

**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                                 )  
\_\_\_\_\_  )

**RESPONSE TESTIMONY  
OF THE  
CITIZENS' UTILITY BOARD OF OREGON**

June 30, 2016



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1 Our names are Bob Jenks and Nadine Hanhan, and our qualifications are listed in  
2 CUB Exhibit 101.

3 **I. Introduction**

4 On June 1, 2016, Oregon Public Utility Commission (PUC) Staff (hereby referred  
5 to as “Staff”) filed Direct Testimony regarding Oregon’s resource value of solar  
6 (RVOS).<sup>1</sup> The PUC opened up this investigation over a year ago,<sup>2</sup> but the subject of  
7 RVOS has long been a topic of interest for Oregon stakeholders. CUB has been a regular  
8 participant of workshops regarding RVOS, and has already provided comments and input  
9 at stakeholder meetings.<sup>3</sup> When Staff requested that parties submit comments on RVOS  
10 elements, CUB’s filing included a list of elements it perceived to be most crucial:<sup>4</sup>

- 11
- Avoided Energy Impacts

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<sup>1</sup> See docket UM 1716, Staff’s Direct Testimony.

<sup>2</sup> See docket UM 1716 Actions. Accessed at <http://apps.puc.state.or.us/edockets/Docket.asp?DocketID=19362&Child=action>.

<sup>3</sup> For example, see docket UM 1716, CUB Comments. Accessed at <http://edocs.puc.state.or.us/efdocs/HAC/um1716hac163818.pdf>.

<sup>4</sup> See docket UM 1716, CUB Comments. Accessed at <http://edocs.puc.state.or.us/efdocs/HAC/um1716hac163818.pdf>.

- 1           • Avoided Capacity Additions
- 2           • Line Losses
- 3           • Avoided Transmission and Distribution
- 4           • Environment: Compliance Impacts
  - 5           ▪ Carbon—Current
  - 6           ▪ Carbon—Future
  - 7           ▪ NO<sub>x</sub>/SO<sub>x</sub>/Particulates—Current
  - 8           ▪ NO<sub>x</sub>/SO<sub>x</sub>/Particulates—Future
  - 9           ▪ Other—Current (e.g. MATS - Mercury Air Toxics)
- 10          • Security: Reliability, Resiliency, and Disaster Recovery
- 11          • Financial: Fuel Price Hedge (Adjustable mechanism)
- 12          • Utility: Interconnection Impacts
- 13          • Compliance Value: Reduced RPS procurement due to reduced utility sales
- 14          • Utility: Integration Impacts
- 15          • Utility: Administration Impacts

16           Staff ultimately hired consultant Arne Olson to create a methodology for Oregon  
17   RVOS.<sup>5</sup> Most of the elements CUB preferred were included in the methodology, with the  
18   exception of the security element.

## 19   **II. General Methodology**

20           Staff has opted for a granular approach to RVOS. The general mathematical formula  
21   Staff has provided is the following:

$$\begin{aligned} 22 & \quad \forall h \in [1, \dots, 8760] \\ 23 & \quad \text{Value}_h = \text{Energy}_h \\ 24 & \quad + \text{Generation Capacity}_h \\ 25 & \quad + \text{Line Losses}_h \\ 26 & \quad + \text{T\&D Capacity}_h \\ 27 & \quad + \text{RPS Compliance}_h \\ 28 & \quad + \text{Market Price Response}_h \\ 29 & \quad + \text{Hedge}_h \\ 30 & \quad - \text{Integration}_h \\ 31 & \quad + \text{Environmental Compliance}_h \\ 32 & \quad - \text{Administration}_h^6 \end{aligned}$$

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<sup>5</sup> UM 1716/Staff/200/Olson.

<sup>6</sup> UM 1716/Staff/200/Olson/26.

1       Where  $h$  is each hour of the year.<sup>7</sup> Thus, the RVOS is calculated on an hourly basis,  
2       creating an avoided cost profile for the entire year.<sup>8</sup> CUB agrees that this level of  
3       accuracy, if it can be achieved, is preferable for calculating RVOS and does not have an  
4       objection to this approach. Staff's testimony asserts that this level of granularity is  
5       generally available from the utilities,<sup>9</sup> but that there may be cases where it is  
6       unavailable.<sup>10</sup>

7       The model also allows for calculating RVOS according to location in addition to an  
8       hourly factor.<sup>11</sup> CUB also agrees that this level of granularity, if it can be achieved, is  
9       preferable to a statewide RVOS. CUB has previously argued for location-specific  
10      renewable contribution<sup>12</sup> and agrees that the addition of geography as a factor in RVOS is  
11      a reasonable approach.

12      CUB generally agrees with Staff's approach. However, without a better  
13      understanding of the inputs that will be used, CUB cannot endorse the model. There can  
14      be a trade-off between the model itself and its inputs. For example, there will be non-  
15      normalized weather and hydro conditions in the future. A model can be developed to use  
16      normalized values but must have either an explicit input to capture non-normalized  
17      benefits or a model can be developed to include non-normalized values.

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<sup>7</sup> UM 1716/Staff/200/Olson/26.

<sup>8</sup> UM 1716/Staff/200/Olson/26.

<sup>9</sup> UM 1716/Staff/200/Olson/29, line 13.

<sup>10</sup> UM 1716/Staff/200/Olson/29, line 17.

<sup>11</sup> UM 1716/Staff/200/Olson/34.

<sup>12</sup> See UM 1719/CUB/100/Hanhan.

1 **III. Historic Example: Energy Efficiency in Under Low Hydro**  
2 **Conditions**

3 Oregon is in a part of the country where hydro provides over half of the capacity of  
4 the region and approximately 2/3 of the energy.<sup>13</sup> CUB is concerned that the model does  
5 not recognize the value of solar in protecting customers in years with low hydro  
6 conditions. This concern grows out of Oregon's history with energy efficiency.

7 In the 1990s, Oregon's utilities cut back on investments in energy efficiency  
8 based on short-term avoided costs. Because the avoided cost of market purchases was  
9 under \$.02/kWh, and because there was ample liquidity in the wholesale market, utilities  
10 reduced energy efficiency investments—only acquiring the lost opportunities.

11 Unfortunately, 2001 was a bad hydro year—the second worst since 1929.<sup>14</sup> 2001 was  
12 also when serious problems developed in the California wholesale market. The energy  
13 efficiency resource that had not been pursued during the 1990s would have saved the  
14 region millions of dollars as the cost of energy soared extraordinarily.

15 Short-term avoided costs were low, and the liquidity in the market led utilities to  
16 believe they had ample sufficiency. But the energy efficiency capacity that was not  
17 acquired (and was therefore unavailable) was enormously valuable. In CUB's experience,  
18 IRP modeling confirms that energy efficiency offers benefits to customers in non-  
19 normalized periods of high power costs, whether due to low hydro, high fuel prices, or  
20 other conditions.

21 While the model being proposed to evaluate solar is not a short term model—it  
22 looks at avoided costs over 25 years—there is little discussion regarding the inputs that

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<sup>13</sup> NWPCC, 7<sup>th</sup> Plan, pages 9.3-9.4

<sup>14</sup> Harrison, J. Energy crisis of 2000/2001. October 31, 2008. Accessed at:  
<https://www.nwcouncil.org/history/EnergyCrisis>.

1 will be used. Over the next 25 years, the region may experience a 1-in-25 year bad hydro  
2 scenario or 2.5 events that represent 1-in-10 bad hydro. Does the avoided energy cost  
3 modeled over the 25 years of the investment reflect these hydro conditions? Does the  
4 sufficiency/insufficiency calculation for capacity needs include insufficiency caused by  
5 non-normalized conditions?

6 Is this a modeling issue or an input issue?

#### 7 **IV. Security**

8 While not a major element of the model, CUB continues to believe that rooftop  
9 solar has security value. In its earlier Comments, CUB stated:

10 CUB takes [*Security: Reliability, Resiliency, and Disaster Recovery*]  
11 to mean the stability associated with distributed generation (i.e., DG  
12 versus relying on long-distance generation subject to disaster far from  
13 the end-user/service territory). While this may not be available as an  
14 immediate solar resource value, as penetration increases, distributed  
15 generation could add significant value to the system in terms of  
16 resiliency and stability.<sup>15</sup>

17 CUB maintains this position and reiterates that if there is a significant increase (or  
18 decrease) in the penetration of solar in Oregon, the RVOS and its elements should be  
19 reevaluated.

#### 20 **V. Conclusion**

21 CUB appreciates the work that the Staff did in developing the model. CUB  
22 believes that Mr. Olson was an appropriate consultant, and the model developed includes  
23 most of the elements that CUB recommended. While CUB believes that security should  
24 have also been included, CUB recognizes that this is not a major element.

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<sup>15</sup> See UM 1716, CUB Comments, p. 8.

1           However, CUB cannot endorse the model. CUB is concerned about how the  
2 model reflects the value of solar resources in non-normalized conditions. While CUB  
3 recognizes that there may be an issue with model inputs, a model is only as good as its  
4 inputs. A further discussion of inputs would be helpful to CUB's understanding of the  
5 model.

## WITNESS QUALIFICATION STATEMENT

**NAME:** Bob Jenks

**EMPLOYER:** Citizens' Utility Board of Oregon

**TITLE:** Executive Director

**ADDRESS:** 610 SW Broadway, Suite 400  
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**EDUCATION:** Bachelor of Science, Economics  
Willamette University, Salem, OR

**EXPERIENCE:** Provided testimony or comments in a variety of OPUC dockets, including UE 88, UE 92, UM 903, UM 918, UE 102, UP 168, UT 125, UT 141, UE 115, UE 116, UE 137, UE 139, UE 161, UE 165, UE 167, UE 170, UE 172, UE 173, UE 207, UE 208, UE 210, UE 233, UE 246, UE 283, UE 296, UE 308, UG 152, UM 995, UM 1050, UM 1071, UM 1147, UM 1121, UM 1206, UM 1209, UM 1355, UM 1635, UM 1633, and UM 1654. Participated in the development of a variety of Least Cost Plans and PUC Settlement Conferences. Provided testimony to Oregon Legislative Committees on consumer issues relating to energy and telecommunications. Lobbied the Oregon Congressional delegation on behalf of CUB and the National Association of State Utility Consumer Advocates.

Between 1982 and 1991, worked for the Oregon State Public Interest Research Group, the Massachusetts Public Interest Research Group, and the Fund for Public Interest Research on a variety of public policy issues.

**MEMBERSHIP:** National Association of State Utility Consumer Advocates  
Board of Directors, OSPIRG Citizen Lobby  
Telecommunications Policy Committee, Consumer Federation of America  
Electricity Policy Committee, Consumer Federation of America  
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**WITNESS QUALIFICATION STATEMENT**

**NAME:** Nadine Hanhan

**EMPLOYER:** Citizens' Utility Board of Oregon (CUB)

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**ADDRESS:** 610 SW Broadway, Suite 400  
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**EDUCATION:** Master of Science, Applied Economics, 2015  
Oregon State University, Corvallis, OR

Bachelor of Arts, Economics and Philosophy, 2010  
California State University San Bernardino, San Bernardino,  
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**WORK EXPERIENCE:** Provided testimony and comments in dockets including LC 55, LC 56, LC 57, LC 58, LC 59, LC 60, LC 61, LC 62, LC 63, UE 264, UE 296, UE 308, UM 1505, UM 1657, UM 1662, UM 1667, UM 1675, UM 1716, UM 1719, and UM 1746. Also worked at CUB as an analyst on various other dockets, including AR 599, LC 64, UE 246, UE 262, UE 263, UM 1720, and UM 1758.

**MEMBERSHIP:** Portfolio Options Committee Chair (May 2016-June 2016)