VIA ELECTRONIC MAIL ONLY

Attention: Filing Center
Public Utility Commission of Oregon
201 High Street, Suite 100
P.O. Box 1088
Salem, OR 97308-1088

Re: In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, Investigation to
   Determine the Resource Value of Solar
   OPUC Docket No.: UM 1716
   DOJ File No.: 330030-GN0062-15

Filing Center:

   On behalf of the Oregon Department of Energy, enclosed for filing today with the
   Commission in the above-captioned matter is the following document:

   1. OREGON DEPARTMENT OF ENERGY, CROSS-RESPONSE TESTIMONY OF
      DIANE BROAD AND ROBERT DELMAR.

   Sincerely,

   Renee M. France
   Senior Assistant Attorney General
   Natural Resources Section

Enclosures
RMF/jrs/#7545178
c: Diane Broad, ODOE
   Robert Del Mar, ODOE
   Wendy Simons, ODOE
Before the
PUBLIC UTILITY COMMISSION OF OREGON

OREGON DEPARTMENT OF ENERGY

Cross-Response Testimony of Diane Broad
and Robert DelMar

July 21, 2016
Q. PLEASE STATE YOUR NAME AND ORGANIZATION.

A. My name is Diane Broad. I am a Senior Policy Analyst for the Planning and Innovation Division within the Oregon Department of Energy (ODOE, department). The business address is 625 Marion St. NE, Salem, Oregon. I am testifying on behalf of ODOE.

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS.

A. I am a policy analyst with particular expertise in electric utility transmission and distribution systems and operations, renewable generator interconnection standards and procedures, and integration of variable energy resources. I gained this expertise through eighteen years of practice as an electrical engineer in consulting, serving electric utilities and renewable project developers, and in two years as a policy analyst at ODOE. I am a registered Professional Engineer in the State of Oregon.

Q. PLEASE STATE YOUR NAME AND ORGANIZATION.

A. My name is Rob DelMar. I am a Senior Policy Analyst for the Planning and Innovation Division within the Oregon Department of Energy. I work out of the field office in Bend, Oregon. I am testifying on behalf of ODOE.

Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS.

A. I am a policy analyst with particular expertise in solar energy. I have a degree in Architectural Engineering from Drexel University and have worked in the solar energy industry for 16 years. I started my career in the private sector as a design engineer and project manager at an engineering firm in New
England responsible for the design, construction and monitoring of commercial and residential solar thermal and photovoltaic energy systems. I worked at ODOE from 2007 to 2011 as an operations analyst and policy analyst, and at Energy Trust of Oregon from 2011 to 2013 as a senior project manager in the solar program. In 2013 I returned to ODOE, working as a senior policy analyst responsible for technical and policy support for solar technologies.

I served on the board of directors for the Solar Rating and Certification Corporation (SRCC) for 5 years and am currently on the SRCC Codes and Standards Committee as well as the Energy Membership Advisory Committee for the International Code Council.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. This testimony is in response to the testimony filed June 30, 2016, by the other parties to the UM 1716 docket. The June 30, 2016, testimony in turn was responding to the June 1, 2016, testimony by Oregon Public Utility Commission (PUC) Staff and the report by Arne Olson. Mr. Olson was hired as a consultant by the PUC to create a methodology for the Resource Value of Solar (RVOS) for Oregon.

ODOE agrees with the general sentiment expressed by the parties to this docket that, with a few exceptions (explained below), the elements included in
the proposed model are reasonable and appropriate, but that the quality of
the input data and the methodologies for calculating the elements are critical
and warrant additional attention from the parties and Commission. The
department’s comments focus on model inputs for which utilities currently
lack granular data, recommendations related to periodic updates to the
model, and the inclusion of elements which were either left out of the
proposed model or combined with other elements.

Q. WHAT IS ODOE’S RECOMMENDATION REGARDING MODEL INPUTS

FOR WHICH UTILITIES CURRENTLY LACK GRANULAR DATA?

A. The department supports determination of the RVOS through a rigorous data
driven model. We also recognize and agree with many of the comments by
utilities demonstrating the challenges of generating timely and accurate data
for the model. Especially in the early years, it will be important to scrutinize
the calculations and output values associated with each element to identify
variations that are due to assumptions underpinning the determination of
proxy values where the model’s granularity exceeds current reporting
abilities. For elements where utilities will need to incorporate average or proxy
values for inputs, the department recommends the Commission require
utilities to periodically conduct a sensitivity analysis to determine the impact of
variation in input values on model outputs.
Q. WHAT ARE ODOE’S RECOMMENDATIONS FOR ENHANCING PERIODIC UPDATES TO THE RVOS MODEL?

A. Staff recommends in comments from June 1, 2016,\(^1\) that the RVOS model be updated every two years. ODOE recommends that at the time the model is updated, there is also a corollary effort by the utilities to improve the granularity and accuracy of the input data. Oregon utilities continue to make investments in substation automation, Supervisory Control and Data Acquisition (SCADA), and other smart grid technologies, all of which have the potential in the future to provide hourly data for inputs that lack that granularity at present. Another important part of the update to the RVOS model should include verification that the model works correctly in cases when elements may be shifting from a cost to a benefit, or vice versa.

Q: WHICH ELEMENTS DOES ODOE RECOMMEND BE RECONSIDERED BY THE CONSULTANT?

A: ODOE recommends that including “security, reliability and resiliency” in the model be reconsidered, and that integration and ancillary services be disaggregated into two separate elements.

**Security, Reliability and Resiliency**

ODOE wishes to re-emphasize our position\(^2\) that the exclusion from the RVOS model of the element encompassing “security, reliability and resiliency”

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\(^1\) Staff/100, Dolezel/9
\(^2\) ODOE/100, Broad/2, lines 14-15
be reconsidered. The consultant did not include this element largely because of a lack of a framework for quantifying the potential benefits to utility ratepayers.

ODOE wishes to make two points regarding the evolving understanding of the benefits of improving security, reliability and resiliency with solar energy installations. First, the consultant’s reference to the absence of microgrid applications in Oregon\(^3\) does not necessarily result in a complete lack of methodology for determining potential resiliency benefits of solar. There are resiliency benefits outside of microgrid applications, such as solar energy at an emergency shelter\(^4\) or at a critical utility operations center. The PUC has an ongoing docket, UM 1751, Implementing an Energy Storage Program,\(^5\) currently in its first phase, in which stakeholders are identifying methodologies to evaluate the costs and benefits of energy storage. Improved resiliency is included as a potential benefit, and a key outcome of the first phase will be guidelines for utilities on how to evaluate all the costs and benefits.\(^6\) ODOE recommends reconsideration of including the “security, reliability and resiliency” element in the RVOS model, along with the development of further guidance on how to evaluate this element. As noted by Michael O’Brien in joint response testimony for Renewable Northwest, the Oregon Solar Energy Industries Association, NW Energy Coalition, and

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\(^3\) Staff/200, Olson/26, lines 1-2
\(^4\) RNW, OSEIA, NWEC, NW SEED/100, O’Brien/5, lines 11-15
\(^5\) [http://apps.puc.state.or.us/edockets/docket.asp?DocketID=19733](http://apps.puc.state.or.us/edockets/docket.asp?DocketID=19733)
\(^6\) [http://edocs.puc.state.or.us/efdocs/HAH/um1751hah75057.pdf](http://edocs.puc.state.or.us/efdocs/HAH/um1751hah75057.pdf), pages 6-7
Northwest Sustainable Energy for Economic Development, there is an opportunity for this docket to benefit from the work done in UM 1751.  

Second, ODOE believes including an element in the model which may be difficult to value at the present time is consistent with how the model is constructed currently. In testimony from each of the three Oregon investor-owned utilities the testifiers identify elements which they would currently evaluate as zero benefit. In some cases this is due to lack of the necessary input data, while in other cases there are elements that the utilities do not currently calculate at all, e.g. market price response and avoided cost of fuel cost hedging. Clearly the use of the RVOS model will evolve over time as utilities enhance the ability to collect the necessary input data and develop methodologies to calculate elements that become more important to the overall RVOS. It is therefore completely reasonable to include the element “security, reliability and resiliency” in the model now and allow its use to evolve as solar energy applications evolve.

**Ancillary Services**

ODOE recommends the disaggregation of “Integration Impacts” and “Ancillary Services” into two separate elements. The impact on the electric system of integrating solar energy can include a variety of costs, including physical

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7 RNW, OSEIA, NWEC, NW SEED/100, O’Brien/7, lines 1-2  
8 IPC/Youngblood, PGE/Brown and Murtagh, and PAC/Dickman  
9 Idaho Power/100, Youngblood/13; PGE/100, Brown and Murtagh/5; PAC/100, Dickman/15-16
system upgrades, enhanced communications and monitoring of portions of
the electric system with high penetrations of solar, and the need to increase
balancing reserves. ODOE agrees with the testimony of Michael O'Brien that
the element “ancillary services” as described by the consultant does not seem
to agree with the definition agreed upon by stakeholders in phase one of this
docket. Solar installations, with or without energy storage, have the potential
to contribute to grid management through management of voltage and
frequency. These valuable ancillary services are soon to be unlocked with the
adoption of smart inverters. ODOE recommends the model be modified such
that ancillary services is a stand-alone element which can be quantified as a
cost or a benefit.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. The department appreciates the work of Staff and Mr. Olson in
developing the RVOS model, the time and efforts of other parties to
participate in workshops and provide testimony, and the opportunity to
provide comments.

10 RNW, OSEIA, NWEC, NW SEED/100, O'Brien/7, lines 5-19