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.	Initial Brief of Renewable Northwest, Northwest Sustainable Energy for Economic Development, the Oregon Solar Energy Industries Association, and the Northwest Energy Coalition.

I. INTRODUCTION

Renewable Northwest, Northwest Sustainable Energy for Economic Development, the Oregon Solar Energy Industries Association, and the Northwest Energy Coalition (the "Joint Parties") submit this initial brief recommending that the Commission adopt a Resource Value of Solar ("RVOS") methodology that includes the elements "Security, Reliability, Resilience" and "Ancillary Services." These elements should be part of the RVOS methodology because they could directly impact the cost of service to utility customers. Additionally, solar resources already offer, and will increasingly offer, benefits that the methodology would fail to capture without these elements. As a result, an RVOS methodology that does not include the elements "Security, Reliability, Resilience" and "Ancillary Services" would result in a less accurate estimate of the RVOS than a methodology that includes them.

In this brief, the Joint Parties also encourage the Commission to clarify that the RVOS methodology that will emerge from UM 1716 is not limited to being used in connection with any particular program. The Commission opened this investigation by its

own motion and without an intention to pre-judge the uses of the RVOS. As a result, the Joint Parties disagree with arguments that the RVOS methodology is intended to apply to only the Volumetric Incentive Rate ("VIR") Program. We request Commission clarification that the use of the RVOS methodology is not so limited.

II. ARGUMENT

1. The Elements "Security, Reliability, Resilience" And "Ancillary Services" Should Be Part of the RVOS Methodology.

The methodology presented by Staff excludes the elements "Security, Reliability, Resilience" and "Ancillary Services." [1] However, excluding these elements "Security, Reliability, Resilience" and "Ancillary Services" is inconsistent with the Commission's guidance for this investigation because these elements meet the Commission's threshold for inclusion and capture important benefits that solar offers. In Order 15-296, the Commission stated that its aim in Investigation #1 is to "get the best available estimate or approach to developing an estimate of the resource value of solar." [2] In that order, the Commission declined to identify elements for inclusion in the RVOS methodology, but instead provided guidance on its evaluation of the elements, stating that it would "only consider elements that *could* directly impact the cost of service to utility customers." As an example of such an element, the Commission stated that it would consider the "potential financial cost to utilities of future carbon regulation."[3] This statement suggests that elements that may have no current impact on the cost of service to utility customers, but that could have an impact in the future, are ripe for inclusion in the RVOS

[1] Staff/200 Olson/14 (respectively Stakeholder Elements No. 6 and 11).
[2] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).
[3] *Id*.

methodology. The Commission also stated that "any parties proposing inclusion of any element must make [the] threshold determination" as to whether it could directly impact the cost of service to utility customers.[4]

As discussed below, the elements "Security, Reliability, Resilience" and "Ancillary Services" capture benefits of solar that could directly impact the cost of service to utility customers and should, therefore, be part of the RVOS methodology. Witnesses for Staff appear reluctant to include these elements because they see this RVOS methodology as being intended to calculate an RVOS that is generally applicable to a solar system installed by retail, mass-market customers.[5] However, the Commission has not limited the methodology to calculating the RVOS only for mass-market solar systems. Even if the Commission had imposed such a limitation, what constitutes a "mass-market solar system" will continuously change, and, as discussed below, will likely include systems capable of offering the values captured by "Security, Reliability, Resilience" and "Ancillary Services." A methodology that meets the Commission's aim to "get the best available estimate or approach to developing an estimate of the [RVOS]"[6] must be robust enough to capture the value offered by those elements.

Additionally, an RVOS methodology that includes the elements "Security, Reliability, Resiliency" and "Ancillary Services" would be a valuable tool from a market, policy, and regulatory perspective because it could help the Commission, Staff, utilities, and stakeholders understand the potential implications of different decisions. For example, such an RVOS methodology could be used to explore the hypothetical resource

[4] *Id*.
[5] Staff/300 Dolezel/5 at 6-16; Staff/400 Olson/6 at 1-19.
[6] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).

value of solar if solar owners were compensated for providing reactive power for voltage support (at the expense of active power). Hence, including these elements in the methodology is consistent with the Commission's view of the RVOS as a tool that could have "many potential policy and ratemaking uses"[7] and will better meet the Commission's aim to get "the best available estimate or approach to developing an estimate of the resource value of solar."[8]

1.1 The best approach to developing an estimate of the RVOS includes the element "Security, Reliability, Resiliency."

The element "Security, Reliability, Resiliency" should be part of the RVOS methodology because it meets the threshold for inclusion since it "could directly impact the cost of service to utility customers."[9] As explained below, the current definition of the element provided by Mr. Olson fails to capture much of the value that solar already offers, and that solar could offer, with regard to security, reliability, and resiliency. However, regardless of whether the Commission adopts Mr. Olson's narrow definition of the element or the one that we suggest, excluding the element from the RVOS methodology would lead to an estimate of the RVOS that does not include some of the value of solar. Hence, an RVOS that does not include "Security, Reliability, and Resiliency" would fail to meet the Commission's aim to get "the best available estimate or approach to developing an estimate of the resource value of solar."

[7] *Id*.
[8] *Id*.
[9] *Id*.

1.1.1 The current definition of "Security, Reliability, Resiliency" fails to capture important benefits of solar.

The element "Security, Reliability, Resiliency" should capture the benefits of solar that stakeholders and Staff identified during the workshops preceding Staff's July 2015 Comments. In its July 2015 Comments, Staff recommended inclusion of the element "Security: Reliability, Resiliency, and Disaster Recovery" in the RVOS investigation.[10] Staff offered the following perspective on the element:

> The stability associated with distributed generation (e.g., versus relying on long-distance generation) may bring benefits from: 1) reductions in outages by reducing T&D network congestion; 2) minimization of outages resulting from a more diverse and dispersed electricity supply. As solar penetration increases, distributed generation could add significant value to the system in terms of resiliency and stability.[11]

In contrast, Mr. Olson defines "Security, Reliability, Resiliency" as "[t]he potential capability of solar, when deployed in combination with other technologies, to provide backup energy or microgrid islanding capabilities during a loss of service from the utility."[12] Compared to Staff's definition in the July 2015 Comments, Mr. Olson's more narrow definition fails to capture much of the value that solar offers and could offer due to the definition's focus on microgrid applications.

The element "Security, Reliability, Resiliency" should also capture the benefits that solar offers ratepayers outside of microgrid applications.[13] For example, the element currently fails to capture benefits that solar could provide ratepayers by potentially reducing the likelihood of outages[14] as well as by providing voltage support.[15] Witnesses

[10] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, STAFF's Comments at 6 (Jul. 20 2015).
[11] *Id*.
[12] Staff/200 Olson/23.
[13] ODOE/200 Broad and DelMar/6.
[14] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, STAFF's Comments at 6 (Jul. 20 2015).

for Staff oppose inclusion of the element on the basis that this RVOS methodology is meant to calculate an RVOS that is generally applicable to a solar system installed by retail, mass-market customers.[16] Instead, Mr. Olson recommends that "…these very specific types of benefits be valued separately for the few solar installations that may provide them."[17] However, the Commission has not limited the methodology for use only in calculating the RVOS for mass-market solar systems. Besides, what constitutes a mass-market solar system will continue to evolve. At one point, as acknowledged by Mr. Olson, only a few solar projects had tracking capability, yet it is now relatively common in utility scale systems.[18] Similarly, while the capability to provide "Security, Reliability, Resiliency" services, as currently defined, may not be common in Oregon now, it likely will be in the future.[19] An RVOS methodology that is not robust enough to capture "Security, Reliability, Resiliency" benefits cannot be the best available estimate or approach to developing an estimate of the RVOS. Therefore, the RVOS methodology should include an element that also captures the "Security, Reliability, Resiliency" benefits that solar offers outside of microgrid applications.

Finally, as currently defined, the element "Security, Reliability, Resiliency" also fails to capture the value that solar could provide ratepayers in a scenario of disaster recovery. For example, solar could provide power during an outage at public buildings like hospitals and emergency shelters, as well as to critical utility operations centers.[20] Mr. Olson argues that such potential value does not warrant inclusion in the RVOS

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[15] ODOE/100 Broad/2.
[16] Staff/300 Dolezel/4; Staff/400 Olson/6.
[17] Staff/400 Olson/11.
[18] Staff/200 Olson 40 at line 3.
[19] *See* Sandia National Laboratories, "Opportunities and Challenges in Using Advanced Inverter Functionality", Rasool Aghatehrani, PV Grid Integration into Distribution Workshop, May 2016.
[20] RNW, OSEIA, NWEC, NW SEED/100 O'Brien/5; ODOE/200 Broad and DelMar/6.

methodology because the value of power provided by solar during an outage accrues to the solar owner, not to the utility ratepayer as a whole.[21] However, utilities in Oregon have distinct service territories. Hence, in the case of a public building or a critical utility operations center, the value that solar could provide in a disaster recovery scenario would likely accrue largely to ratepayers in that service territory.

1.1.2 "Security, Reliability, Resiliency" meets the threshold for inclusion in the RVOS methodology even if the Commission accepts Mr. Olson's definition of the element.

Even if the Commission accepts Mr. Olson's narrow definition of "Security, Reliability, Resiliency", incorporating this element into the RVOS methodology would be consistent with the Commission's guidance for this investigation. Mr. Olson acknowledges that "Security, Reliability, Resiliency", as he defines it, could provide value that accrues to utility ratepayers.[22] However, he did not incorporate the element into the methodology because "this [value] would depend on solar being deployed in a microgrid application that would provide electric service to utility ratepayers that do not adopt solar PV … and [he is] not aware of such applications in Oregon."[23] We disagree with Mr. Olson's recommendation to exclude the element. The Commission's threshold for inclusion in the RVOS is that an element "*could* directly impact the cost of service to utility customers,"[24] not that an element currently impacts the cost of service to utility customers. Therefore, an RVOS methodology that does not include the element fails to

[21] Staff/400 Olson/12.
[22] Staff/200 Olson/23-25.
[23] Staff/200 Olson/23.
[24] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).

capture some of the value of solar and cannot be the "best available estimate or approach to developing an estimate for the [RVOS]".[25]

That an element has a current value of zero does not justify exclusion from the RVOS methodology. For example, the methodology includes two elements with current values that may be zero. For example, Idaho Power Company ("Idaho Power") will not have an RPS compliance obligation until 2025.[26] Still, the element "RPS Compliance" will be part of the RVOS methodology for Idaho Power. According to Mr. Olson, "Idaho Power should include an RPS compliance value beginning in 2025."[27] Similarly, Mr. Olson does not exclude the element "Environmental Compliance" from the RVOS methodology although, according to utility witnesses, utilities do not currently face any environmental compliance cost.[28] We agree with Ms. Dolezel and Mr. Olson that "Environmental Compliance" and "RPS Compliance" should be included in the RVOS methodology even though their current value may be zero. The Commission implied that those elements are ripe for inclusion by listing "the potential financial cost to utilities of future carbon regulation" as an example of elements that it would consider.[29] Hence, an element currently valued at zero but that may have an ascertainable value in the future should not be excluded from the RVOS methodology so long as it "could directly impact the cost of service to utility consumers".[30]

[25] *Id*.
[26] Idaho Power/100 Youngblood/12 at 19-22.
[27] Staff/400 Olson/13 at 19-22.
[28] Idaho Power/100 Youngblood/14 at 5-6; PAC/100 Dickman/15 at 17-22.
[29] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).
[30] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).

Importantly, the Alliance for Solar Choice ("TASC") also points out that Energy and Environmental Economics, Inc—the company with which Mr. Olson is a Partner[31]—developed an RVOS methodology for California (the CA NEM 2.0 Public Tool) that provided stakeholders the "option of including additional benefits that were not directly quantified within the model".[32] As TASC describes it, this "kind of user-defined input in previous models [enables the RVOS] to capture values where there isn't agreement on how they should be calculated."[33] This example shows that previous RVOS models with which Mr. Olson has worked have the capability to incorporate elements which may have zero value in Oregon currently, but which could impact a customer's cost of service in the future.

Like "Environmental Compliance" and "RPS Compliance", the element "Security, Reliability, Resiliency" should be part of the RVOS methodology because its value will be ascertainable in the future even if it may currently be zero. As Mr. Olson acknowledges, the value of elements changes overtime.[34] In fact, the time when "Security, Reliability, Resiliency" will have a value is foreseeable because microgrids will likely soon be a reality in the region as indicated by a series of projects in the region. For example, Portland General Electric's Salem Smart Power Center allowed the utility to "simulate a high-reliability zone, also known as a microgrid, by accessing power from third-party standby generators to continue providing electricity to customers in the event of a power outage."[35] Also, the Oregon Department of Energy announced late last year

[31] Staff/200 Olson/2.
[32] TASC/200 Gilfenbaum/2 at 12–13.
[33] *Id*. at 7-8.
[34] Staff/200 Olson 27.
[35] Portland General Electric, "Salem Smart Power Center: Storing energy and integrating renewables" available at https://www.portlandgeneral.com/our-company/energy-strategy/smart-grid/salem-smart-power-center.

that it was going to award federal and state funds to Eugene Water & Electric Board for a pilot project "that demonstrates energy storage and "microgrid" technology and how it can improve community resiliency and response in emergency situation.[36] Finally, the state continues its commitment to making sure that the region is resilient in case of a natural disaster.[37] To meet the Commission's goals for this investigation, the RVOS methodology should be robust enough to capture such benefits as they materialize.

1.2 The RVOS methodology should include the element "Ancillary Services" to capture the value of the ancillary services that solar will likely provide to a utility's system.

The RVOS methodology should include the element "Ancillary Services" because such an element could directly impact the cost of service to utility customers. An RVOS methodology that does not include the element would fail to account for the value of the ancillary services that solar could provide to a utility's system and that "Ancillary Services" captures. Hence, such a methodology would fail to meet the Commission's aim to get "the best available estimate or approach to developing an estimate of the resource value of solar."[38]

None of the elements that Mr. Olson included in the RVOS methodology capture the value of ancillary services that stakeholders and Staff identified prior to Staff's July 2015 Comments. In its July 2015 Comments, Staff recommended the inclusion of the elements "Integration Impacts" and "Ancillary Services and Grid Support" in the RVOS

[36] Oregon Department of Energy, "ODOE Storage Grant to Spur Eugene Water & Electric Board Toward a Cleaner, More Resilient Energy System" (Dec. 16 2015) available at https://www.oregon.gov/energy/Pages/2015-39-Energy-Storage.aspx.
[37] *See* Governor's Office, "Senate Confirms Oregon's First Resilience Officer" (May 25, 2016) available at https://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=1122.
[38] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).

investigation.[39] Staff's perspective on "Integration Impacts" was that "[t]he cost of the operational modifications needed to accept variable/intermittent solar generation onto the utility system is a solar resource cost element to the utility system and customer."[40] As for "Ancillary Services and Grid Support", Staff offered the following perspective:

> Solar system inverters can provide grid support through voltage support and frequency regulation. The use of advanced inverters is being sought by utility executives across the nation and ancillary services from these will almost certainly be available in the near future. Modeling the costs and benefits of ancillary services can also inform policy decisions like those related to interconnection technology requirements and may provide a hedging benefit. [41]

As Staff's perspective shows, the definition of "Ancillary Services and Grid Support" that Staff and stakeholders originally envisioned captures the positive value of the ancillary services that solar can provide to a utility's system.

In contrast, the elements that Mr. Olson proposed for inclusion in the RVOS methodology do not capture the positive value of the ancillary services that solar could provide. Mr. Olson included the element "Integration and Ancillary Services" and defined it as follows:

> The increased costs associated with integrating solar PV into the electrical system. These costs include additional spinning reserve and ancillary service requirements to facilitate the variability and intermittency of solar PV production, as a well as any change in ancillary service procurement due to reduction in metered load".[42]

"Integration and Ancillary Services" captures the avoided ancillary services due to a reduction in metered load. However, as Mr. Olson's definition indicates, the element

[39] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, STAFF's Comments at 6-7 (Jul. 20 2015).
[40] *Id*. at 6.
[41] *Id*. at 7.
[42] Staff/200 Olson/22 at row 6.

"Integration and Ancillary Services" fails to capture the positive value of the ancillary services that solar could provide to the system.

"Ancillary Services" should not be excluded from the RVOS methodology because it current value may be zero. Witnesses for Staff acknowledge that the methodology does not account for the ability of solar to provide ancillary services,[43] but suggest that it is not appropriate to include an element that captures this value because utilities cannot yet extract and/or compensate for it.[44] However, as we explained above with regard to "Security, Reliability, Resiliency", that an element has a current value of zero does not warrant exclusion from the RVOS methodology because the threshold for inclusion set by the Commission is that the element "*could* directly impact the cost of service to utility customers" (emphasis added), not that it currently impacts the cost of service to utility customers.[45] In fact, the Commission included as an example "the potential financial cost to utilities of future carbon regulation," an element that does not yet have a value but that likely will have one in the foreseeable future.[46] Like the potential financial costs to utilities of future carbon regulation, these "valuable ancillary services are soon to be unlocked with the adoption of smart inverters."[47] In fact, in its Order closing Investigation #3 of this docket, the Commission expressed its intent to "pursue a smart inverter standard in a rulemaking proceeding to be opened later this year."[48] Since the value of the ancillary services that solar would offer in the foreseeable future will impact cost of service because utilities will have to compensate solar PV owners, the element

[43] Staff/300 Dolezel/5 at 6-16; Staff/400 Olson/6 at 1-3.
[44] Staff/300 Dolezel/5 at 6-16.
[45] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).
[46] *Id*.
[47] ODOE 200/Broad and DelMar/8 at 8-12.
[48] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 16-074 (Feb. 29 2016).

"Ancillary Services" will directly impact the cost of service to utility customers and should be part of the RVOS methodology.

2. The RVOS Methodology Should Not Be Limited for Use in Any Particular Program.

The RVOS methodology resulting from this docket should not be limited to use in connection with the VIR program or any other program in particular. Neither the Legislature nor the Commission have limited the use of the RVOS methodology that will emerge from this investigation to any particular program. Michael Youngblood, witness for Idaho Power, argued in his testimony that "the definition and application of RVOS was intended by the Legislature to be limited to Solar PV Programs [or the VIR Program]."[49] In so arguing, he referenced the comments that Idaho Power filed in this docket on July 20, 2015.[50] In those comments, Idaho Power argued that "to the extent that this docket was opened to evaluate the resource value of solar for purposes of implementing the VIR Pilot Program," the scope of the docket should be informed by definition of "resource value" in ORS 757.360(5).[51] However, the Commission opened this investigation on its own motion,[52] not pursuant to any particular statute or to evaluate the resource value of solar for any particular program. In fact, in Order 15-296, the Commission distinguished this investigation from proceedings to determine the resource value of solar for the VIR Pilot Program.[53] Additionally, the Commission expressly stated

[49] Idaho Power/100 Youngblood/8 at 8-10.
[50] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Idaho Power Company's Comments (Sep. 28 2015).
[51] *Id* at 9.
[52] *In the Matter of Investigation to Determine the Resource Value of Solar*, Docket No. UM 1716, Order No. 15-296 at 2 (Sep. 28 2015).
[53] *Id*. at footnote 2 ("Three years ago we considered, but did not decide, methods to calculate the resource value of solar for the VIR Pilot Program.").

that it was not "prejudging potential future uses" of the methodology. Therefore, the RVOS methodology that will emerge from this docket is not—and should not be—limited to use in connection with the VIR Program or any other program.

III. CONCLUSION

For the reasons stated above, we recommend that the Commission adopt an RVOS methodology that includes the elements "Security, Reliability, Resilience" and "Ancillary Services," and clarify that this RVOS methodology is not limited to use in connection with any particular program.

RESPECTFULLY SUBMITTED this 26th day of August, 2016

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