CASE: UM 1716
WITNESS: MARK BASSETT

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 600

Reply Testimony

June 7, 2017

Q. Please state your name, occupation, and business address.

A. My name is Mark Bassett. I am a Senior Utility Analyst employed in the Energy Resources and Planning Division of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Have you previously provided testimony in this case?

A. Yes. I provided opening testimony on May 5, 2017.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to opening testimony filed by other stakeholders on June 5, 2017.

Q. Did you prepare an exhibit for this docket?

A. Yes. I prepared exhibit Staff/501, which is my Witness Qualifications Statement.

Q. How is your testimony organized?

A. My testimony is organized as follows:

ISSUE 1, RESPONSE TO PGE TESTIMONY

Q. PGE reiterated their position that the elements "Market Price Response" and "Avoided Hedge Value" have a de minimis value unless solar penetration significantly increases, and caution that "it may not be possible to have a non-zero current value for this element."[1] Do you agree with this testimony?

A. No. Solar penetration is significantly increasing as shown by PGE's update to its 2016 IRP Reply Comments with a reduction of 52 MW of needed capacity due to new QF contracts[2] in just a few months after filing. These elements have a non-zero value that will be determined in workshops as proposed in the Commission's Straw Proposal.[3]

Q. Do you agree with PGE's methodology for determining other energy values as stated in the Straw Proposal?[4]

A. Yes. Determining the marginal cost of avoided energy using PGE's Schedule 201, using existing integration studies to determine Integration and Ancillary Services, and proposing a system-average value of avoiding capacity-driven upgrades for Transmission and Distribution Capacity elements all follow Commission recommendations in the Straw Proposal.

Q. Do you agree that the Commission should direct PGE to make a compliance filing showing its RVOS values?[5]

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[1] PGE/300, Murtaugh-Goodspeed/9-10.
[2] Docket No. LC 66 PGE's update to 3/31/17 Reply Comments, Figure 5, filed 4/13/2017.
[3] OPUC Order No. 17-085
[4] PGE/300, Murtaugh-Goodspeed/6-8.
[5] PGE/300, Murtaugh-Goodspeed/11.

A. Yes. Phase 1 of this proceeding will close following an opportunity for hearing and briefing, and compliance filings will occur in Phase 2.

ISSUE 2, RESPONSE TO PACIFICORP TESTIMONY

Q. PacifiCorp expressed concern with performing a 25-year analysis in determining the RVOS.[6] Do you agree with PacifiCorp that frequent updates will alleviate some of this uncertainty?[7]

A. Yes. Frequent updates must be performed to ensure that RVOS values are properly captured and reflect the current marketplace.

Q. PacifiCorp supports using utility scale solar resource costs as an alternative estimate.[8] Do you agree that this estimate could be used to establish a cap on the RVOS value?

A. No. The utility scale solar resource value should be used as a reference only, to provide a comparison to current marketplace costs. This value should be considered the minimum RVOS value because it does not reflect many of the values of distributed solar, including line losses and transmission and distribution capacity.

Q. Do you agree that "monthly average prices" can be effectively equivalent to hourly modeling as PacifiCorp states in its testimony?[9]

A. Yes, but I would like to emphasize that the statements of Mr. Olson relied on by PacifiCorp reflect Mr. Olson was referring to a monthly average price per hour of the day; i.e., a monthly average for midnight, a monthly average for 1 a.m., and so on, not determining a single average price for the entire month.

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[6] PacifiCorp/300, Link/4.
[7] PacifiCorp/300, Link/4.
[8] PacifiCorp/300, Link/5.
[9] PacifiCorp/300, Link/7, quoting UM 1716 Hearing Transcript (TR) 14, lines 12-15 (Olson).

Q. Do you agree that an average hydro year should be used to forecast energy prices rather than a range of hydro conditions?[10]

A. No. The distribution of hydro conditions over time are not necessarily the same as the distribution of energy prices resulting from those conditions, so an average hydro year may not capture the possible extreme variation of prices. The modeling should incorporate the effect of a distribution of hydro years on energy value rather than just an average hydro year.[11]

Q. PacifiCorp disagrees with the suggestion by another party (TASC) that cost-effectiveness analysis used for energy efficiency or demand response programs is a better benchmark than avoided cost pricing.[12] Do you agree with PacifiCorp's assessment?

A. No. Energy efficiency or demand response program cost-effectiveness methods do not completely capture the full range of benefits offered by distributed solar resources.

Q. Do you agree with PacifiCorp that the Commission should not direct utilities to develop preliminary estimates of market price response until after the outcomes of workshops are known?[13]

A. No. As PacifiCorp notes, a workshop/technical conference will be held prior to valuation of this element in order for utilities to receive input from Staff and other stakeholders. It is appropriate for the Commission to assume that at least

[10] PacifiCorp/300, Link/8.
[11] Staff/400, Olson/16, lines 16-18.
[12] PacifiCorp/300, Link/12.
[13] PacifiCorp/300, Link/15.

one method for determining the market price response will be sufficiently vetted (even if not unanimously agreed to) and usable by the utilities.

Q. Do you agree that the Commission should direct PacifiCorp to make a compliance filing showing its RVOS values?[14]

A. Yes. Phase 1 of this proceeding will close following an opportunity for hearing and briefing,[15] and compliance filings will occur in Phase 2.

Q. Do you agree that the element value of RPS compliance to the utilities may be zero?[16]

A. No. Since every grid-connected solar installation reduces a utility's load, it also directly reduces the Company's RPS compliance requirement; therefore, it follows that there will be a nonzero value to this element, although it may be small.

Q. PacifiCorp disagrees with the Commission's recommendation to use IRP assumptions for carbon regulations because they are too speculative.[17] Do you agree with the Commission's recommendation?

A. Yes. While there is currently no enforceable federal carbon regulation in place, PacifiCorp should model the eventuality of it as directed by the Commission. Use of the IRP assumptions is reasonable because the IRP represents the Company's best estimate of the costs of regulatory compliance going into the future.

[14] PacifiCorp/300, Link/2.
[15] Order No. 17-075 at 1.
[16] PacifiCorp/300, Link/17.
[17] PacifiCorp/300, Link/20-21.

Q. PacifiCorp argues that security, reliability, and reserves should not be included as an element of the RVOS primarily because the benefits are accrued only to participants in a solar project.[18] Do you agree?

A. No. Smart inverters can contribute value to this element, which will be impacted by imminent changes to IEEE 1547 and UL 1741 rules requiring that all inverters have smart capabilities. Although the initial value of this element may be zero or close to zero, it is still wise to include this element in the methodology. It is highly reasonable to conclude that as technology advances mature, new operational policies will be adopted that take advantage of the wide range of smart inverter capabilities. Introduction of these advanced functions will no doubt be reflected in a measurable incremental value to solar resources as time goes on.

[18] PacifiCorp/300, Link/22.

ISSUE 3, RESPONSE TO IDAHO POWER TESTIMONY

Q. Do you agree with Idaho Power's testimony that a median hydro condition should be used to forecast energy prices rather than a range of hydro conditions?[19]

A. No. The distribution of hydro conditions over time is not necessarily the same as the distribution of energy prices resulting from those conditions, so an average hydro year may not capture the possible extreme variation of prices. The modeling should incorporate the effect of a distribution of hydro years on energy value rather than just an average hydro year.[20]

Q. Idaho Power does not agree with the Commission's proposal to determine the generation capacity element of RVOS in a manner that is consistent with the standard QF avoided cost guidelines because this value may not be the lowest net cost generation capacity resource.[21] **Do you agree?**

A. No. QF avoided cost (AC) methodologies are constructed using the lowest cost resources identified by the company in its latest acknowledged IRP. In periods of resource sufficiency, the AC is based on market prices; in periods of resource deficiency, the basis is the next least-cost resource identified in the IRP. This process ensures that the avoided costs are based on the company's best estimate of its potential resource costs.

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[19] Idaho Power/300, Youngblood/3.
[20] Staff/400, Olson/16, lines 16-18.
[21] Idaho Power/300, Youngblood/3-4.

Q. Idaho Power has stated in this and previous testimony that it does not consider solar resources to provide ancillary services, and views these components as strictly a cost.[22] Do you agree?

A. No. While this element may currently have a zero value, smart inverters have the potential to contribute value to this element including power factor correction and voltage/frequency regulation, which will be impacted by imminent changes to IEEE 1547 and UL 1741 requiring that all inverters have these smart capabilities.

Q. Do you agree with Idaho Power that conducting a workshop to examine methodologies to quantify a hedge value is not appropriate?[23]

A. No. The hedge value methodology is to be evaluated with follow-up workshops, and while the value for this element will vary from utility to utility, the workshops should examine the underlying methodologies for soundness. If Idaho Power believes that hedging is independent of RVOS, it needs to demonstrate that fact to stakeholder's satisfaction through the workshop process.

Q. Idaho Power recommends that security, reliability, and reserves should not be included as an element of the RVOS.[24] Do you agree?

A. No. Smart inverters can contribute value to this element, which will be impacted by imminent changes to IEEE 1547 and UL 1741 requiring that all inverters have smart capabilities.

[22] Idaho Power/300, Youngblood/6.
[23] Idaho Power/300, Youngblood/6-7.
[24] Idaho Power/300, Youngblood/7-8.

Q. Idaho Power expresses concern with modelling the RVOS for different applications.[25] How do you respond?

A. Staff believes it is premature to draw conclusions regarding the Commission's use of RVOS values in ratemaking. The Commission has not as yet considered all the potential applications of RVOS and for this reason it hopes to design the methodology to be highly flexible and customizable.

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[25] Idaho Power/300, Youngblood/9.

ISSUE 4, RESPONSE TO MICHAEL O'BRIEN TESTIMONY[26]

Q. Mr. O'Brien recommends that the Commission adopt a methodology that is not directly tied to and affected by the regulatory uncertainty associated with PURPA.[27] Do you agree?

A. Yes, in the sense that the RVOS process should not be made dependent on values or policies adopted in the PURPA context. However, if the methods used to determine avoided costs under PURPA yield credible values for elements that are also found in RVOS, it seems reasonable that the same methods might be adopted. The QF avoided cost methodology is an established estimation of costs that utilities can easily implement from existing models, and represents a fair value for solar resources. However, even if the computational methods are shared, Staff does not recommend directly tying determination of RVOS to any PURPA related policies.

Q. Mr. O'Brien expresses concern with using non-standard price methodologies for determining the marginal avoided cost of energy, such as PacifiCorp's GRID model.[28] Do you agree?

A. Yes. Utilities should use standard QF methodologies to determine the marginal avoided cost of energy for systems below 3 MW, consistent with QF (and proposed community solar) practice.

Q. There is concern that using the IRP resource sufficiency/deficiency demarcation could lead to an inaccurate estimate of "Generation

[26] Mr. O'Brien testified on behalf of RNW, OSEIA, NWEC, and NWSEED. This testimony will be referenced as RNW, et al./300.
[27] RNW, et al./300, O'Brien/2-3.
[28] RNW, et al./300, O'Brien/3-4.

Capacity" due to circularity in the valuation process.[29] How should this be avoided?

A. I agree with Mr. O'Brien and Mr. Olson that "any solar resources whose compensation is tied to the RVOS should be excluded from the utility's forecast of the resource-balance-year."[30] Removing the solar projects from the projected load should also remove the circularity of the calculation.

Q. Do agree with Mr. O'Brien that generation capacity should not be set to zero?[31]

A. Yes. Utilities should follow standard QF avoided cost guidelines, which will not result in a zero value.

Q. Do you agree with Mr. O'Brien's concerns about using a system-wide average for transmission and distribution capacity values?[32]

A. In part. Mr. O'Brien correctly points out that utilities are capable of modeling DER as an alternative solution to new T&D.[33] However, I believe that doing so for individual RVOS projects is not practical so an average should be used. Statistical analysis of future DER models that can replace T&D should be used to help determine this value in the future. Under the Commission's Straw Proposal, Staff is to convene a workshop or technical conference at a later date "to examine ways to generate specific T&D capacity deferral elements".[34] I think the commitment to continue investigating ways to value avoided

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[29] RNW, et al./300, O'Brien/6-7.
[30] See Staff/400 Olson 15, lines 17-19.
[31] RNW, et al./300, O'Brien/7.
[32] RNW, et al./300, O'Brien/8.
[33] RNW, et al./300, O'Brien/8-9.
[34] Order No. 17-085 at 4.

transmission and capacity values is sufficient to address Mr. O'Brien's concerns.

Q. Do you agree that the definition of "line losses" in the Straw Proposal as "electricity losses from the point of generation to the point of delivery" needs to be clarified?[35]

A. Yes. Determining this value for each RVOS project is not practical, and a range of values may need to be determined for each utility. I also agree that a system-wide average may not be appropriate due to variable rates of resistance in transmission lines throughout the system at different times, and an hourly average may be more appropriate.

Q. Do you agree with Mr. O'Brien that additional contingency reserves are not likely to be needed to cover the sudden loss of a large solar generation unit?[36]

A. Yes. Solar in Oregon has not yet reached penetration levels high enough to impact contingency reserves. In addition, advanced smart inverters will help prevent solar PV outages using voltage/frequency ride-through, and can also stabilize and help normalize the grid during and after a major fluctuation or outage event on the grid, helping to mitigate the need for reserves. These capabilities will likely add to the RVOS.

Q. Regarding the security, reliability, and reserves RVOS element, Mr. O'Brien encourages the Commission to clarify the interaction between the proposed smart inverter rulemaking, workshop or

[35] RNW, et al./300, O'Brien/10-11.
[36] RNW, et al./300, O'Brien/16-17.

technical conference associated with this RVOS element, and triggers that will enable a non-zero value to be assigned to this element.[37] What are your thoughts on this?

A. I agree that smart inverters will have an impact and provide value to this element of the RVOS, but I don't think a rulemaking will be necessary to implement smart inverter functionality. California's Rule 21[38] proceedings are developing rules for smart inverters, and because that state is such a large driver of the solar industry, IEEE 1547 and UL 1741 standards are being updated as a result to require that all inverters have smart capabilities. Once these international standards are updated, an OPUC rulemaking will not be necessary since all new inverters will then have to meet smart inverter standards. It is very likely that any solar PV system to which RVOS applies will be required by code to have smart capabilities.

[37] RNW, et al./300, O'Brien/20-22.
[38] California Public Utility Commission Rule 21 - http://www.cpuc.ca.gov/Rule21/

ISSUE 5, RESPONSE TO THE ALLIANCE FOR SOLAR CHOICE (TASC) TESTIMONY

Q. Do you agree with TASC that methodologies consistent with how utilities evaluate cost effectiveness of demand side resources like energy efficiency and demand response would be the most appropriate starting point for the avoided cost categories evaluated under RVOS?[39]

A. In certain cases this approach may yield a reasonable estimate of avoided costs. If the RVOS is applied to behind-the-meter solar PV systems, the utility sees the solar system as a reduction in load and in some ways it effectively resembles the effect of energy efficiency measures, so those cost calculations could be appropriate. On the other hand, systems connected directly to the grid similar to utility scale solar would not provide the same benefits as energy efficiency or demand response, so the QF avoided cost methodology would be more appropriate. In any case, the cost effectiveness methods used for energy efficiency may not fully capture all of the avoided costs associated with distributed solar resources.

Q. Do you agree that the aggregation of the entire fleet of distributed resources should be viewed as capable of contributing the deferral of transmission and distribution investments?[40]

A. Yes. A single solar PV array may not be able to defer T&D investments, but several systems on the same feeder or substation could. Each of those systems would contribute to that deferral, and thus should be compensated. I

[39] TASC/300, Gilfenbaum/6-7.
[40] TASC/300, Gilfenbaum/10-11.

also agree that these values should be discussed and quantified in a Phase 2 workshop.

Q. Do you agree that RVOS should account for the value of distributed storage or other paired systems?[41]

A. No. I agree that there is great value in solar paired with storage and other technologies, but the valuation of that pairing is beyond the scope of the RVOS. It appears likely that paired technologies may offer additional value streams compared to either stand-alone solar or stand-alone storage. The determination of how to properly value these streams may need to be investigated at a later date, when these systems have reached maturity.

Q. Do you agree that it is not appropriate to use utility scale solar as a proxy value for distributed solar?[42]

A. Yes. The utility scale solar resource value does not capture all of the value streams associated with distributed energy resources. As such, the utility scale value should be used as a reference only, to provide a comparison to current marketplace for energy costs. This value should be considered only a minimum RVOS value because it does not reflect many of the values of distributed solar, including line losses and transmission and distribution capacity.

[41] TASC/300, Gilfenbaum/12-14.
[42] TASC/300, Gilfenbaum/14.

ISSUE 6, RESPONSE TO CUB TESTIMONY

Q. CUB expresses concern with the use of the terms "methodology" and "values."[43] Do you think that there is still much to be discussed about these terms in Phase 2?

A. Yes. Any values that utilities propose in accordance with the Straw Proposal will be reviewed by stakeholders and discussed in a workshop prior to the Commission finalizing them. Specific analytic approaches to determining the values of elements and methodologies will be discussed by stakeholders in workshops prior to assigning a value.

Q. Do you agree with CUB that solar PV provides a long-term physical hedge against changes in fuel and wholesale market prices without adding significant new risks to the system?[44]

A. Yes. Solar PV provides predictable, reliable energy to the grid with very little recurring cost, and no fuel cost. The resource can therefore be counted on to reduce the risk of future cost increases.

Q. Does this conclude your testimony?

A. Yes.

[43] CUB/100, Jenks/1-2.
[44] CUB/100, Jenks/3-4.