERVIEW OF THE REBUTTAL POSITIONS YOU ADDRESS BY WITNESS.

A. Starting with the Company, I address Ms. Steward's discussion concerning the challenge of using production meter data from the Load Research Study. While there may be some issues, I believe the data is reasonable enough for use in the evaluation of costs and benefits. With regards to Mr. Clements, I address some of his comments concerning avoided transmission costs, avoided distribution costs, and avoided transmission and distribution ("T&D") losses as benefits. Mr. Clements also states that he agrees with the Office concerning the inclusion of integration costs and added distribution expenses as costs in the evaluation.

I address issues that all three of the witnesses for the Joint Parties discuss. First, I disagree with the notion that lost revenues should not be included in what Mr. Woolf refers to as the "cost impact" analysis, but instead should be considered in a "rate impact" analysis.[1] As Mr. Woolf readily admits, these two analyses are identical, therefore, Mr. Woolf's discussion of lost revenues is misleading and is an attempt on his part to suppress the presentation of results that are readily available from the analysis. Those results are the costs that are shifted to non-net metering customers that I believe should be at the forefront of consideration of costs and benefits. Second, I comment on Mr. Woolf's suggestion that on the basis of his analysis, the rate impacts are modest, though I commend him for recognizing that the Commission could ultimately implement alternative rate

[1] Tim Woolf Rebuttal Testimony, line 49.

designs "that might result in better impacts on customers, including non-NEM customers",[2] which I believe should be done. Furthermore, I do not agree that the rate impacts would necessarily be modest.

Next, I understand that it is conceivable that fixed costs could shrink over time, but I do not think that is as likely as Ms. Morgan seems to suggest. I believe my analysis was reasonable to assume that fixed costs would increase at least at the rate of inflation. I also disagree with Mr. Norris' suggestion that the capacity contribution value of solar should be between 53% and 87%. This is contrary to the determination that the Commission made in Docket No. 14-035-140, in which case it set the capacity contribution value of fixed tilt solar to 34.1% for use in determining Schedule 38 capacity payments. Furthermore, as I discussed in my Direct Testimony, I believe that capacity payments should only be made when PacifiCorp has a justified need for capacity. Also, I address one of Mr. Norris' criticisms of Division witness Davis concerning the capacity value of solar distributed generation, which I think is unwarranted.

With regards to Mr. Davis, I address his comment in which he agrees with my method, but believes it should be based on non-hypothetical inputs. I agree that additional analysis will have to be performed to develop actual inputs; however, I would clarify that I do believe that many of the inputs I used are realistic for PacifiCorp's situation, and the analysis I performed based on those inputs should be relied on by the Commission in reaching conclusions about the framework that should be implemented. Finally, I will respond to Mr. Black's comment that it was not clear how I accounted for T&D line losses in my analysis.

[2] Tim Woolf Rebuttal Testimony, line 305.

III. COMPANY WITNESSES

Q. WHAT DID MS. STEWARD DISCUSS REGARDING THE CHALLENGES OF USING PRODUCTION METER DATA FROM THE LOAD RESEARCH STUDY?

A. Ms. Steward stated that the Company experienced difficulty in installing production meters on customer facilities, which she implies means the data the Company collected will not provide a sufficient sample to develop accurate customer generation profiles. Ms. Steward gave this as one reason that the Company's framework would be better to rely on compared to the Division's or the Office's.

Q. DO YOU AGREE WITH MS. STEWARD?

A. While I am not necessarily opposed to using the Company's framework, I do not agree that the Company's production metered data would be problematic for use in the Office's framework. First, in response to UCE 2.2, the Company stated that it was able to install production meter data on 75% of the customers included in the load research study, which is not insignificant. Second, while we did not perform an in depth analysis of the data provided in response to that discovery request, we did conduct some studies, and did not notice anything of concern. Finally, Mr. Clements even seems to hold the data in higher regard as he stated "…the Company has developed a way to obtain reliable solar generation production data for a group of NEM customers through a load research study."

Q. DO YOU AGREE WITH MR. CLEMENTS CONCERN REGARDING AVOIDED T&D COSTS?

A. I agree with Mr. Clements that avoided T&D costs should be calculated on a case-by-case basis. I am not opposed to including avoided T&D costs as benefits if it could be demonstrated that transmission or distribution capital investment could be avoided over the study period. While in concept I agree with the Company on developing costs on a case-by-case basis, I believe further details are required as to how Mr. Clements recommends including his suggestions in the Company's analysis. I believe this process should not be overly complex, and should allow other parties to be able to review the Company's assumptions and analysis.

Specifically with regard to avoided distribution costs, given the number and configuration of distribution circuits that exist, I still believe it could be quite difficult to demonstrate there are distribution costs that could be avoided. Over time, circumstances could change and avoided costs may become more demonstrable. At such time as benefits become verifiable and quantifiable, they could be incorporated.

Q. MR. CLEMENTS MENTIONED HE WOULD NOT BE OPPOSED TO INCLUDING INCREASED DISTRIBUTION COSTS AS AN ADDITIONAL COST IN THE ANALYSIS. WHAT DO YOU RECOMMEND?

A. For reasons similar to those discussed in Mr. Marx's testimony, I continue to believe that distributed generation could also cause distribution costs to increase in some circumstances, and I believe it would be reasonable to include increased distribution costs as an additional cost in the analysis. However, similar to my discussion above concerning avoided distribution costs, I believe that the amount that distribution costs could possibly increase as a result of having distributed generation currently would be immaterial and difficult to demonstrate making it unlikely that these costs would impact current calculations. Once again, at such time as these costs become verifiable and quantifiable, they could be incorporated.

Q. DO YOU AGREE WITH MR. CLEMENTS CONCERNING AVOIDED T&D LINE LOSS BENEFITS?

A. Mr. Clements states that lines losses should be included as benefits if they are identifiable and measurable. In my view, avoided T&D line losses are identifiable and measurable and should be included as a benefit associated with distributed generation. Certainly there might be a question of how large the avoided losses should be, but as I discussed in my direct testimony, I think that a fixed loss percentage, similar to what the Company uses in rate case analyses, would be reasonable to use for this purpose.

Q. MR. CLEMENTS MENTIONED THAT HE WOULD NOT BE OPPOSED TO INCLUDING INTEGRATION COSTS IN HIS COST OF SERVICE STUDY. DO YOU HAVE A RECOMMENDATION CONCERNING INTEGRATION COSTS?

A. Yes. Mr. Clements mentioned that solar integration costs are included in the avoided cost method, and I believe it would be reasonable to use a value consistent with that approach in the evaluation of net metering costs and benefits. I would also note that Mr. Woolf does not appear to oppose the inclusion of an integration cost, as he included this as a cost in his illustrative analysis in his rebuttal testimony.

III. JOINT PARTIES' WITNESSES

Q. DO YOU AGREE THAT THE JOINT PARTIES HAVE MET THE COMMISSION'S DIRECTIVE OF DEVELOPING A FRAMEWORK THAT EVALUATES THE IMPACTS OF COSTS AND BENEFITS OF PACIFICORP'S NET METERING PROGRAM ON THE UTILITY AND ITS NON-NET METERING CUSTOMERS?

A. No I do not. I believe that the Joint Parties have developed a framework that implies that all customers are better off with net metering, and marginalizes the fact that non-net metering customers' costs actually increase as a result of the net metering program. I agree that the Joint Parties have followed a process to evaluate distributed generation using a method that may be found in an Integrated Resource Plan ("IRP"). However, there is a difference between studying the benefits of distributed generation and studying the benefits of a rate design, which is what net metering is. I agree with Ms. Steward's direct testimony, which stated, "Rate design is an essential element of net metering since rate design [establishes] price signals and compensation for distributed generation. Therefore, rate design cannot be completely separated from consideration of how costs and benefits are calculated for net metering."[3]

Q. PLEASE EXPLAIN YOUR DISAGREEMENT WITH THE JOINT PARTIES' APPROACH.

A. Essentially, the Joint Parties have 1) developed a long-term analysis similar to what is typically performed in an IRP, 2) reported cost impacts on the utility, and 3) reported rate impacts. I have four disagreements with the Joint Parties approach. First, I believe that the Joint Parties' framework has been intentionally designed to suppress information that is readily available from the analysis that would provide a more complete evaluation of net metering. Next, I disagree with the inclusion of some of the benefits that the Joint Parties have recommended, and furthermore, I believe that the magnitude of some of the benefits would not be as substantial as the Joint Parties suggested. Finally, for the purposes of evaluating the costs and benefits on the utility and its non-net metering customers and in

[3] Joelle Steward Direct Testimony, at line 154.

preparation for developing rates, I do not believe the sole focus of the framework should be based on a long-term time horizon evaluation as the Joint Parties recommend.

Q. YOU HAVE IDENTIFIED FOUR CONCERNS WITH THE JOINT PARTIES' REBUTTAL TESTIMONY. IS ONE OF PRIMARY IMPORTANCE?

A. Yes, the primary concern that I will focus on is the first issue that I mentioned above, and is in regards to information Mr. Woolf did not supply, which he discussed at length in his rebuttal testimony. In addition, I will address the additional analysis that Mr. Woolf included in his rebuttal testimony.

Q. BEFORE DISCUSSING YOUR PRIMARY CONCERN IN DEPTH, COULD YOU FIRST DESCRIBE YOUR OTHER THREE CONCERNS?

A. I will briefly describe the other three concerns as they have been discussed at length in my direct and rebuttal testimonies. First, I continue to disagree with the Joint Parties regarding the inclusion of certain items in the cost/benefit framework, including potential and speculative environmental compliance costs; risk reduction cost components, including fuel price risk; reduced grid costs as a result of photovoltaic power production; and reduced revenue requirements at the end of the year due to the value of expiring credits that provide assistance to low-income customers. My next concern is that Mr. Woolf's analyses uses avoided costs that range from $60 to $116 per MWh.[4] As Company witness Clements notes in his rebuttal testimony, this range of avoided cost is quite high for PacifiCorp's system. Even the $60 per MWh levelized value is above the current Schedule 37 rate for a 20-year levelized PPA, which is $52 per MWh.[5] Finally, for the purposes of evaluating

[4] Mr. Woolf essentially lowered his avoided cost estimate by adding a $5/MWh cost in his rebuttal testimony to account for program administration and integration costs.
[5] Paul Clements Rebuttal Testimony, at line 350.

the costs and benefits on the utility and its non-net metering customers and in preparation for developing rates, I do not believe the sole focus of the framework should be based on a long-term time planning horizon evaluation as the Joint Parties recommend. I would not be opposed to developing impacts over a long-term horizon for informational purposes, however, because net metering impacts are driven by rate design considerations, I believe the analysis should be conducted over a shorter-term horizon using data assumptions that are consistent with ratemaking analyses. I also recommend a shorter-term horizon because the Commission has to consider impacts on the utility and non-net metering customers, and because the Commission's framework is intended to be the basis for determining "a just and reasonable charge, credit or ratemaking structure."[6]

Q. COULD YOU DISCUSS MR. WOOLF'S LATEST ANALYSIS AND EXPLAIN ABOUT THE INFORMATION THAT WAS READILY AVAILABLE, BUT THAT MR. WOOLF DID NOT SUPPLY.

A. Mr. Woolf's latest analysis appears to be identical to his prior analysis, however, he has now included a cost that he said was based on a simplistic assumption of $5/MWh to account for program administrative costs and integration costs. As before, he developed both a cost impact and rate impact analysis. Despite information being available, Mr. Woolf appears to insist that his cost impact analysis should not report cost impacts separately for the non-net metering residential customers and the net metering residential customers. Instead, Mr. Woolf appears to insist that his cost impact analysis should only report cost impacts on the combined residential class of customers. Mr. Woolf appears to be equally insistent that his rate impact analysis should be the only analysis used to obtain

[6] Utah Code Ann. § 54-15-105.1

an indication of the harm caused by PacifiCorp's net metering program, rather than showing the shifting of the fixed costs from the net metering to the non-net metering customers.

Q. DO THE COST IMPACT ANALYSIS AND THE RATE IMPACT ANALYSIS USE DIFFERENT ASSUMPTIONS OR A DIFFERENT EVALUATION METHODOLOGY?

A. According to Mr. Woolf there are no differences in the two analyses. The only difference is the way that results are reported. The cost impact analysis reports results in dollars, and the rate impact analysis reports results in cents/kWh.[7]

Q. DOES MR. WOOLF STATE ELSEWHERE THAT THERE IS A DIFFERENCE IN THE TWO ANALYSES?

A. Yes, at a further point in his testimony he states that the cost impact analysis did not include lost revenues, but that they were included in the rate impact analysis.[8] What Mr. Woolf refers to as lost revenues are really the fixed costs that are shifted from net metering to non-net metering customers.

Q. WAS MR. WOOLF CORRECT WHEN HE STATED THERE WERE NO DIFFERENCES IN THE TWO ANALYSES OTHER THAN THE WAY THE RESULTS WERE REPORTED?

A. He was, the cost impact and rate impacts really are identical and Mr. Woolf is correct that the only difference is the way the results were reported. In fact, to clear up confusion, Mr. Woolf provided clarification of this in response to OCS 1.1[9], in which he maintained that

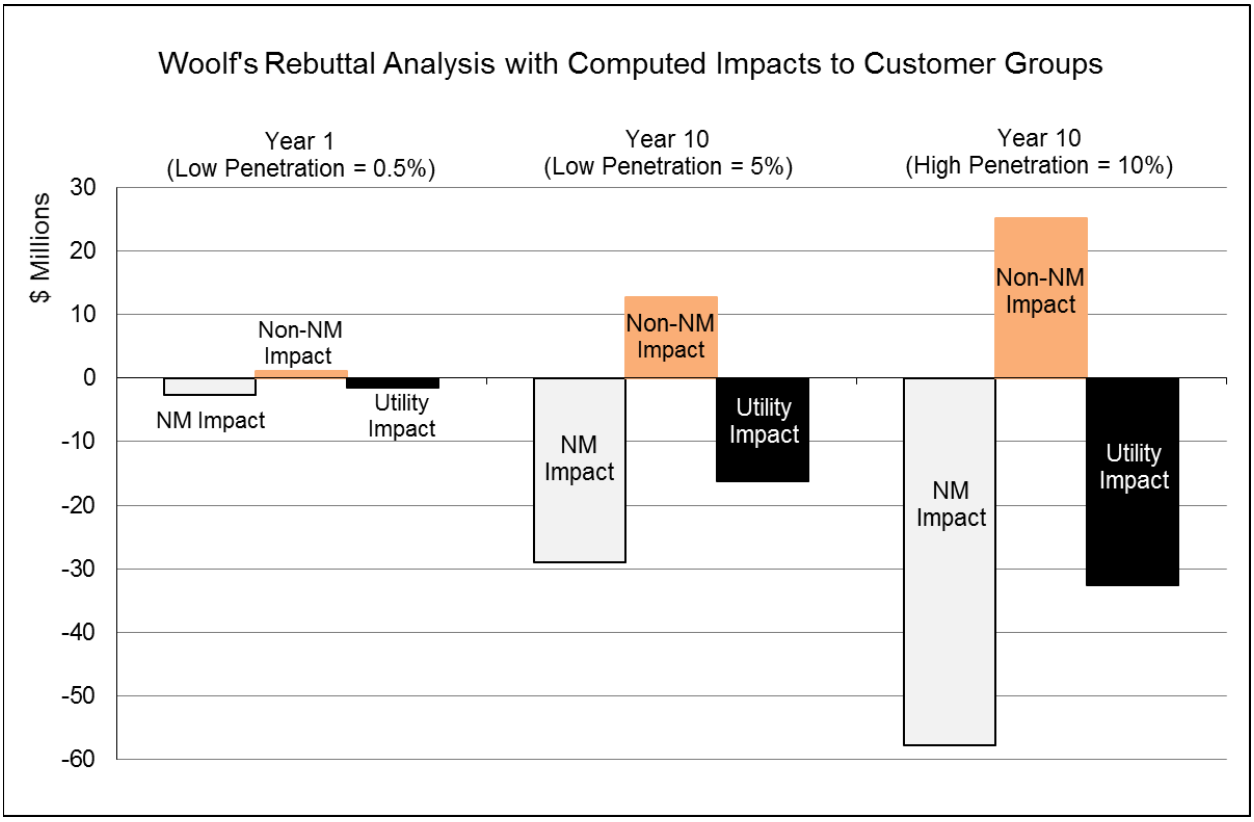
[7] Tim Woolf Rebuttal Testimony, line 623.
[8] Tim Woolf Rebuttal Testimony, line 657.
[9] The Joint Parties' response to OCS 1.1 has been included with my workpapers.

the only difference between the two analyses is the way the results are reported. What Mr. Woolf's analysis implies is that cost impact results should only be reported for the combined category of residential customers, and should not be reported separately for the net metering and for the non-net metering subsets of residential customers. This means that when PacifiCorp's revenues decline due to the reduction in energy sales from net metering customers, Mr. Woolf does not recommend identifying the cost increases that non-net metering customers have to pay due to fixed costs that are shifted to them. This is an important point that the Division, the Company, and the Office believe should be highlighted.

Q. DO YOU ACCEPT MR. WOOLF'S RECOMMENDATION OF REPORTING RATE IMPACTS AS A REASONABLE SUBSTITUTE FOR NOT PRESENTING COST IMPACTS SEPARATELY FOR THE TWO SUBSETS OF CUSTOMERS?

A. No I do not. The rate impact analysis does provide useful information, however, it does not provide an assessment of how costs and benefits are allocated, and how costs are shifted to non-net metering customers from net metering customers, which is an important aspect of the net metering program. Fundamentally, one of the questions at the heart of this proceeding as defined by Utah statute is to measure the impact of the net metering program to other customers. Thus, evaluating the cost shift should be an important component of the framework that comes out of this proceeding. Furthermore, it is not as if Mr. Woolf's cost impact analysis is incapable of developing the cost impact results on the different subsets of customers. That information is readily available. In fact, I made minor modifications to Mr. Woolf's cost impact analysis to report the same results that I presented in my direct testimony, but using Mr. Woolf's framework. Hayet Surrebuttal – Exhibit

OCS-2.1SR included in this testimony contains Mr. Woolf's results, but in the same format as my direct exhibit (Hayet Direct – Exhibit OCS-2.2D), which separately reports cost impacts on net metering, non-net metering, and all net metering and non-net metering residential customers combined. I refer to the combined impact as the Utility Impact. The results indicate that even though all residential customers combined incur a savings, non-net metering customer costs increase. The following graph compares results under the different penetration assumptions that Mr. Woolf made and at different time periods.[10]



These results, using only Mr. Woolf's data, demonstrate the impact of the net metering program, which results in fixed costs being shifted from net-metering to non-net metering customers. In other words, because fixed costs are shifted, non-net metering

[10] NM Impact refers to impacts on the net metering subset of residential customers, Non-NM Impact refers to impacts on the non-net metering subset of residential customers, and Utility Impact refers to impacts on all residential customers, that is, both the net metering and non-net metering subsets of residential customers combined.

customer costs increase, while net metering customer costs decline due to reduced purchases from PacifiCorp. As the penetration of net metering increases, the harm to non-net metering customers also increases. It is simply misleading only to report the Utility Impact as Mr. Woolf emphatically recommends, especially given that all of this information is readily available from his analysis. Mr. Woolf believes that the cost impact on non-net metering customers is an unimportant aspect of the study and should not even be reported. However, I think this is extremely important, as it demonstrates the way costs are shifted from net metering to non-net metering customers.

Q. MR. WOOLF'S RECOMMENDATION FOR A RATE IMPACT ANALYSIS SEEMS TO SUGGEST THAT IF RATE IMPACTS ARE SMALL THE HARM TO NON-NET METERING CUSTOMERS SHOULD BE IGNORED. DO YOU AGREE?

A. No I do not. First, as I discussed in my rebuttal testimony, while Mr. Woolf suggested that the largest rate impact caused by net metering might be just about 3%, I found that the largest rate impact could be over 8%, which is not inconsequential. Furthermore, Mr. Woolf's long term rate impact analysis is focused on but one issue, the impact of just net metering on rates. At the same time, there are many other factors including fuel costs, O&M expenses, administrative costs, capital costs, etc. that could also drive rates higher. As a result, not only would non-net metering customers be forced to pay higher rates due to the net metering program, non-net metering customers could also incur higher rates due to a host of other factors as well. The point is that net metering is not the only reason that non-net metering customers' rates could rise, and the increase caused by net metering would be additive to any other rate increase that might occur.

Q. MS. MORGAN CRITICIZED YOUR ANALYSIS FOR ASSUMING THAT FIXED COSTS WOULD INCREASE OVER TIME. DO YOU BELIEVE THIS IS A REASONABLE CRITICISM?

A. No, I do not. I admit that nobody has perfect knowledge as to how much costs may grow, or possibly decline over time. However, the number of residential customers on PacifiCorp's system continues to grow each year, and that means PacifiCorp will continue to need to build out its distribution system, which will lead to higher fixed costs. Furthermore, equipment will always need to be replaced as it becomes obsolete. For these reasons, I believe it was perfectly reasonable to assume that the fixed costs would increase at the rate of inflation. Furthermore, we have recommended that the evaluation should be performed over a short-term horizon consistent with the ratemaking process. In the future, as rates are updated, the study would be revised using assumptions that would be current at the time, and if in fact fixed costs decrease those revised assumptions would be picked up in the analysis at the time.

Q. MR. NORRIS RECOMMENDED USING A CAPACITY CONTRIBUTION VALUE OF SOLAR THAT IS MUCH HIGHER THAN WHAT THE COMMISSION ADOPTED IN DOCKET NO. 14-035-140. IS THERE ANY JUSTIFICATION FOR ASSIGNING A HIGHER CAPACITY CONTRIBUTION VALUE TO DISTRIBUTED SOLAR GENERATION FACILITIES THAN TO QF SOLAR FACILITIES?

A. No there is not. Solar facilities placed on rooftops are much more limited in their ability to optimize the location where they could be installed compared to QF solar facilities. Mr. Norris' recommendation of performing a study that might lead to capacity contribution

values between 53% and 87% is highly optimistic, particularly in light of the Commission's findings in Docket 14-035-140. I continue to recommend using a capacity contribution value for fixed tilt solar of 34% as the Commission determined in Docket 14-035-140.

Q. MR. NORRIS CRITICIZED DIVISION WITNESS DAVIS' STATEMENT THAT AVAILABLE RESULTS SUGGEST THAT NET METERING CUSTOMERS DO NOT PROVIDE MEANINGFUL OFFSETS TO SYSTEM PEAK LOADS. DO YOU AGREE WITH MR. NORRIS?

A. No, I believe that Mr. Norris' criticism is unwarranted. The point that Mr. Davis tried to make is that based on data that the Company provided from a study performed in 2010, it appeared that solar load profiles do not follow the same hourly pattern as the system load. Mr. Davis noted the Company determined "that by the time the system was reaching its peak load, the solar generation on the circuit under study was producing less than seven percent of the needed system peak load requirement.[11] Because of that, he stated, "net metering customers do not yet offer a steady and predictable offset to system peak load that can be relied upon in capacity planning."[12] Mr. Norris' criticism, it seems, is that even if 7% was correct, which he did not believe it was, solar resources would provide every bit as meaningful of an offset as conventional units such as Gadsby would provide.

Q. DO YOU BELIEVE THAT MR. DAVIS WAS CORRECT IN SUGGESTING THAT SOLAR RESOURCES DO NOT PROVIDE MEANINGFUL OFFSETS TO SYSTEM PEAK LOADS FOR PURPOSES OF CAPACITY PLANNING?

A. I do. This is the same capacity contribution of solar resources issue that the Commission investigated in Docket 14-035-140. If solar resources do not peak at the same time that the

[11] Robert Davis Direct Testimony, line 196.
[12] Robert Davis Direct Testimony, line 191.

system peaks, then the capacity contribution value of solar resources has to be less than 100%. I believe this was all that Mr. Davis was trying to explain when he discussed that solar resources produce just 7% of their nameplate rating at the time of the system peak. Furthermore, as I mentioned earlier, I believe the capacity contribution of solar resources should be set to 34%, and resources such as Gadsby should be set to 100%.

IV. OTHER WITNESS ISSUES

Q. SEVERAL PARTIES INCLUDING MR. DAVIS, MR. WOOLF, AND MR. BLACK COMMENTED ON THE ASSUMPTIONS YOU USED IN YOUR HYPOTHETICAL STUDY. PLEASE DISCUSS THEIR COMMENTS.

A. In my Direct Testimony, I explained that my assumptions were hypothetical and were not intended to be a precise analysis of the costs and benefits of net metering. They were, however, designed to provide a reasonable assessment of the impacts in order for the Commission to be able to evaluate the Office's proposed framework. The Division and the Company both found the framework to be reasonable, and the most significant criticism by the Joint Parties was that I included lost revenues in the analysis, which as I explained above really meant that I reported cost impact results not just for the residential customers in total, but I also showed the results for non-net metering customers as compared to net metering customers. As I stated already, I do not find that to be a valid criticism.

In regards to the assumptions I used, I intentionally chose values that I thought were reasonable for PacifiCorp, though not exact. I would not disagree with Mr. Davis' point that my analysis would be a reasonable way to evaluate costs and benefits if non-hypothetical inputs were used. However, I do believe the values I chose were basically

realistic.[13] From clarification that Mr. Davis provided in response to OCS 1.1[14], I believe that he agrees with this point. Mr. Woolf found that I did not fully describe my assumptions, therefore he said he was unable to comment on the validity of my assumptions.[15] I am sure additional information could have been provided that Mr. Woolf would have found useful; however, Mr. Woolf must not have had too many concerns with the values I used, as I am sure he would have enumerated every flaw that he noticed or asked questions in discovery for clarification.

Q. MR. WOOLF REFERRED TO YOUR RESULTS AND STATED, "CONSEQUENTLY, THE COMMISSION SHOULD NOT INTERPRET ANY OF THE RESULTS AS AN INDICATION OF THE COSTS AND BENEFITS FOR ALL CUSTOMERS OR FOR NON-NEM CUSTOMERS."[16] DO YOU AGREE WITH THIS?

A. No, I do not. Mr. Woolf stated this because he noted that I referred to my analysis as being a hypothetical analysis. However, as I mentioned, while I do not believe that the assumptions I chose were exact, I do believe they were reasonable, and that the results should be interpreted as providing an indication of the impacts on net metering and non-net metering customers. I do agree with Mr. Woolf that a more comprehensive cost/benefit analysis should be conducted using more precise inputs. Mr. Woolf recommends this as well, as he described his analysis as being a relatively simple, illustrative analysis that was developed using high level approximations for some of the key inputs.[17]

[13] Robert Davis Rebuttal Testimony, line 29.
[14] The Division's response to OCS 1.1 has been included with my workpapers.
[15] Tim Woolf Rebuttal Testimony, line 498.
[16] Tim Woolf Rebuttal Testimony, line 503.
[17] Tim Woolf Rebuttal Testimony, line 587 and 613.

Q. VIVINT SOLAR WITNESS MR. BLACK NOTED THAT YOU STATED IN YOUR DIRECT TESTIMONY THAT YOU ACCOUNTED FOR T&D LINE LOSSES, BUT HE SAID YOU DID NOT SHOW HOW THEY WERE ACCOUNTED FOR OR HOW THEY AFFECTED RESULTS IN YOUR ANALYSIS. HOW DID YOU ACCOUNT FOR LINE LOSSES?

A. Mr. Black is correct, I only mentioned in my testimony that I did account for line losses, however, the workpapers I supplied with my direct testimony identified the approach that I used to calculate the line losses, which was to include a fixed 7% line loss factor. I have also compared the results using other line loss factors, such as 10%, but that made a small impact on the results, and my conclusions are identical to what I discussed in my direct testimony.

Q. THE COMMISSION, IN ITS PRE-HEARING NOTICE, IDENTIFIED A SERIES OF QUESTIONS THAT IT DIRECTS WITNESSES TO BE PREPARED TO TESTIFY TO AT THE HEARING. WHAT ARE THE COMMISSION'S REQUESTS?

A. The Commission requested parties to be prepared to testify at hearing on the following matters, (1) what tools (e.g., GRID) the party recommends using for valuing each metric in the framework the party is advocating; (2) to the extent a new tool will be required in order to implement a party's recommendation, specific recommendations as to how the tool may be feasibly developed; and (3) the period of time the party recommends analyzing for each component of its recommended framework, including whether such period is historic or forecast and the duration of the period to be analyzed. I will be prepared to testify to these questions at hearing.

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.

A. The Commission stated in its July 1, 2015 Order that the Statute directs the Commission to perform a cost-benefit analysis and determine whether the benefits of the net metering program will exceed the costs, which the Commission has referred to as being Step One. In my direct and rebuttal testimonies, and again in this surrebuttal testimony I have laid out the Office's recommended framework for Step 1 to calculate costs and benefits on both the utility, and on non-net metering customers. I also discussed in this testimony our disagreements with the Joint Parties, which relate to the presentation of results, the benefits to include in the analysis, the magnitude of the benefits, and the length of the study period. The Office believes that it is important for the Commission to evaluate impacts on non-net metering customers, and in particular to consider the costs that are shifted to them from net metering customers, which our method does.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes it does.

Hayet Surrebuttal – Exhibit OCS-2.1

Illustrative Example - Net Metering Impacts (Using Woolf Rebuttal Workpaper Cases)
Comparison of Growth Cases

	Year 1 (0.5% penetration) 3,670 NM Customers		Year 10 (5% penetration) 40,134 NM Customers		Year 10 (10% penetration) 80,267 NM Customers	
	Annual Total ($/Year)	Customer $/Month	Annual Total ($/Year)	Customer $/Month	Annual Total ($/Year)	Customer $/Month
Tot Reduction in Costs to NM						
Avoided Costs	-890,220	-20.22	-9,805,074	-20.36	-19,775,458	-20.53
Fixed Cost Shifted to Other Cust	-1,776,574	-40.34	-19,226,722	-39.92	-37,965,222	-39.42
NM Cust Cost Savings	-2,666,794	-60.56	-29,031,796	-60.28	-57,740,680	-59.95
Tot Increase in Costs to Non-NM						
Avoided Costs	-601,544	-0.07	-6,510,126	-0.71	-12,854,940	-1.48
Fixed Cost Shift from NM	1,776,574	0.20	19,226,722	2.10	37,965,222	4.38
Non-NM Customer Cost Increase	1,175,030	0.13	12,716,597	1.39	25,110,282	2.90
Total Impact to Utility						
Avoided Costs	-1,491,764	-0.17	-16,315,199	-1.69	-32,630,399	-3.39
Fixed Cost	0	0.00	0	0.00	0	0.00
Total Utility Savings	-1,491,764	-0.17	-16,315,199	-1.69	-32,630,399	-3.39