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July 21, 2016

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

DOCKET NO. UM 1716

EXHIBIT: ODOE/200

WITNESSES: DIANE BROAD AND ROBERT DELMAR

**Before the
PUBLIC UTILITY COMMISSION OF OREGON**

OREGON DEPARTMENT OF ENERGY

**Cross-Response Testimony of Diane Broad
and Robert DelMar**

July 21, 2016

1 **Q. PLEASE STATE YOUR NAME AND ORGANIZATION.**

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

6 **Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS.**

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

15 **Q. PLEASE STATE YOUR NAME AND ORGANIZATION.**

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

19 **Q. PLEASE SUMMARIZE YOUR QUALIFICATIONS.**

20 A. I am a policy analyst with particular expertise in solar energy. I have a degree
21 in Architectural Engineering from Drexel University and have worked in the
22 solar energy industry for 16 years. I started my career in the private sector as
23 a design engineer and project manager at an engineering firm in New

1 England responsible for the design, construction and monitoring of
2 commercial and residential solar thermal and photovoltaic energy systems. I
3 worked at ODOE from 2007 to 2011 as an operations analyst and policy
4 analyst, and at Energy Trust of Oregon from 2011 to 2013 as a senior project
5 manager in the solar program. In 2013 I returned to ODOE, working as a
6 senior policy analyst responsible for technical and policy support for solar
7 technologies.

8
9 I served on the board of directors for the Solar Rating and Certification
10 Corporation (SRCC) for 5 years and am currently on the SRCC Codes and
11 Standards Committee as well as the Energy Membership Advisory
12 Committee for the International Code Council.

13
14 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

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

21
22 ODOE agrees with the general sentiment expressed by the parties to this
23 docket that, with a few exceptions (explained below), the elements included in

1 the proposed model are reasonable and appropriate, but that the quality of
2 the input data and the methodologies for calculating the elements are critical
3 and warrant additional attention from the parties and Commission. The
4 department's comments focus on model inputs for which utilities currently
5 lack granular data, recommendations related to periodic updates to the
6 model, and the inclusion of elements which were either left out of the
7 proposed model or combined with other elements.

8
9 **Q. WHAT IS ODOE'S RECOMMENDATION REGARDING MODEL INPUTS**
10 **FOR WHICH UTILITIES CURRENTLY LACK GRANULAR DATA?**

11 A. The department supports determination of the RVOS through a rigorous data
12 driven model. We also recognize and agree with many of the comments by
13 utilities demonstrating the challenges of generating timely and accurate data
14 for the model. Especially in the early years, it will be important to scrutinize
15 the calculations and output values associated with each element to identify
16 variations that are due to assumptions underpinning the determination of
17 proxy values where the model's granularity exceeds current reporting
18 abilities. For elements where utilities will need to incorporate average or proxy
19 values for inputs, the department recommends the Commission require
20 utilities to periodically conduct a sensitivity analysis to determine the impact of
21 variation in input values on model outputs.

22 ///

23 ///

1 **Q. WHAT ARE ODOE’S RECOMMENDATIONS FOR ENHANCING PERIODIC**
2 **UPDATES TO THE RVOS MODEL?**

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

13
14 **Q: WHICH ELEMENTS DOES ODOE RECOMMEND BE RECONSIDERED BY**
15 **THE CONSULTANT?**

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

19 **Security, Reliability and Resiliency**

20 ODOE wishes to re-emphasize our position² that the exclusion from the
21 RVOS model of the element encompassing “security, reliability and resiliency”

¹ Staff/100, Dolezel/9

² ODOE/100, Broad/2, lines 14-15

1 be reconsidered. The consultant did not include this element largely because
2 of a lack of a framework for quantifying the potential benefits to utility
3 ratepayers.

4
5 ODOE wishes to make two points regarding the evolving understanding of the
6 benefits of improving security, reliability and resiliency with solar energy
7 installations. First, the consultant's reference to the absence of microgrid
8 applications in Oregon³ does not necessarily result in a complete lack of
9 methodology for determining potential resiliency benefits of solar. There are
10 resiliency benefits outside of microgrid applications, such as solar energy at
11 an emergency shelter⁴ or at a critical utility operations center. The PUC has
12 an ongoing docket, UM 1751, Implementing an Energy Storage Program,⁵
13 currently in its first phase, in which stakeholders are identifying
14 methodologies to evaluate the costs and benefits of energy storage.

15 Improved resiliency is included as a potential benefit, and a key outcome of
16 the first phase will be guidelines for utilities on how to evaluate all the costs
17 and benefits.⁶ ODOE recommends reconsideration of including the "security,
18 reliability and resiliency" element in the RVOS model, along with the
19 development of further guidance on how to evaluate this element. As noted
20 by Michael O'Brien in joint response testimony for Renewable Northwest, the
21 Oregon Solar Energy Industries Association, NW Energy Coalition, and

³ Staff/200, Olson/26, lines 1-2

⁴ RNW, OSEIA, NWECA, NW SEED/100, O'Brien/5, lines 11-15

⁵ <http://apps.puc.state.or.us/edockets/docket.asp?DocketID=19733>

⁶ <http://edocs.puc.state.or.us/efdocs/HAH/um1751hah75057.pdf>, pages 6-7

1 Northwest Sustainable Energy for Economic Development, there is an
2 opportunity for this docket to benefit from the work done in UM 1751.⁷

3
4 Second, ODOE believes including an element in the model which may be
5 difficult to value at the present time is consistent with how the model is
6 constructed currently. In testimony from each of the three Oregon investor-
7 owned utilities⁸ the testifiers identify elements which they would currently
8 evaluate as zero benefit. In some cases this is due to lack of the necessary
9 input data, while in other cases there are elements that the utilities do not
10 currently calculate at all, e.g. market price response and avoided cost of fuel
11 cost hedging.⁹ Clearly the use of the RVOS model will evolve over time as
12 utilities enhance the ability to collect the necessary input data and develop
13 methodologies to calculate elements that become more important to the
14 overall RVOS. It is therefore completely reasonable to include the element
15 “security, reliability and resiliency” in the model now and allow its use to
16 evolve as solar energy applications evolve.

17
18 **Ancillary Services**

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

⁷ RNW, OSEIA, NWEA, 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

1 system upgrades, enhanced communications and monitoring of portions of
2 the electric system with high penetrations of solar, and the need to increase
3 balancing reserves. ODOE agrees with the testimony of Michael O'Brien that
4 the element "ancillary services" as described by the consultant does not seem
5 to agree with the definition agreed upon by stakeholders in phase one of this
6 docket.¹⁰ Solar installations, with or without energy storage, have the potential
7 to contribute to grid management through management of voltage and
8 frequency. These valuable ancillary services are soon to be unlocked with the
9 adoption of smart inverters. ODOE recommends the model be modified such
10 that ancillary services is a stand-alone element which can be quantified as a
11 cost or a benefit.

12
13 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

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

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