BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1716

In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, Investigation to Determine the Resource Value of Solar.	Opening Testimony of Michael O'Brien on behalf of Renewable Northwest, the NW Energy Coalition, Northwest Sustainable Energy for Economic Development, and the Oregon Solar Energy Industries Association.

I. INTRODUCTION

Q. Please state your name, title, and business affiliation.

A. My name is Michael O'Brien, Research Director at Renewable Northwest. My business address is 421 SW 6th Avenue, Suite 975, Portland, OR 97204.

Q. Are you the same Michael O'Brien that filed testimony previously in this proceeding?

A. Yes, my testimony previously filed in this proceeding, marked as RNW, OSEIA, NWEC, NW SEED/100 includes my qualifications.

Q. On whose behalf are you testifying?

A. This testimony is on behalf of Renewable Northwest, the Oregon Solar Energy Industries Association, the NW Energy Coalition, and Northwest Sustainable Energy for Economic Development.

Q. What is the purpose of your testimony?

A. The purpose of this testimony is to discuss proposed definitions of elements of the resource value of solar ("RVOS") and proposed methodologies for determining the values of those elements. This opening testimony is submitted in response to Oregon Public Utility Commission ("Commission") Order 17–085 issued March 6, 2017.

Q. What does your testimony address and how is it structured?

A. My testimony addresses the Straw Proposal, attached to Order 17–085, which offered the Commission's tentative resolutions on elements, methodologies, and next steps for Phase II. With regard to next steps, the

Order notes that element-specific workshops will be: "separate from the Phase II calculations…The workshops will not be used to inform Phase II."[1] Each of the elements is discussed in turn, including the proposed definitions, proposed methodologies, and proposed next steps. Concluding remarks will address any remaining issues.

II. RESPONSE TO RVOS STRAW PROPOSAL

Q. What was the Straw Proposal Definition for Element 1—Energy?

A. "The marginal avoided cost of procuring or producing energy, including fuel, O&M, pipeline costs and all other variable costs."[2]

Q. What was the Straw Proposal Methodology for determining the value of Element 1—Energy?

A. "Utilities shall estimate the marginal avoided cost of energy using the methods currently used for their QF avoided costs (monthly values with on- and off-peak blocks). Utilities shall model a range of hydro conditions to forecast energy prices. Utilities must examine and evaluate different schemes for weighting hydro years and report the results of their examination."[3]

Q. Do you have concerns about using a Public Utility Regulatory Policies Act ("PURPA") framework in the context of the RVOS?

Using a PURPA framework in the RVOS would add a significant amount of regulatory uncertainty. PURPA is a highly litigated area of the law. For example, during the course of this investigation, Renewable Northwest has monitored and/or participated in the following PURPA-related dockets before the Commission: UM

[1] Order No. 17-085 at 3 (Mar 06, 2017).
[2] Order No. 17-085 at 3 (Mar 06, 2017).
[3] Order No. 17-085 at 3 (Mar 06, 2017).

1610, UM 1725, UM 1729, UM 1734, UM 1752, UM 1794, UM 1799, UM 1802, and UM 1805. Of those dockets, at least three are, or have been, focused on issues that would directly impact the RVOS if the Commission were to adopt a PURPA framework for any element. For example, dockets UM 1729 and UM 1794 have focused on the sufficiency/deficiency demarcation point for PacifiCorp. Similarly, Docket UM 1802 is focused on the use of Generation and Regulation Initiative Decision Tools ("GRID") for PacifiCorp's non-standard avoided cost rates.

Given the frequent litigation in the PURPA arena, I recommend that the Commission adopt a methodology that is not directly affected by the regulatory uncertainty associated with PURPA. While the method used to determine the marginal avoided cost of energy could be similar or the same as that used for determining Qualifying Facilities' ("QF") avoided costs, the application of the method could be RVOS-specific, separate and distinct from PURPA and its associated dockets.

Q. Does the Straw Proposal Methodology clearly explain how utilities are to estimate the marginal avoided cost of energy using the methods currently used for their QF avoided costs?

A. No. The Straw Proposal Methodology does not specify whether utilities should use their standard avoided cost rates or non-standard avoided cost rates to estimate the marginal avoided costs of energy.

Q. If a PURPA framework is to be pursued, should standard or non-standard avoided cost rate methods be used?

A. If the Commission adopts a PURPA framework for "Energy", the RVOS marginal avoided cost of energy should be estimated using the utility method for calculating

QF standard avoided costs. SB 1547 (2016) states that the amount of electricity generated by a community solar project shall be credited "in a manner that reflects the resource value of solar energy".[4] In terms of the size of such projects, Staff's proposed rules for community solar would limit projects to 3 MW or less.[5] This aligns with the 3 MW eligibility cap for avoided cost prices in standard contracts for solar QFs.[6] Given that the size of a community solar project is likely to fall within the 3 MW eligibility cap for standard QF contracts, the RVOS marginal avoided cost of energy should be estimated using the utility method for calculating QF standard avoided costs.

Q. How does this approach align with utility testimony on how the value of this element should be determined?

A. While Portland General Electric ("PGE") proposed using its standard avoided cost rates to obtain this value,[7] PacifiCorp proposed using its GRID production cost model to calculate this element.[8] GRID is used to calculate non-standard avoided cost rates for QFs above the 3 MW threshold.[9] However, as I testify above, estimating the marginal avoided cost of energy using methods currently used for standard QF avoided cost rates would be more appropriate than doing so with GRID. Therefore, if the Commission decides to direct utilities to use a PURPA framework for this element, I encourage clarifying that utilities should estimate the marginal avoided

[4] SB 1547 (2016), Section 22(6)(a)
[5] AR 603 Proposed Rules, http://edocs.puc.state.or.us/efdocs/HNA/ar603%28ar%20603%20proposed%20rules.pdf%29hna18280.pdf
[6] Order 16-130, Mar 29 2016
[7] UM 1716, PGE/100 Brown-Murtaugh/4.
[8] UM 1716, PAC/100 Dickman/12.
[9] UM 1610, Order 16-174 at 20 (May 13 2016).

cost of energy using the methods currently employed for their standard QF avoided cost rates.

Q. What were the Next Steps for "Energy" outlined in the Straw Proposal?

A. The Commission proposed that the utilities produce this value in Phase II.[10] A future workshop on this element, which will not inform Phase II, will "examine the need for and costs of modeling refinements to estimate the marginal avoided cost of energy at a smaller time interval".[11]

Q. Should utilities be able to permanently estimate the marginal avoided cost of energy using the methods that utilities currently use to calculate their QF avoided costs?

No. If the Commission adopts a PURPA framework for "Energy", utilities should only be able to estimate the marginal cost of energy using standard avoided cost rate methods on a temporary basis because these methods lack the granularity necessary to accurately estimate the RVOS. I agree with the Straw Proposal's framework that would see a transition to more granular marginal cost of energy estimates, and I encourage the Commission to set a target date for the completion of such a transition.

Q. What was the Straw Proposal Definition for Element 2—Generation Capacity?

A. "The marginal avoided cost of building and maintaining the lowest net cost generation capacity resource."[12]

Q. What was the Straw Proposal Methodology for determining the value of Element 2—Generation Capacity?

[10] Order No. 17-085 at 3 (Mar 06, 2017)
[11] Order No. 17-085 at 3 (Mar 06, 2017)
[12] Order No. 17-085 at 3 (Mar 06, 2017)

A. "Utilities shall use their IRP resource sufficiency/deficiency demarcation and shall determine the capacity value consistent with the Commission's standard QF avoided cost guidelines. Utilities shall use their IRP's value for solar's contribution to capacity or peak. (For reference, when the utility is resource sufficient, the QF receives standard prices based on the market energy price. See Order No. 16-174. When the utility is resource deficient, the QF receives standard prices based on the capacity and energy costs of a proxy resource, scaled for solar's contribution to peak. See Order No. 16-174 and Order No. 16-337."[13]

Q. Do you have any concerns with utilities using their Integrated Resource Plan (IRP) resource sufficiency/deficiency demarcation when calculating the value of this element?

A. Yes. Using the IRP resource sufficiency/deficiency demarcation could lead to an inaccurate estimate of "Generation Capacity" due to circularity in the valuation process. For example, if the utility anticipates increased behind-the-meter solar adoption in its IRP load forecast (i.e. the utility reduces its load forecast owing to increased customer self-generation), this could result in the utility's resource sufficiency year being pushed out. A later resource deficiency year would result in reduced capacity value for solar, and therefore a lower RVOS; this, in turn, could result in lower adoption of solar, which could lead to the utility becoming deficient earlier.[14]

To provide the best available estimate of this element, the methodology must address the circularity concern outlined above. Mr. Olson's recommendation to avoid

13 Order No. 17-085 at 3–4 (Mar 06, 2017)
14 UM 1716, TASC/200 Gilfenbaum/5-6

the circularity concern is that "any solar resources whose compensation is tied to the RVOS should be excluded from the utility's forecast of the resource-balance-year."[15] I suggest that the Commission direct utilities to address this circularity issue as Mr. Olson recommended.

Q. Should the element "Generation Capacity" be zero during a utility's sufficiency period?

No. Setting "Generation Capacity" at zero would undervalue the RVOS during the sufficiency period because solar systems provide a "Generation Capacity" benefit even in years when they may not help displace the procurement of a capacity resource. The straw proposal defines "Generation Capacity" as "[t]he marginal avoided cost of building and maintaining the lowest net cost generation capacity resource."[16] In years before a utility plans its next procurement of a capacity resource, a solar system will help the utility avoid costs associated with operating and maintaining the lowest net cost generation capacity resource. As Mr. Olson rightly points out, the cost of fixed operations and maintenance (fixed O&M) captures that benefit.[17] Hence, I encourage the Commission to clarify that the element "Generation Capacity" will be equal to fixed O&M in years prior to a planned capacity procurement.

Q. What were the Next Steps for "Generation Capacity" outlined in the Straw Proposal?

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[15] **UM 1716, Staff/400 Olson/15.**
[16] **UM 1716, Order No. 17-085 at 3 (Mar. 06 2017).**
[17] **UM 1716, Staff/400 Olson/5.**

A. The Commission proposed that the utilities produce this value in Phase II.[18] The Commission proposes that during Phase II, the utilities "run sensitivity analyses to determine when the level of solar PV penetration has a material effect on the timing of the need for new resources (the deficiency demarcation)." [19]

Q. Would the proposed sensitivity analysis inform the discussion on circularity concerns?

A. Yes. The proposed sensitivity analysis would determine the magnitude of the effect of solar penetration on a utility's resource balance year.

Q. What was the Straw Proposal Definition for Element 3—Transmission and Distribution Capacity?

A. **"**Avoided or deferred costs of expanding, replacing, or upgrading transmission and distribution (T&D) infrastructure."[20]

Q. What was the Straw Proposal Methodology for determining the value of 3—Transmission and Distribution Capacity?

"Utilities shall develop a system-wide average of the avoided or deferred costs of expanding, replacing, or upgrading T&D infrastructure attributable to incremental solar penetration in Oregon service areas. The avoided or deferred costs shall be for growth-related investments."[21]

Q. What were the Next Steps for "Transmission and Distribution Capacity" outlined in the Straw Proposal?

[18] Order No. 17-085 at 4 (Mar 06, 2017)
[19] Order No. 17-085 at 4 (Mar 06, 2017)
[20] Order No. 17-085 at 4 (Mar 06, 2017)
[21] Order No. 17-085 at 4 (Mar 06, 2017)

The Commission proposed that the utilities produce this value in Phase II.[22] A future workshop on this element, which will not inform Phase II, will "examine ways to generate location-specific T&D capacity deferral estimates (and the information needed to make such estimates) and to assess the costs imposed on distribution system by increasing penetration of solar PVs." [23]

Q. Do you have any concerns with the proposal that a system-wide average be used?

A. Yes. I am concerned with using a "system-side average" to value "Transmission and Distribution Capacity" because more granular data appears to already be available. Transmission and Distribution Deferral highlights the potential use of distributed energy resources to defer traditional investments (expansions, replacements or upgrades) in transmission and distribution infrastructure, an approach that utilities have already begun to explore. The Straw Proposal Methodology suggests that a "system-wide average" value of this element be developed by the utilities, and that Staff convene a workshop or technical conference at a later date "to examine ways to generate specific T&D capacity deferral elements".

However, PacifiCorp's 2016 Annual Smart Grid Report indicates that location-specific data may already be readily available. PacifiCorp's 2016 Annual Smart Grid Report states that the company has "recognized the role that distributed energy resources (DER) may play in the deferral or offset of traditional poles and wires infrastructure investments. "[24] The Smart Grid Report describes how PacifiCorp has developed a "Distributed Energy Resources Template" that "can be used by

[22] Order No. 17-085 at 3 (Mar 06, 2017)
[23] Order No. 17-085 at 3-4 (Mar 06, 2017)
[24] UM 1667, Pacific Power Smart Grid Annual Report 2016, Aug 01, 2016 pp 21–22.

transmission and distribution planners to screen system issues and quantify the feasibility and affordability of a DER alternative solution in comparison to traditional solutions."[25] In terms of solar, the screening tool considers hourly facility load data—for example at a power transformer—and compares that to annual solar data and costs to determine whether it is more feasible and affordable to deploy solar in order to defer or offset transformer replacement. Such tools will likely prove to be an invaluable resource when determining the value of this element and could potentially enable locational values to be determined earlier than anticipated. I encourage the Commission to adopt use of such tools in valuing this element because they will lead to a better estimate of the RVOS and will thus help accomplish the Commission's goal.

Q. What was the Straw Proposal Definition for Element 4—Line Losses?

A. "Avoided marginal electricity losses from the point of generation to the point of delivery."[26]

Q. What was the Straw Proposal Methodology for determining the value of Element 4—Line Losses?

A. "Utilities shall develop estimates of avoided marginal line losses attributable to increased penetration of solar PV systems in Oregon service areas. The incremental line loss estimates shall reflect the hours solar PV systems are generating electricity."

Q. Does the Straw Proposal's language on Line Losses concern you?

A. Potentially. I encourage the Commission to clarify that its definition and methodology of Line Losses implies a multiplicity of values. The Straw Proposal

[25] UM 1667, Pacific Power Smart Grid Annual Report 2016, Aug 01, 2016 pp 21–22.
[26] Order No. 17-085 at 5 (Mar 06, 2017)

Definition requires an estimate to be developed for electricity losses "from the point of generation to the point of delivery." This definition implies a multiplicity of values rather than a system-wide average value as is proposed for Element 3, Transmission and Distribution Capacity.

Q. Should a system-wide average be used for this element?

A. No. Using averages for an element, whether it is Energy or Line Losses, could lead to the loss of important information about which hours are of higher value and about the magnitude and frequency of any changes in the RVOS. As a result, using averages for Line Losses would lead to an estimate of the RVOS that undervalues it.

Q. What were the Next Steps for "Line Losses" outlined in the Straw Proposal?

The Commission proposed that the utilities produce this value in Phase II.[27]

Q. Do you have any further comments on this element?

A. No.

Q. What was the Straw Proposal Definition for Element 5—Administration?

A. "Increased utility costs of administering solar PV programs".[28]

Q. What was the Straw Proposal Methodology for determining the value of Element 5—Administration?

A. "Utilities shall develop estimates of the direct, incremental costs of administering solar PV programs including staff, software, interconnection, and other utility costs."[29]

Q. Are there any costs that should be excluded from this element?

[27] Order No. 17-085 at 5 (Mar 06, 2017)
[28] Order No. 17-085 at 5 (Mar 06, 2017)
[29] Order No. 17-085 at 5 (Mar 06, 2017)

A. Yes. As suggested in the presentation given by Arne Olson of Energy and Environmental Economics ("E3") during the Hearing on January 31, 2017, Renewable Northwest recommends that Administration costs "Should exclude cost of interconnection paid by the interconnecting solar generator."[30]

Q. What were the Next Steps for "Administration" outlined in the Straw Proposal?

The Commission proposed that the utilities produce this value in Phase II, adding that the utilities "shall provide justification for their method and value".[31]

Q. Do you have any further comments on this element?

A. No.

Q. What was the Straw Proposal Definition for Element 6—Market Price Response?

A. **"**The change in utility costs due to lower wholesale energy market prices caused by increased solar PV production."[32]

Q. What was the Straw Proposal Methodology for determining the value of Element 6—Market Price Response?

A. This is, "To be evaluated with follow-up."[33]

Q. Do you have any additional information to inform this follow-up?

A. Yes. A useful foundation was provided in Staff's Direct Testimony.[34] The key variable to determine is the change in market price, potentially Mid-Columbia, due to

[30] UM 1716, Hearing Jan 31, 2017, "Proposed Oregon RVOS Methodology Overview", Slide 13, E3, Arne Olson
[31] Order No. 17-085 at 5 (Mar 06, 2017)
[32] Order No. 17-085 at 5 (Mar 06, 2017)
[33] Order No. 17-085 at 5 (Mar 06, 2017)
[34] Staff/200, Olson/33

the reduced demand for energy as a result of solar generation. During the Hearing on January 31, 2017, E3's Arne Olson observed that, "There is existing literature that estimates this effect using market price data".[35] One example of existing literature is the discussion of "market price response" in a report prepared for regulated utilities in Iowa.[36] I look forward to further evaluating the methodology for determining market price response.

Q. What were the Next Steps for "Market Price Response" outlined in the Straw Proposal?

A. The Commission proposed that, "in tandem with Phase II", a workshop or technical conference should be convened to:

> …examine an empirically-sound way to estimate the impact of incremental solar generation in Oregon service areas on wholesale market prices. Using an acceptable method, utilities shall develop preliminary estimates of the impacts of incremental solar generation on both wholesale purchases and sales. Utilities shall report their preliminary results in Phase II.[37]

Q. Do you seek any further clarity on the next steps?

A. Yes. I encourage the Commission to clarify whether the "preliminary results" for this element will be used to inform Phase II or just reported for use in connection with the RVOS at a later date.

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[35] UM 1716, Hearing Jan 31, 2017, "Proposed Oregon RVOS Methodology Overview", Slide 14, E3, Arne Olson

[36] PV Valuation Methodology—Recommendations for Regulated Utilities in Iowa, February 26, 2016, Prepared for Midwest Renewable Energy Association by Ben Norris, Clean Power Research https://appsrv.pace.edu/VOSCOE/?do=DownloadFile&res=7D3DN7041316031440

[37] Order No. 17-085 at 5 (Mar 06, 2017)

Q. What was the Straw Proposal Definition for Element 7—RPS Compliance?

A. **"**Avoided net incremental cost of purchasing renewable energy credits (RECs) to satisfy the Renewable Portfolio Standard (RPS)."[38]

Q. What was the Straw Proposal Methodology for determining the value of Element 7—Market Price Response?

A. "The levelized cost of the marginal renewable resource installed in the year when utilities need to act to comply with RPS requirements less energy, capacity, and environmental compliance values, plus any integration cost. Utilities shall estimate an avoided value based on reduction in load attributable to incremental solar generation in Oregon service areas."[39]

Q. Do you agree with this methodology?

A. Yes. For the reasons described in prior testimony, I welcome the clarification that an avoided RPS compliance value should be based on a reduction in load attributable to incremental solar generation in Oregon service areas.

Q. What were the Next Steps for "RPS Compliance" outlined in the Straw Proposal?

The Commission proposed that the utilities produce this value in Phase II, with an exemption for Idaho Power.[40]

Q. Do you have any further comments on this element?

A. No.

Q. What was the Straw Proposal Definition for Element 8—Integration and Ancillary Services?

[38] Order No. 17-085 at 6 (Mar 06, 2017)
[39] Order No. 17-085 at 6 (Mar 06, 2017)
[40] Order No. 17-085 at 6 (Mar 06, 2017)

A. "Change in a utility's need for ancillary services due to changes in metered load and net load variability. Includes contingency reserves (spin and non-spin) needed for sudden outages; load following reserves for fluctuations over the 5 to 60 minute time scale; and regulation reserves to accommodate sub-5 minute fluctuations."[41]

Q. What was the Straw Proposal Methodology for determining the value of Element 8—Integration and Ancillary Services?

A. "Utilities will make estimates of integration costs based on acknowledged wind and solar integration studies. Utilities will assign a value of zero to ancillary services benefits of increased penetration of solar PVs."[42]

Q. Do you have comments on the proposed definition of this element?

A. Yes. As I explain below, contingency reserve requirements will likely not be significantly affected by increased solar penetration, but there may be some impact on regulation reserve and following reserve requirements. The Straw Proposal Definition includes contingency reserves, load following reserves, and regulation reserves. This reflects the list of grid services "affected" as outlined by Arne Olson of Energy and Environmental Economics ("E3") during the Hearing of January 31, 2017. [43] It is important to understand what services these different types of reserves provide in order determine a utility's change in need for these services due to "changes in metered load and net load variability" as well as increased solar penetration in general.[44]

[41] Order No. 17-085 at 6 (Mar 06, 2017)
[42] Order No. 17-085 at 6 (Mar 06, 2017)
[43] UM 1716, Hearing Jan 31, 2017, "Proposed Oregon RVOS Methodology Overview", Slide 12, E3, Arne Olson
[44] Order No. 17-085 at 6 (Mar 06, 2017)

Q. How might contingency reserves be affected by solar?

As indicated in the Straw Proposal Definition, Contingency Reserves (also called spinning and non-spinning reserves) are "needed for sudden outages".[45] The National Renewable Energy Laboratory ("NREL") provides further clarity, describing contingency reserves as:

> …capacity available for assistance during rare, sudden events that require more severe balancing than that needed during normal conditions. These events are typically caused by the sudden loss of a large generating unit of the loss of a large block of load.[46]

Given that the majority of metered loads reduced by solar generation are likely to be small and residential, and that solar generating systems themselves are modular and relatively smaller in size compared to traditional generation, additional contingency reserves are unlikely to be needed to cover the sudden loss of a large solar generation unit. NREL concluded that:

> Generally, variations caused by variable renewable generation such as solar energy are not instantaneous; thus, increased solar penetrations on a power system will likely not impact required contingency reserves.[47]

PacifiCorp holds contingency reserves "equal to three percent of generation plus three percent of load".[48] To the extent that behind-the-meter solar can reduce a

[45] Order No. 17-085 at 6 (Mar 06, 2017)
[46] NREL, Impacts of Solar Power on Operating Reserve Requirements, Dec 2012 http://www.nrel.gov/docs/fy13osti/56596.pdf
[47] NREL, Impacts of Solar Power on Operating Reserve Requirements, Dec 2012 http://www.nrel.gov/docs/fy13osti/56596.pdf
[48] LC 67, PacifiCorp 2017 IRP, p 261.

customer's need for load served by the utility, this could also lead to a reduction in the amount of contingency reserves that need to be carried.

Q. How might load-following reserves be affected by solar?

A. The Straw Proposal Definition describes Load-Following Reserves (also called balancing reserves) for "fluctuations over the 5 to 60 minute time scale".[49] NREL adds:

> …capacity above or below scheduled generation used to correct anticipated imbalances on the system…because longer-term solar forecasts do not have perfect accuracy, as more solar power is added to an electric power system, it is possible that the need for following reserves may increase.[50]

Q. How might regulation reserves be affected by solar?

The Straw Proposal Definition describes Regulation Reserves (also called regulating reserves, automatic generation control, and load frequency control) as required to "accommodate sub-5 minute fluctuations".[51] NREL adds that such reserves are:

> …capacity above or below scheduled generation used to correct the continuous, fast, frequent changes in load and generation and any differences from forecasted conditions…Because photovoltaic solar can vary within a market interval and solar forecasts do not have perfect accuracy, as more solar power is added to an electric power system, regulating reserve requirements will likely be affected.[52]

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[49] Order No. 17-085 at 6 (Mar 06, 2017)
[50] NREL, Impacts of Solar Power on Operating Reserve Requirements, Dec 2012 http://www.nrel.gov/docs/fy13osti/56596.pdf
[51] Order No. 17-085 at 6 (Mar 06, 2017)
[52] NREL, Impacts of Solar Power on Operating Reserve Requirements, Dec 2012 http://www.nrel.gov/docs/fy13osti/56596.pdf

Q. Can you summarize how reserves might be affected by solar?

A. NREL's publication on "Impacts of Solar Power on Operating Reserves" indicates that regulation reserve requirements are likely to be affected, and it is possible that the need for following reserves may increase, but there will likely not be an impact on required contingency reserves. However, NREL concludes that "more accurate wind and solar forecasts will likely reduce operating reserve requirements significantly" and "new technologies—including energy storage, demand response, and variable generation itself—can provide components of needed operating reserves".[53] Given these conclusions, it will be important to ensure that the RVOS is updated regularly to be able to capture the benefits of more accurate forecasts and technology synergies.

Q. What were the Next Steps for "Integration and Ancillary Services" outlined in the Straw Proposal?

The Commission proposed that the utilities produce this value in Phase II.[54] A future workshop on this element, which will not inform Phase II, will "evaluate the incremental system benefits from enabled advanced inverters and ways to evaluate those benefits." [55]

Q. Do you have any further comments on this element?

A. No.

Q. What was the Straw Proposal Definition for Element 9—Hedge Value?

[53] NREL, Impacts of Solar Power on Operating Reserve Requirements, Dec 2012 http://www.nrel.gov/docs/fy13osti/56596.pdf
[54] Order No. 17-085 at 6 (Mar 06, 2017)
[55] Order No. 17-085 at 6 (Mar 06, 2017)

A. "Avoided cost of utility hedging activities, i.e., transactions intended solely to provide a more stable retail rate over time."[56]

Q. What was the Straw Proposal Methodology for determining the value of Element 9—Hedge Value?

A. This is to be evaluated with follow-up.

Q. Do you have any additional information to inform this follow-up?

A. Yes. During the Hearing of January 31, 2017, E3's Arne Olson observed that, "There is existing literature that estimates the risk premium that is embedded in wholesale commodities prices, relative to expected spot prices".[57] An example of this existing literature is a report prepared for Austin Energy, Texas, which discusses "Natural Gas Price Uncertainty".[58] I look forward to further evaluating the methodology for determining hedge value.

Q. What were the Next Steps for "Hedge Value" outlined in the Straw Proposal?

The Commission proposed that the utilities produce this value in Phase II.[59] A future workshop on this element, which will not inform Phase II, will "examine ways to generate location-specific T&D capacity deferral estimates (and the information needed to make such estimates) and to assess the costs imposed on distribution system by increasing penetration of solar PVs." [60]

Q. Do you have any further comments on this element?

A. No.

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[56] Order No. 17-085 at 6–7 (Mar 06, 2017)
[57] UM 1716, Hearing Jan 31, 2017, "Proposed Oregon RVOS Methodology Overview", Slide 15, E3, Arne Olson
[58] The Value of Distributed Photovoltaics to Austin Energy and the City of Austin, Appendix C, p 90, Prepared for Austin Energy by Clean Power Research, L.L.C., March 17, 2006 http://ilsr.org/wp-content/uploads/2013/03/Value-of-PV-to-Austin-Energy.pdf
[59] Order No. 17-085 at 6-7 (Mar 06, 2017)
[60] Order No. 17-085 at 6-7 (Mar 06, 2017)

Q. What was the Straw Proposal Definition for Element 10—Environmental Compliance?

A. "Avoided cost of complying with existing and anticipated environmental standards."[61]

Q. What was the Straw Proposal Methodology for determining the value of Element 10—Environmental Compliance?

"Utilities shall estimate the avoided cost based on a reduction in carbon emissions from the marginal generating unit. To value future anticipated standards utilities should use the carbon regulation assumptions from their IRP."[62]

Q. What were the Next Steps for "Environmental Compliance" outlined in the Straw Proposal?

The Commission proposed that the utilities produce this value in Phase II and "explain how the value is consistent with IRP assumptions."[63]

Q. Do you have any further comments on this element?

A. No.

Q. What was the Straw Proposal Definition for Element 11—Security, Reliability, and Reserves?

A. "The potential capability of solar, when deployed in combination with other technologies such as energy storage and control systems, to provide backup energy or microgrid islanding capabilities during a loss of service from the utility."[64]

Q. Do you have any concerns with this proposed definition?

[61] Order No. 17-085 at 7 (Mar 06, 2017)
[62] Order No. 17-085 at 7 (Mar 06, 2017)
[63] Order No. 17-085 at 7(Mar 06, 2017)
[64] Order No. 17-085 at 8 (Mar 06, 2017)

Yes, it would be helpful to clarify the name of this element. E3's presentation during the UM 1716 Hearing on January 31, 2017, described the element as "Security, Reliability, Resiliency".[65] Given that reserves are being considered explicitly in Element 8, Integration and Ancillary Services, I assume that the inclusion of "reserves" in Element 11 is a mistake, and that the intent was to include "resiliency."

Q. What was the Straw Proposal Methodology for determining the value of Element 11—Security, Reliability, and Reserves?

A. "The utility shall include an element for security, reliability, and reserves but assign a value of zero currently."[66]

Q. What were the Next Steps for "Security, Reliability, and Reserves" outlined in the Straw Proposal?

A. The Commission proposed a future workshop on this element, which will not inform Phase II, that will "examine methodologies to quantify the value of benefits and the circumstances under which they are applicable, only considering the value provided to the utility system and value that is not already captured in energy, capacity and ancillary services." [67]

Q. What are the connections between this element and UM 1716 Investigation #3 into Reliability Impacts of Solar on the Grid?

A. On January 19, 2016, the Commission held a workshop for UM 1716 Investigation #3—Reliability Impacts of Solar on the Grid.[68] In Order 16-074, the Commission closed Investigation #3 and notified stakeholders of its intention to "pursue a smart

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[65] 1716, Hearing Jan 31, 2017, "Proposed Oregon RVOS Methodology Overview", Slide 12, E3, Arne Olson
[66] Order No. 17-085 at 8 (Mar 06, 2017)
[67] Order No. 17-085 at 8 (Mar 06, 2017)
[68] UM 1716, Staff's Updated Agenda for 1/19/16 Workshop, Jan 15, 2016.

inverter standard in a rulemaking proceeding to be opened later this year".[69] I observe that such a rulemaking did not open in 2016, but acknowledge that the passage of SB 1547 and its associated dockets and rulemakings have filled the Commission's schedule.

Given the urgency with which the Commission sought to pursue a rulemaking on smart inverter standards—which could have ensured that any new solar systems were able to provide some security, reliability and/or resiliency services—I encourage the Commission to clarify the interaction between the proposed smart inverter rulemaking, a workshop or technical conference associated with this RVOS element, and triggers that will enable a non-zero value to be assigned to this element.

III. CONCLUSION

Q. Do you have any further comments?

A. Yes. Below, I comment on both the timing and the interactions between Phase II and the dockets outlined in the proposed next steps.

Q. What are your concerns regarding Phase II?

A. Order 17-085 states that element-specific workshops/technical conferences discussed in the proposed next steps will be "separate from the Phase II calculations…The workshops will not be used to inform Phase II."[70] Element 6, "Market Price Response" and Element 9, "Hedge Value", both have proposed methodologies that are "to be evaluated with follow up" as well as workshops that will run in tandem with Phase II.[71] It would be helpful to clarify that, unlike the next

[69] Order No, 16-074 (Feb 29, 2016)
[70] Order No. 17-085 at 3 (Mar 06, 2017)
[71] Order No. 17-085 at 5 and 6 (Mar 06, 2017)

step workshops for other elements, the workshops for Elements 6 and 7 will actually inform Phase II.

Q. What are your final comments on timing?

A. Given the import of the RVOS for other investigations, it would be helpful to have guidance on how long a time is expected to elapse between the proposed coarse values as determined by the straw proposal methodologies, and the more granular values as informed by future workshops or technical conferences. In addition, from a policy perspective, it would be helpful if the next step workshops were concluded prior to reaching Tier 2 of the Community Solar Program.

Q. Does this conclude your testimony?

A. Yes, thank you.