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.	STAFF CLOSING BRIEF

I. Staff recommends the Commission adopt its proposed RVOS Model and the list of ten elements that should be valued in the RVOS.

Staff recommends that in this phase of the Investigation to Determine the Resource Value of Solar (RVOS), the Commission adopt Staff's proposed methodology for determining RVOS and Staff's recommendation regarding the ten "elements" of solar generation that should be valued in the methodology. Staff's proposed methodology was developed by Energy and Environmental Economics (E3) and is a Microsoft Excel-based model that employs a time- and area-specific marginal cost approach to estimate the impact to the electric system of additional electric load or generation (hereinafter the RVOS Model).

In Staff's proposed methodology, an hourly marginal avoided cost is calculated for each of the following ten elements for each hour of the 8760 hours of the year.

1. Energy
2. Generation Capacity
3. Line Losses
4. Transmission and Distribution Capacity
5. RPS Compliance
6. Integration and Ancillary Services
7. Administration
8. Market Price Response
9. Hedging Costs
10. Environmental Compliance

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After hourly avoided-cost values are determined for each element, these values are added together to create an 8760-hour avoided cost profile that is the basis for the RVOS.

The ten elements included in the RVOS are elements "that directly impact the cost of service to utility customers," which is the criteria specified in Order No. 15-296 issued in this docket.

No party opposes the valuation methodology developed by Staff's consultant and recommended by Staff. And, although some parties believe additional elements should be included in the RVOS, no party opposes the inclusion of any of the ten elements valued in the Staff-recommended methodology.

Notably, although Staff's proposed methodology and recommendation regarding elements that should be included in the determination of RVOS is the culmination of a lengthy and often collaborative process, the Commission's acceptance of the recommended RVOS Model and list of ten elements would not end this investigation. All parties, including Staff, note that a considerable amount of work needs to be done in the second part of this investigation to determine the inputs for each of the elements valued in the proposed RVOS Model.

Furthermore, several parties have provided arguments and recommendations regarding appropriate inputs for the elements valued in the RVOS. However, these issues are not ripe for resolution in this part of the investigation. Instead, Staff recommends that the Commission address these issues in the next phase of this docket after the parties have had opportunity for collaborative workshops, discovery, and if necessary, testimony.

II. Staff recommends that the Commission not include additional elements in the RVOS at this time.

a. Ancillary Services and Security, Reliability, Resiliency.

The only disputed issue presented to the Commission in this phase of the investigation is whether to include elements in the RVOS in addition to the ten elements recommended by Staff. The "Joint Parties," composed of Renewable Northwest (REC), Oregon Solar Energy Industries

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Association (OSEIA), NW Energy Coalition, and Northwest Sustainable Energy for Economic Development (NW SEED), recommend that the Commission include Security, Resiliency, Reliability as an element in the RVOS and split the element of "Ancillary Services and Interconnection" included in Staff's proposed RVOS Method into two separate elements. The element of "Interconnection" would capture to the utility to integrate solar generation and the element of "Ancillary Services" would capture the ancillary services benefits that solar systems can provide the utility. The Oregon Department of Energy (ODOE) also recommends including Ancillary Services and Security, Reliability Resiliency elements in the determination of RVOS. ODOE acknowledges that distributed solar generation in Oregon generally will not provide security, reliability and resilience and other ancillary benefits, but recommends including a placeholder in the methodology in anticipation of the fact that installation of other facilities (such as smart inverters or storage) will enable distributed solar generation to provide these benefits.[1]

The Joint Parties marshal five arguments in support of their recommendation to include Ancillary Services and Security, Resiliency, Reliability as elements valued in the RVOS. First, the Joint Parties reject Staff's assertion that exclusion of these elements is appropriate because the RVOS Model is intended for mass-market solar systems and most or all systems in Oregon are not configured to provide these benefits. The Joint Parties assert that "what constitutes a 'mass-market solar system' will continuously change, and, * * * will likely include systems capable of offering the values captured by 'Security, Reliability, Resilience' and "Ancillary Services." [2]

Second the Joint Parties note that Staff has already acknowledged that distributed solar generation can provide benefits to utility ratepayers through reductions in outages by reducing transmission and distribution network congestion and minimization of outages resulting from a

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[1] Oregon Department of Energy's Pre-Hearing Brief 2.

[2] Initial Brief of the Joint Parties 3.

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more diverse and dispersed solar supply.[3] The Joint Parties assert that these benefits are properly considered Security, Reliability, Resiliency benefits and should be included in the RVOS.[4]

Third, the Joint Parties argue that distributed generation solar can provide Security, Reliability, Resiliency benefits to ratepayers "in a scenario of disaster recovery," asserting that "solar could provide power during an outage at public buildings like hospitals and emergency shelters, as well as to critical utility operations centers." [5]

Fourth, the Joint Parties assert that even if distributed solar generation does not result in Security, Reliability, Resiliency benefits or Ancillary Services benefits that accrue to ratepayers today, the Commission should include these elements in the RVOS methodology because distributed solar generation could provide such benefits at some point in the future.[6]

Finally, the Joint Parties assert that 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."[7]

Staff agrees with the Joint Parties' description of benefits and potential benefits of distributed solar generation, but for the reasons discussed in testimony, does not believe Ancillary Services and Security, Reliability, Resiliency are appropriate to include as elements in the RVOS Methodology.

First, Staff believes that additional services that could be provided by advanced and uncommon infrastructure (such as voltage support and reactive power) should be addressed outside of the RVOS Model, which is intended to apply to mass-market installations. The fact

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[3] Initial Brief of the Joint Parties 5.

[4] Initial Brief of the Joint Parties 5-6.

[5] Initial Brief of the Joint Parties 6.

[6] Initial Brief of the Joint Parties 7-8.

[7] Initial Brief of Joint Parties 3-4.

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that solar systems capable of providing the services described by the Joint Parties and ODOE may be the mass-market distributed solar systems of the future does not alter the fact that these systems are not generally found in Oregon today.[8]

Including placeholders in the RVOS Model for Security, Reliability, Resiliency or Ancillary Benefits that may accrue to ratepayers if a solar system is coupled with certain advanced infrastructure is not as simple as the Joint Parties imply. Mr. Olson of E3 testified that any solar installation offering Ancillary Services would "necessarily have a different production profile than a system that did not offer these services so other elements of RVOS such as energy value would be affected as well."[9] This means that it is not possible to simply incorporate a value for these elements into a methodology created for the vast majority of solar installations that do not have the capability to provide these services. Instead, including these benefits would mean adjustments to other inputs in the RVOS Methodology recommended by Staff.

Accordingly, to the extent the Commission would like to implement a methodology to determine RVOS that is capable of being applied to most distributed solar generation facilities in Oregon, it should not require that the methodology be able to value benefits for services that are associated with advanced infrastructure that is not widely installed in Oregon.

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[8] *See e.g.,* Oregon Department of Energy's Pre-Hearing Brief 2-3:

> The department recognizes that potential value streams for security, reliability, resiliency and related ancillary services are largely associated with advanced inverter technologies, which have not been deployed and adopted yet in Oregon and may not become part of the mainstream market for many years. * * *
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> Quantifiable value of ancillary services from distributed solar resources will rely on deployment of advanced inverter technologies and will only be fully realized with utility communication and control of the devices. Under this scenario, advanced inverter technologies may be used to provide reactive power and voltage support, which may be dispatched whether the PV side of the system is operating or not.[8]

[9] Staff/400, Olson/6.

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Second, some Security, Reliability, Resiliency benefits that distributed solar generation may provide are captured in the RVOS Methodology proposed by Staff. Security, Reliability, Resiliency benefits that distributed solar generation provides to utilities by reducing congestion and outages on transmission and distribution systems can be captured in the Transmission and Distribution (T&D) Capacity element that is valued in the RVOS Model. Staff defines this element as "avoided or deferred costs of expanding, replacing, or upgrading transmission and distribution infrastructure such as substations, lines, and transformers."[10] To the extent that solar generation may reduce transmission and distribution network congestion, this benefit would be captured by avoided T&D network upgrades.

Third, Security, Reliability, Resiliency benefits that solar generation may provide in a "scenario of disaster recovery" do not accrue to utility ratepayers but instead generally accrue to the solar system owners. While it is technically possible for solar systems to be configured as a microgrid that could provide continued electricity service to non-solar ratepayers in the event of a grid outage, Mr. Olson testified and Joint Parties did not dispute, that such configurations are exceedingly rare and would likely require significant additional expense. To the extent there is a more dispersed benefit from the powering of hospitals or emergency shelters the benefit accrues to individuals as members of society, rather than as ratepayers of a particular utility.

Fourth, Staff agrees with the Joint Parties and ODOE regarding the importance of informed distribution system planning, but believes that the RVOS Model is not the appropriate vehicle to facilitate an improved utility distribution system planning process. To the extent the Commission would like to facilitate distribution system planning to better capture the value of distributed generation, Staff recommends a separate investigation into distribution planning. Mr. Olson testified:

> As a general rule, utilities must know about and incorporate demand-side resources into their distribution planning processing order to actualize [deferred-investment] cost savings. If utility distribution planners do not account for these

[10] Staff/200, Olson/21.

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> resources, they may overbuild the distribution system relative to the desired reliability and not capture these potential benefits of demand-side resources.
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> * * * * *
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> Advances in technology, such as internet connected smart meters, are making the collection and analysis of locational specific data possible where historically it hasn't been. Several states have tackled this new opportunity, notably California through its Distribution Resource Plan proceeding. California utilities are currently developing plans to "more fully integrate [distributed energy resources] into system planning, operations, and investment." As part of these plans, utilities will be required to demonstrate the capacity to integrate distributed resources into their systems, the locational benefits that different resources can offer, and actionable pilot programs and tariffs to incentivize and capture this value.[11]

b. Societal benefits.

TASC recommends the Commission include societal benefits in the RVOS. To the extent the Commission concludes societal benefits are outside the scope of this proceeding, TASC recommends that the Commission include placeholders for such benefits.[12] Staff disagrees with both recommendations. First, including societal benefits in the determination of RVOS is inconsistent with the Commission's determination that the RVOS should only include elements that directly impact ratepayers. Second, given that the commission has declined to include societal benefits in the determination of RVOS, a placeholder for such benefits in the RVOS Model is not warranted.

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[11] Staff/200, Olson/12.

[12] Initial Brief of the Alliance for Solar Choice 3.

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III. Conclusion.

Staff recommends that the Commission adopt Staff's proposed RVOS Model and list of ten elements that should be included in the RVOS.

DATED this 19th day of September 2016.

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