

**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.

ORDER

**DISPOSITION: FURTHER PHASE I PROCEEDINGS ORDERED**

After our review of the record, we conclude that additional proceedings are necessary to help better inform this initial phase of our investigation on how best to determine the benefits that a solar resource provides to a utility system.

In Order No. 15-296, we indicated that the initial phase of this investigation would focus on which elements should be included in determining the resource value of solar and which methodologies are most appropriate to calculate those values. We appreciate the work of the parties and Staff's consultant, Energy and Environmental Economics, Inc. (E3), which has greatly furthered our understanding of these issues. However, while the positions as to which elements should be included have been made clear, we need more information to better understand the parties' rationale and evidence to support their proposed methodologies to value those elements, as well as how those methodologies would be implemented before issuing an order with meaningful findings and direction to guide Phase II activities.

Therefore, we will extend Phase I and conduct additional proceedings. First, we will hold a hearing to further address the parties' pre-filed testimony. The hearing will be limited to examination by the Commissioners and the administrative law judge. Witnesses of each party should present an overview and summary of their testimony and be prepared to address questions listed in Appendix A.

Following the hearing, the administrative law judge will hold a conference with the parties to discuss a schedule for possible additional proceedings. The proceedings will

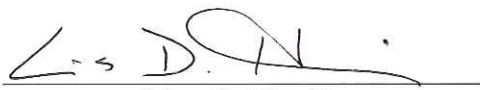
include at least one additional round of testimony, with opportunity for hearing and additional briefing. Notice of the conference will be issued separately.

As we made clear in Order No. 15-296, we are committed to obtaining a deep understanding of these issues and will not rush our investigation. Therefore, given the importance of determining the resource value of solar, we do not believe it to be in the public interest to make findings unless the record is sufficiently robust to inform sound decisions and to provide meaningful guidance and direction. Extending the Phase I proceedings will better help us to:

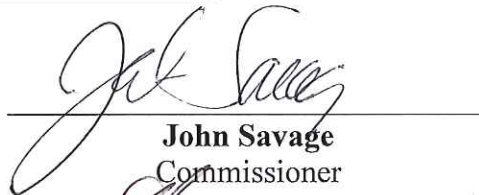
- Resolve disagreements on elements
- Determine points of agreement and disagreement on calculation methodologies
- Identify gaps in proposed calculation methodologies and related inputs
- Decide broad policy issues related to valuation methodologies
- Approve or provide guidance on calculation methodologies for each of the approved elements
- Direct Phase II activities, including needed research by the utilities and Staff.

IT IS SO ORDERED.

Made, entered, and effective OCT 19 2016



**Lisa D. Hardie**  
Chair



**John Savage**  
Commissioner



**Stephen M. Bloom**  
Commissioner



**UM 1716 – Resource Value of Solar**

## Questions for Witnesses

**Energy and Capacity Elements**

Should the Commission require all utilities to provide the forecasted value of avoided energy costs on an hourly basis? What is the gain in precision by doing so? What is the cost of doing so?

Utilities model a range of hydro conditions to generate an estimate of the avoided cost of energy. Is that sufficient? If not, why not and what modelling should the utilities be doing and how should the results for different hydro conditions be presented?

Should the Commission require the utilities to use a resource sufficiency/deficiency demarcation as is now used to generate QF avoided costs?

If so, should the Commission require the utilities to revisit the demarcation timing assuming that forward-looking incremental solar PV generation additions are not included as a reduction in the load used to determine the demarcation?

Should the Commission require the utilities to value avoided energy costs during a resource sufficiency period as currently set forth in the Commission's QF avoided cost rules? If not, what changes should be made and why?

**Transmission and Distribution Capacity Element**

Should utilities estimate the value of solar to defer or eliminate the need for T&D upgrades solely when an upgrade is required to meet load growth?

Some argue that increased solar generation could increase distribution system O&M expenditures. What empirical evidence exists or could be generated to support that assertion?

The transmission and distribution capacity value is highly location-dependent. Given available data, should the Commission consider using a system-wide average as a proxy and why or why not? Given available data, are there ways to differentiate value by geographic area that would provide more accurate estimates by area? (by "geographic area", we are not necessarily assuming down to the individual feeder level but rather if there is a geographical area designation between the entire system (and use of a system-wide average) and feeder level that could be used to derive area-specific values.)

What additional data would need to be collected to derive a more accurate T&D capacity value by area? What additional work or investment would be required to collect additional data to calculate location-specific values?

**Administrative Costs and Line Losses**

With small variations in approach, there seems to be general agreement on the valuation of administrative costs and line losses. Should the method for calculating incremental administrative costs and line losses be left to utilities as long as each utility provides sufficient justification for the method used and value derived?

**Market Price Response**

Should utilities estimate both the impact of lower wholesale prices on customer costs and lower surplus sales revenue?

There appears to be no ready empirical research or quantitative formula for determining a reasonably accurate measure of the impact of increased solar generation in Oregon on regional wholesale power sale prices.

Should the Commission require the use of a proxy method? If yes, what should be the basis of that method and what evidence exists to back up a proxy method?

What research and modelling work, if any, should the Commission require and by whom to generate a workable calculation formula?

**Avoided Hedge Value**

In general, the utilities disagree with the proposed hedge value calculation formula and argue that hedge value should be set to 0 based on their hedging policies and other factors. Do other parties agree or disagree with these assertions and why?

What research and modelling work, if any, should the Commission require and by whom to generate a workable calculation formula?

**Avoided Renewable Portfolio Standard Compliance**

There appears to be some agreement that a valuation of avoided RPS compliance should be based on a reduction in load due to increased solar PV generation. Do you agree or disagree that this should be the basis of a value formula and why? Is there a straightforward methodological approach that would generate reasonably accurate values?

Assuming each utility has enough banked RECs to meet current compliance projects for at least the next five years, how should this value of avoided RPS compliance cost from a newly installed PV system in 2017 be calculated? Should this value be applied only for the future years in which actual deferral of renewable resource procurement to meet compliance will be realized?

Utilities reassess their RPS implementation plans every two years for the next five years. Does this reassessment of need have any bearing on the calculation of this element?

Is a simplified approach such as what is proposed by E3 reasonably accurate in assessing this value?

### **Carbon Compliance Assumptions**

Parties disagree on valuing the reduction in carbon emissions.

Should the Commission consider the possibility of future carbon regulation in valuing solar? Why or why not? What criteria or standards should we apply in making such a determination?

How should we direct utilities to assign probabilities to different energy futures?

### **Integration and Ancillary Services**

Increased solar generation could either increase or reduce (with smart technologies) the need for grid services depending on the specific circumstances. What specific grid services should we focus on? Are the potential benefits and costs location-specific? What additional research or modelling is necessary to properly value grid services?

### **Security, Reliability, and Reserves**

Parties appear to disagree on the definition of system security and resiliency set forth by E3. What potential resiliency and reliability benefits does solar PV generation potentially provide to the utility system? Are any of those potential benefits captured in other valuation categories? How should these benefits be valued? Is there available data or analysis that would inform an assessment of these values?

### **General Issues**

There appear to be disagreements on valuation when there is uncertainty. What criteria should the Commission use to assign a non-zero value or zero value to an element when a value is uncertain?

Should utilities assign values based on the technology of the solar systems (e.g. solar PV systems with or without smart inverters) that are installed the year a calculation is made?

What should we require to obtain location-specific values or reasonable proxies of locational values?

What should be the time frame for analyses and why? What should be the time period for a levelization calculation?

How often should values be updated?

What level of granularity and transparency should we require and why?