Witness OCS – 2S (Corrected)

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

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	)	**Docket No. 17-035-61 Phase II**
In the Matter of the Application of	)	
Rocky Mountain Power to	)	**Surrebuttal Testimony**
Establish Export Credits for	)	**of Philip Hayet**
Customer Generated Electricity	)	**On behalf of the**
	)	**Office of Consumer Services**
	)	**(Corrected Version)**

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Introduction and Summary of Positions

Q. WHAT IS YOUR NAME, OCCUPATION AND BUSINESS ADDRESS?

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

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS CASE?

A. Yes, I filed rebuttal testimony on July 15, 2020.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. I respond to some of the issues that Rocky Mountain Power ("RMP") witness Daniel MacNeil raised in his rebuttal testimony related to the RMP's proposed calculation of avoided energy costs and the overall Export Credit Rate ("ECR").

I also respond to certain issues that Vote Solar witnesses Dr. Michael Milligan and Dr. Albert Lee addressed in their respective rebuttal testimonies. Finally, I respond to issues raised by Dr. Christopher Worley in his rebuttal testimony on behalf of Vivint Solar.

Q. AS A PRELIMINARY MATTER, HAVE YOU MODIFIED ANY OF YOUR POSITIONS SINCE YOU FILED REBUTTAL TESTIMONY?

A. Yes, I have. As I will discuss below, after having considered RMP and intervenor rebuttal testimony, I now believe the Energy Imbalance Market ("EIM") could be used as part of a method for developing avoided energy costs for the ECR. While I still believe there are desirable reasons for using a GRID or Aurora modeling approach, I would agree that for short-term avoided energy costs (in this case one year), it would be reasonable to use actual EIM price data to calculate avoided

energy costs for the ECR. I would also agree with RMP witness MacNeil and Vivint witness Worley that the use of EIM data to calculate the ECR would most likely avoid the kind of controversies that sometimes arise when models are employed to develop avoided energy costs. However, I would stress, that this position is dependent on the PSC adopting a single year ECR calculation approach with annual updates, rather than adopting a long-term levelized ECR calculation approach, as advocated by Vote Solar, Vivint and other parties. For a long-term projection of avoided energy costs, clearly a modeling approach using GRID or Aurora would be more preferable.

In addition, though I do not agree unconditionally with the notion of including a long-term, levelized avoided capacity cost component in the ECR as advocated by Vote Solar, Vivint and Utah Clean Energy ("UCE"), I do acknowledge that rooftop solar exported customer generation ("CG") could possibly avoid some small amount of generation capacity cost. In other words, I accept the notion that the avoided generation capacity cost associated with solar exported CG may have a non-zero value. While I would not be opposed to including some small, avoided generation capacity cost value in the ECR, I continue to oppose a full long-term levelized generation capacity cost component for the reasons that I discussed in my rebuttal testimony. Furthermore, I do not believe that any of the parties in this proceeding who have advocated for the inclusion of such an avoided generation capacity cost component (Vote Solar, Vivint and UCE) have met their burden of proof in offering a reasonable value that could be relied on.

Response to RMP Witness Daniel MacNeil

Q. RMP WITNESS MACNEIL ADDRESSES VIVINT SOLAR WITNESS WORLEY'S PROPOSAL TO CALCULATE AVOIDED ENERGY COSTS BASED ON EIM DATA. WHAT IS YOUR RESPONSE TO MR. MACNEIL'S TESTIMONY ON THIS ISSUE?

A. In his rebuttal to Dr. Worley, Mr. MacNeil discusses his willingness to adopt Vivint's recommendation to use EIM data to calculate avoided energy costs. However, Mr. MacNeil points out what he considers to be flaws in Dr. Worley's specific approach and offers three corrections that would make use of an EIM approach acceptable to RMP. As I mentioned above, I have considered RMP and Dr. Worley's rebuttal testimony concerning this matter, and I am also willing to adopt Dr. Worley's recommendations, but with similar conditions to those RMP identified.

Q. WHAT ARE THE CONDITIONS THAT WOULD MAKE AN EIM APPROACH ACCEPTABLE TO YOU?

A. First, I agree with Mr. MacNeil that Dr. Worley's calculation using a simple average of EIM prices over the period of 9:00 am to 7:00 pm and then averaging those values across the twelve months of the year is not the way that EIM prices should be used in the avoided energy cost calculation. Hours with high cost EIM prices could drag up the simple average EIM price calculation, yet the pattern of exported CG may not correlate well with the high cost EIM hours and therefore the simple average approach would overstate the avoided energy cost value. A better

approach would be to match EIM prices to exported CG in the same time periods. At present, historic load research data could be used for this purpose, though in the future this data should be updated using actual Schedule 137 customer usage data. This way, time differentiated EIM prices would be used to derive avoided energy costs to price exported CG.

Q. WHAT ARE THE OTHER CONDITIONS THAT YOU RECOMMEND?

A. The second condition is that the Utah nodal EIM prices should not be adjusted to remove the greenhouse gas, congestion, and line loss adders, as Mr. Worley has proposed. I agree with RMP that these should remain a part of the EIM prices used in the avoided energy cost calculation. The greenhouse gas adder is in fact a negative value at the Salt Lake City node because greenhouse gas values are added in for CAISO market participants but removed for EIM customers outside of the CAISO. Since Utah does not have a greenhouse gas requirement like California, a negative Greenhouse Gas adder should be part of the EIM price used to compute the avoided energy costs. Likewise, the congestion and line loss adders are necessary to derive the appropriate EIM price at the Salt Lake City node and should not be removed as Mr. Worley recommends. Because of congestion and losses, hourly nodal EIM prices are differentiated by location, and it would be inappropriate to remove the components of the EIM prices that cause the nodal EIM prices to be different throughout the EIM market.

Q. ARE THERE ANY OTHER ADJUSTMENTS TO DR. WORLEY'S EIM BASED AVOIDED ENERGY COST CALCULATION THAT SHOULD BE MADE?

A. Yes, Mr. MacNeil notes that Dr. Worley did not account for integration costs and did not fully account for avoided line losses as he had intended. Regarding integration costs, in my rebuttal testimony, I found RMP's proposed amount of $0.15/MWh, determined in RMP's most recent Flexible Reserves Study and presented in the 2019 IRP, to be acceptable and I found that it was a fairly small cost component of the overall avoided energy cost calculation. I continue to recommend that it be included as a reduction to the avoided energy cost calculation.

Q. PLEASE EXPLAIN THE LINE LOSS ADJUSTMENT THAT RMP RECOMMENDS BE APPLIED TO VIVINT'S EIM BASED AVOIDED ENERGY COST CALCULATION.

A. As mentioned above, Dr. Worley recognized that avoided line losses should be included as a component of the energy cost calculation, however he assumed that by removing the EIM line loss component (a negative value) he was in effect adding back in an appropriate amount for avoided line losses. This is not the case, as the EIM line loss component is a marginal line loss value that accounts for losses between different points on the transmission system and would not account for the line loss benefit that exported CG provides. As mentioned, along with the congestion cost component, the line loss component is a necessary part of the calculation that allows EIM prices to be differentiated by location across the EIM market.

I agree with RMP that additional avoided line loss value should be included in the avoided energy cost calculation. However, as I discussed in my rebuttal testimony, I recommend that secondary line losses should be accounted for in

addition to the line losses that RMP recommends. The inclusion of secondary lines losses would add approximately $0.43/MWh to RMP's avoided energy cost.

Q. WHAT IS YOUR ESTIMATE OF AVOIDED ENERGY COSTS BASED ON THE EIM APPROACH?

A. Assuming the PSC adopts RMP's exported CG profile that it derived based on its load research study, then my estimate of avoided energy cost using an EIM calculation is the same as Mr. MacNeil's, but with the addition of $0.43/MWh to include secondary line losses. Mr. MacNeil's analysis produces an avoided energy cost of $22.09/MWh for 2021, and with the addition of $0.43/MWh, the avoided energy cost that I recommend is $22.52/MWh. This amount is $4.80/MWh greater than the avoided energy cost I proposed in my rebuttal testimony that was based on a GRID approach ($17.72/MWh), and is $7.26 greater than the avoided energy cost that RMP proposed in its rebuttal testimony using its GRID approach ($15.26/MWh).[1]

Q. DOES MR. MACNEIL OFFER ANY INSIGHT TO EXPLAIN WHY THE GRID BASED AVOIDED ENERGY COSTS ARE LOWER THAN THE EIM DERIVED AVOIDED ENERGY COSTS?

A. Yes. Mr. MacNeil believes the difference is predominantly attributable to the fact that 459 MW of new solar resource additions will have been added to the system just prior to 2021, and therefore PacifiCorp reflected that zero cost renewable capacity in the GRID study performed for the 2021 test period. However, that solar capacity was not part of the System during the 12-month ended period of September

[1] See Hayet rebuttal testimony at ln. 763.

2019, and therefore, did not affect the EIM results that were collected during that period. Thus, according to Mr. MacNeil, the additional solar capacity impacted the GRID test period results but had no effect on the EIM results. Mr. MacNeil contends that in the future, the EIM results will reflect the additional solar resources, which will cause the EIM derived avoided energy costs to decline similar to what occurred in GRID.

Q. YOU NOTED THAT YOUR ORIGINAL GRID BASED ESTIMATE WAS $17.72/MWH, WHILE RMP'S ORIGINAL GRID BASED ESTIMATE WAS $15.26/MWH, WHAT ACCOUNTED FOR THE DIFFERENCE IN THE TWO ESTIMATES?

A. As I discussed in my rebuttal testimony, RMP included market cap constraints in its GRID modeling during both high load hours ("HLH") and low load hours ("LLH") to limit the amount of coal-fired generation that would be used to make economic sales to the market hubs. As the PSC originally only expected that market caps would be used to limit market sales during LLHs, I removed market caps from all markets during HLHs in my GRID runs, which resulted in an avoided energy cost that was $2.46/MWh (17.72 – 15.26) higher than what RMP determined.

Because of the market cap constraint, it is clear that Mr. MacNeil's explanation (i.e. that additional solar energy is the reason why the GRID derived avoided energy cost estimate is $7.26/MWh lower than the EIM derived estimate) does not fully explain the difference. More than $2 of the difference ($7.26 - $4.80

= 2.46)[2] is due to PacifiCorp's market cap constraint that I recommended should be removed from the database if GRID is used to derive the estimate of avoided energy costs.[3]

Q. PLEASE SUMMARIZE YOUR POSITION REGARDING THE CALCULATION OF AVOIDED ENERGY COSTS IN THIS PROCEEDING.

A. I continue to support the use of GRID to perform projections of production costs and to develop avoided energy costs. However, RMP is transitioning to the Aurora model, and eventually I expect that Aurora would be used to perform these functions. This adds some complications to the continued use of GRID to calculate avoided energy costs for ECR purposes. As discussed above, I am also receptive to using an EIM based approach to develop avoided energy costs, as long as it is only used to project forward for one year, which would require it to be updated annually to reflect the most current conditions possible. Clearly, the ease of calculating and reviewing avoided energy costs derived from historical EIM data, and the reduction in areas of potential controversies are points in its favor. Moreover, because the avoided cost calculation used in the ECR would only be for one year forward, as I have recommended, the use of recent, historic EIM data rather than a production cost projection may be reasonable. In conclusion, while the OCS continues to support the use of the GRID model to calculate avoided energy costs, the OCS would not object to the use of the EIM as the basis for

[2] $0.28/MWh of the difference is also due to Mr. Hayet's inclusion of secondary line losses in his avoided line loss calculation.
[3] See Hayet rebuttal testimony at ln. 763.

calculating avoided energy costs with the conditions that I have discussed. This appears to be the same position that RMP has adopted as well.[4]

Q. MR. MACNEIL RESPONDS TO DR. MILLIGAN AND DR. WORLEY ON THEIR RESPECTIVE TESTIMONIES SUPPORTING THE INCLUSION OF A GENERATION CAPACITY CREDIT IN THE ECR. WHAT IS YOUR RESPONSE TO HIS TESTIMONY ON THIS ISSUE?

A. I generally agree with Mr. MacNeil in not wanting to include an avoided generation capacity cost component in the ECR. Mr. MacNeil specifically addresses the Vote Solar and Vivint derivation of solar capacity values, which form the basis for measuring avoided generation capacity cost. My main concern with including an avoided generation capacity cost component in the ECR, however, is that the solar capacity, regardless of the capacity value percentage, is not subject to any long-term commitment by the exported CG customer. In addition, the exported "capacity" is the amount left over, after the CG customer's own usage. These two factors create additional risk that is not captured in the capacity value adjustment presented by Vote Solar. The fact that the capacity value percentage is applied to an export energy load profile does not reflect this risk. However, notwithstanding this increased risk, the OCS acknowledges that there may be some small non-zero avoided generation capacity value associated with exported CG. I acknowledged this in my rebuttal testimony, in which I stated,[5]

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[4] At line 138 of his rebuttal testimony, Mr. MacNeil supports the use of EIM data, however, in his concluding remarks at line 1238 of the same testimony, Mr. MacNeil reiterates RMP's support for the export credit rates and structure that it presented in its initial application filing, which were derived using the GRID model.

[5] Philip Hayet rebuttal testimony, at ln. 583.

> "…the OCS' primary recommendation is not to include an avoided generation capacity cost component for the reasons I described above. However, there is one reason that possibly supports the inclusion of an avoided generation capacity cost component and mitigates the risks of solar generation as mentioned above. The reason is that generation capacity, as opposed to transmission and distribution capacity, is a product that can be readily acquired from the market. For planning purposes, RMP relies on the notion that short term capacity purchases can be obtained from the market. In fact, PacifiCorp's 2019 IRP action plan includes an action item that notes steps it has to take to in order to acquire market capacity purchases. If PacifiCorp had reason to believe that capacity would not materialize, it could arrange for a short term firm purchase in accordance with its Front Office Procedures and Practices. [footnote reference removed]

The OCS's position, as discussed beginning at line 595 of my rebuttal testimony, is that if an avoided generation capacity cost component is included, it should be included at a discounted percentage of the Vote Solar calculation – somewhere in the range of 25% to 50% of the calculated value.

Response to Vote Solar Witness Dr. Michael Milligan

Q. DR. MILLIGAN RESPONDS TO RMP'S CALCULATION OF AVOIDED ENERGY COST. DO YOU HAVE ANY RESPONSE TO HIS REBUTTAL TESTIMONY ON THIS ISSUE?

A. Yes. Dr. Milligan criticizes RMP's avoided energy cost analysis because the GRID database "bakes-in" resources that are dictated by the IRP, meaning RMP assumes resources "that are anticipated but not yet built, will be developed and deployed ahead of existing CG."[6] While this argument could have some merit for a long run GRID analysis, it is not relevant for determining avoided energy on a one-year in

[6] Michael Milligan rebuttal testimony at ln. 116.

advance basis, which is what RMP proposes and the OCS supports for use in this ECR proceeding.

Q. DR. MILLIGAN ASSERTS AT LINE 251 OF HIS REBUTTAL TESTIMONY THAT "RMP'S INTENT TO ABANDON THE GRID MODEL SHOWS THAT IT HAS A LACK OF CONFIDENCE" IN THAT MODEL. IS IT YOUR UNDERSTANDING THAT PACIFICORP IS PLANNING TO SWITCH TO ANOTHER MODEL BECAUSE IT HAS A LACK OF CONFIDENCE IN GRID?

A. No, it is not. All models have their advantages and disadvantages and certainly one of the greatest advantages of the GRID model is that it has been custom designed by PacifiCorp to include very specific modeling features to properly simulate the PacifiCorp system in a production cost analysis. It is my understanding that PacifiCorp is planning to switch to Aurora, not because of a lack of confidence in GRID, but because PacifiCorp desires to use a nodal pricing model as part of the new 2020 PacifiCorp Inter-Jurisdictional Allocation Protocol ('2020 Protocol") that "PacifiCorp and more than 20 government agencies, customer associations, conservation groups, and individual large customers have signed, which addresses interjurisdictional cost allocation."[7] The Aurora model will allow PacifiCorp to allocate production costs hourly to the different states using a nodal pricing methodology, which does not exist in GRID. I do agree that when GRID is replaced by Aurora, the avoided energy cost analysis should be performed using Aurora.

[7] PSC Order issued April 15, 2020 approving the 2020 Protocol, Docket No. 19-035-42, at pg. 1.

Q. DR. MILLIGAN ARGUES THAT INTEGRATION COSTS SHOULD NOT BE APPLIED TO WIND AND SOLAR RESOURCES. DO YOU CONTINUE TO SUPPORT THE INCLUSION OF INTEGRATION COSTS AS AN OFFSET TO AVOIDED ENERGY COST IN THE ECR?

A. Yes, for the reasons that I discussed in my rebuttal testimony and as I discussed earlier in this testimony. It is important to recognize that RMP's integration cost offset amounts to $0.15/MWh out of a total OCS GRID based ECR value of $17.72/MWh and a Vote Solar ECR of $222/MWh. While RMP's proposed integration cost is relatively small, it is important to include the cost component as integration costs could change over time.

<u>Response to Vote Solar Witness Dr. Albert Lee</u>

Q. DR. LEE PRESENTS AN ANALYSIS COMPARING CUSTOMER FEES TO THE EXPORT CREDIT THAT THE AVERAGE CUSTOMER COULD EXPECT TO RECEIVE IF RMP'S PROPOSED ECR IS APPROVED. HE CONCLUDES THAT EXPORTED CG CUSTOMER'S WOULD NOT BEGIN TO RECEIVE NET ECONOMIC BENEFITS FROM THEIR CG INVESTMENTS UNTIL THE FOURTH YEAR OF OPERATION. DO YOU AGREE WITH HIS CONCLUSION?

A. No. Dr. Lee asserts that each average CG customer would receive $94 in credits per year and would incur $310 in initial fees ($150 application fee and $160 metering fee). Thus, Dr. Lee claims that exported CG customers would not break

even, taking service under Schedule 137, until the fourth year of operation.[8] The problem with this is that Dr. Lee's analysis completely ignores the economic benefit that a CG customer receives through the offset of the customer's own usage from CG solar energy. Under the Schedule 137 proposal, CG customers will avoid paying for the portion of RMP's fixed costs that are ordinarily paid through energy rates during those hours in which CG energy serves the customer's own load. These costs will still have to be paid, and essentially, non-participating customers will pay those costs. While this was deemed to be an acceptable compromise that was approved by all parties who signed the comprehensive Settlement Stipulation on August 28, 2017, for many of the parties that was only because they assumed that a reasonable estimate of the ECR would ultimately be established, and Vote Solar's $222/MWh proposed ECR is far from reasonable. Dr. Lee's break-even argument should be ignored by the PSC in its consideration of RMP's ECR proposal.

Response to Vivint Witness Dr. Christopher Worley

Q. AS YOU DISCUSSED EARLIER IN YOUR TESTIMONY, DR. WORLEY SUPPORTS THE INCLUSION OF AVOIDED GENERATION CAPACITY COSTS IN HIS TESTIMONY AND RECOMMENDS THAT THE PSC ADOPT THE VOTE SOLAR AVOIDED GENERATION CAPACITY COST CALCULATION. DO YOU HAVE ANY ADDITIONAL COMMENTS ON HIS TESTIMONY IN THIS REGARD?

[8] Albert Lee rebuttal testimony, Table 3, at ln. 337.

A. Yes. Dr. Worley appears to be arguing that RMP excluded long run marginal costs (avoided generation capacity costs) from the ECR because CG is an intermittent resource. While solar generation, whether in the form of central station solar facilities or rooftop CG is an intermittent resource, I would emphasize once again that this is not the primary basis that the OCS recommends the exclusion of avoided generation capacity costs from the ECR. As I discussed previously, CG capacity is not subject to any long-term commitment from CG customers, and there is increased risk of export CG being available, relative to central station solar generation, because CG customers use CG first to offset their own energy usage before exporting energy to the grid. The imposition of a customer's own energy usage profile on the solar output profile creates a higher risk to the resulting exported energy profile than would be the case with traditional utility scale solar energy. As I discussed earlier, I believe that this reduces the capacity value of CG. Notwithstanding this, I would still accept the notion that the capacity benefit is likely a non-zero small value. However, as I mentioned earlier, I do not believe that any of the parties in this proceeding, including Vivint have met their burden of proof in offering a reasonable value that should be relied on.

Q. DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.