BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1716

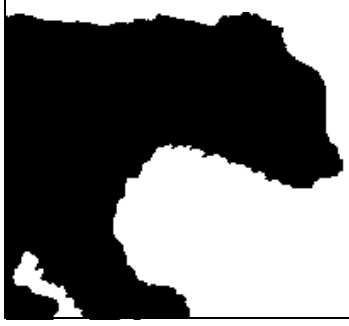
In the Matter of PUBLIC UTILITY COMMISSION OF OREGON,	)
	)
Investigation to Determine the Resource Value of Solar	)

RESPONSE TESTIMONY

OF THE

CITIZENS' UTILITY BOARD OF OREGON

June 30, 2016



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

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

I. Introduction

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

- Avoided Energy Impacts

[1] See docket UM 1716, Staff's Direct Testimony.
[2] See docket UM 1716 Actions. Accessed at http://apps.puc.state.or.us/edockets/Docket.asp?DocketID=19362&Child=action.
[3] For example, see docket UM 1716, CUB Comments. Accessed at http://edocs.puc.state.or.us/efdocs/HAC/um1716hac163818.pdf.
[4] See docket UM 1716, CUB Comments. Accessed at http://edocs.puc.state.or.us/efdocs/HAC/um1716hac163818.pdf.

- Avoided Capacity Additions
- Line Losses
- Avoided Transmission and Distribution
- Environment: Compliance Impacts
  - Carbon—Current
  - Carbon—Future
  - NOx/SOx/Particulates—Current
  - NOx/SOx/Particulates—Future
  - Other—Current (e.g. MATS - Mercury Air Toxics)
- Security: Reliability, Resiliency, and Disaster Recovery
- Financial: Fuel Price Hedge (Adjustable mechanism)
- Utility: Interconnection Impacts
- Compliance Value: Reduced RPS procurement due to reduced utility sales
- Utility: Integration Impacts
- Utility: Administration Impacts

Staff ultimately hired consultant Arne Olson to create a methodology for Oregon RVOS.[5] Most of the elements CUB preferred were included in the methodology, with the exception of the security element.

II. General Methodology

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

$$\forall h \in [1, \dots, 8760]$$
$$Value_h = Energy_h + Generation\ Capacity_h + Line\ Losses_h + T\&D\ Capacity_h + RPS\ Compliance_h + Market\ Price\ Response_h + Hedge_h - Integration_h + Environmental\ Compliance_h - Administration_h$$ [6]

[5] UM 1716/Staff/200/Olson.
[6] UM 1716/Staff/200/Olson/26.

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

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

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

[7] UM 1716/Staff/200/Olson/26.
[8] UM 1716/Staff/200/Olson/26.
[9] UM 1716/Staff/200/Olson/29, line 13.
[10] UM 1716/Staff/200/Olson/29, line 17.
[11] UM 1716/Staff/200/Olson/34.
[12] See UM 1719/CUB/100/Hanhan.

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

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

In the 1990s, Oregon's utilities cut back on investments in energy efficiency based on short-term avoided costs. Because the avoided cost of market purchases was under $.02/kWh, and because there was ample liquidity in the wholesale market, utilities reduced energy efficiency investments—only acquiring the lost opportunities. Unfortunately, 2001 was a bad hydro year—the second worst since 1929.[14] 2001 was also when serious problems developed in the California wholesale market. The energy efficiency resource that had not been pursued during the 1990s would have saved the region millions of dollars as the cost of energy soared extraordinarily.

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

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

[13] NWPCC, 7th Plan, pages 9.3-9.4
[14] Harrison, J. Energy crisis of 2000/2001. October 31, 2008. Accesed at: https://www.nwcouncil.org/history/EnergyCrisis.

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

Is this a modeling issue or an input issue?

IV. Security

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

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

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

V. Conclusion

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

[15] See UM 1716, CUB Comments, p. 8.

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

WITNESS QUALIFICATION STATEMENT

NAME: Bob Jenks

EMPLOYER: Citizens' Utility Board of Oregon

TITLE: Executive Director

ADDRESS: 610 SW Broadway, Suite 400
Portland, OR 97205

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
Board of Directors (Public Interest Representative), NEEA

WITNESS QUALIFICATION STATEMENT

NAME:	Nadine Hanhan
EMPLOYER:	Citizens' Utility Board of Oregon (CUB)
TITLE:	Utility Analyst
ADDRESS:	610 SW Broadway, Suite 400 Portland, OR 97205
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, CA
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)