

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON**

UM 1793

In the Matter of

Idaho Power Company,

Application for Approval of Solar
Integration Charge

STAFF COMMENTS

The Public Utility Commission of Oregon Staff (Staff) files these comments in response to Idaho Power Company's (Idaho Power or Company) Application for Approval of [a] Solar Integration Charge, filed August 10, 2016.

Background

In early 2014, the Commission addressed whether to allow utilities to recover the costs of integrating energy purchased from certain variable energy resources from Qualifying Facilities (QF) under the Public Utility Regulatory Policies Act of 1978 (PURPA). The Commission noted that the utilities were beginning to include estimates of wind integration costs in their IRPs and stated, "We agree with the parties that integration costs are legitimate costs that should be factored into avoided cost calculations."¹ The Commission authorized utilities to include the cost to integrate wind resources in the avoided costs but did not authorize utilities to include costs to integrate solar QFs. The Commission explained that, "[f]or the reasons offered by ODOE and others, we will require no adjustment for integration costs associated with solar QFs, but we will revisit this issue in the future after more solar development occurs. The parties argue that solar QF development is too small to pose harm to ratepayers, and there is too little data to produce accurate solar integration cost estimates."²

Idaho Power subsequently proposed an integration charge to be applied to solar QFs in 2015³ based on the results in its June 2014 Solar Integration Study. Staff did not support the solar integration charges derived from that study. As stated in its opening

¹ Docket No. UM 1610, Order No. 14-058 at 13.

² *Id.* at 15.

³ Docket No. 1725, Application for Approval of Solar Integration Charge, filed April 24, 2015.

testimony in Docket No. UM 1725, “Staff does not support the charges as currently proposed, because as an observer during the 2014 Study process, Staff noted and agreed with several of the concerns of other members of the Technical Review Committee (TRC), such as the lack of netting the balancing reserves required for load, wind, and solar, and the assumed lead time for scheduling the solar generation.”⁴ Staff noted that Idaho Power had already initiated a process for another solar study pursuant to a stipulation reached in Idaho, and that Staff would be a participant in the TRC for the new study. Staff suggested that Idaho Power could propose a solar integration charge based on the new study and noted that Staff intended “to evaluate the methodology and the results as the study proceeds.”⁵

2016 Solar Integration Study

Idaho Power explains the need for a solar integration charge in its opening testimony. An electric utility integrating solar must hold extra operating reserves on dispatchable generation resources. The effect of having to hold these extra reserves is that the capacity held in reserve restricts the use of those resources and they cannot be economically dispatched to their fullest capability.⁶ Idaho Power states that the objective of the 2016 Solar Integration Study (2016 Study) is to determine the costs of the operational modifications necessary to integrate intermittent generation from solar, where the operational modifications are in the form of differing system reserve requirements.⁷

The 2016 Study is based on the costs of integration for four solar build-out scenarios. Solar projects are assumed to be in eight geographically dispersed locations in Idaho, at a range of installed solar capacities.⁸ The 2016 Study calculates integration costs resulting from extra capacity from dispatchable generators that is held in reserve for the purpose of responding to unplanned changes in solar generation. These results were compared with a base case in which no extra capacity in reserve is required for the solar generation.

The 2016 Study results show that the average and incremental integration costs per MWh (2016\$) is as follows for different wind capacity levels:

⁴ Docket No. UM 1725, Staff/100, Andrus/13-14.

⁵ *Id.* at 14.

⁶ Idaho Power/100, DeVol/2-3.

⁷ Idaho Power/100, DeVol/2-3.

⁸ Idaho Power/100, DeVol/3.

<u>Average Cost</u>		<u>Incremental Cost</u>	
<u>Solar Capacity</u>	<u>\$/MWh</u>	<u>Solar Capacity</u>	<u>\$/MWh</u>
0–400 MW	\$0.27	0-400 MW	\$0.27
0–800 MW	\$0.57	400-800 MW	\$0.88
0–1,200 MW	\$0.69	800-1,200 MW	\$0.92
0–1,600 MW	\$0.85	1,200-1,600 MW	\$1.31

The rate per MWh for the average cost is based on the full capacity amount. The incremental cost rate assumes that the first increment of capacity is charged the lower rate. Because the average cost to integrate wind increases as capacity increases, the later increments must pay a higher rate to recover those higher average costs.

Staff Analysis

Staff commends Idaho Power for its robust leverage of the TRC,⁹ and believes that the 2016 Study results reflect the benefits of this approach. As noted above, Staff participated in the TRC and monitored and evaluated the 2016 Study methodology as the 2016 Study was conducted. Staff has no concerns with the 2016 Study or its results. The 2016 Study did not have the same infirmities as the 2014 Solar Integration Study and the integration charges calculated in the 2016 Study are less than those calculated in the 2014 Solar Integration Study.

Idaho Power states that it has 289.5 MW of solar under contract to be online by the end of 2016, 49.5 MW of which are in Oregon. Idaho Power also has solar QF projects requesting contracts for an additional 88.75 MW, 8.75 of which are in Oregon.¹⁰ The 289.5 MW of solar projects already contracted for are not subject to any integration charge approved by the Commission in this docket. However, the charge could be applicable to pending requests and future contracts. The inclusion of an appropriately calculated solar integration charge is in keeping with the Commission's stated goal of setting avoided cost prices at a level that maintains "customer indifference."¹¹

Staff focused its analysis of the 2016 Study and Idaho Power's proposed solar integration charges on three main issues:

⁹ 2016 Solar Integration Study, p. vi: "...consistent with the TRC guidelines as provided by the Utility Variable-Generation Integration Group (UVIG) and the National Renewable Energy Laboratory (NREL) (UVIG and NREL n.d.)."

¹⁰ Idaho Power/100, DeVol/3.

¹¹ Order No. 05-584 at 11.

1. The lack of congruity between Idaho Power's current wind integration charges and its proposed solar integration charges;
2. The potential impact of Idaho Power's participation in the California ISO Energy Imbalance Market (EIM); and,
3. Clarifying the process for incorporating solar integration charges in avoided cost prices in Schedule 85.

1. Incongruity Between Wind and Solar Integration Costs

Idaho Power's current wind integration charge is based on Idaho Power's most recent Wind Integration Study (WIS), issued in February 2013. In October 2014, the Idaho Public Utilities Commission (IPUC) allowed Idaho Power to use the 2013 WIS results to calculate wind integration prices, replacing the \$6.50/MWh rate¹² then in effect. The Idaho Commission also allowed an adder to the average cost per MWh, intended to recover the unrecovered costs at higher levels of capacity because contracts executed prior to that time included the \$6.50/MWh charge

The average costs if applied to all of the wind MWh generated in the 2013 WIS ranged from \$8.06 at 800 MW to \$19.01 at 1,200 MW. However, the IPUC determined that the charges going forward should be between \$10.65 at 800 MW and \$49.46 at 1,200 MW, stating "[t]hese amounts would be necessary to keep customers whole if existing contracts are not amended."¹³ QF prices remain fixed for the contract term, so amending them was not an option.

Based on the current penetration of wind, Idaho Power's wind integration charge in Oregon for QFs coming on line in 2016 is \$16.50/MWh.¹⁴ The result, given current market prices, is that in the years when QFs are paid at market (in Oregon, during the "sufficiency period" when there is no avoided resource), the QF has to pay Idaho Power \$1.74 to take the energy during off-peak hours, and receives \$2.42 during on-peak hours.¹⁵ Although Idaho Power's wind integration costs are not at issue, Staff notes that wind integration rates are incongruous with integration rates indicated by 2016 Solar Integration Study in terms of both timing and methodology. The 2013 WIS on which Idaho Power's wind integration charges are based contained multiple infirmities, including: 1) forecast error based on day-ahead schedules rather than on hour-ahead,

¹² IPUC Order No. 30488; adopts a settlement stipulation capping Idaho Power's wind integration charge at \$6.50/MWh.

¹³ IPUC Order No. 33150.

¹⁴ Idaho Power's wind integration charge for Oregon QFs was included in Idaho Power's compliance filing after the Commission authorized wind integration charges in Order No. 14-058

¹⁵ Schedule 85, page 6:

<https://www.idahopower.com/AboutUs/RatesRegulatory/Tariffs/tariffPDF.cfm?id=269>

and 2) calculation of reserve requirements based on the variability of wind alone, rather than of the load net of wind).

In contrast to the methodology in the 2013 WIS, the 2016 Solar Integration Study uses forecast error based on hour-ahead schedules and the calculation of reserve requirements is based on variability of load net of solar and wind. The disparity in approaches between the results obtained by the 2014 Solar Integration Study, the 2016 Solar Integration Study, and the 2013 WIS leads Staff to conclude that it is time for Idaho Power to do another wind integration study that corrects the infirmities in the 2013 Study, and to explore the need for a comprehensive study of variable resources.

Staff believes further consideration of the interaction of solar and wind integration is appropriate for future integration studies. While Staff understands that load is somewhat correlated with solar while it shows nearly zero correlation with wind, the sequencing of the analysis and the interactions between the three inputs (load, solar generation, and wind generation) can impact costs incurred to integrate both resources. Staff would like to explore the concept of assessing the total integration costs for wind and solar combined, and then allocating those costs to each resource type based on their respective variability and predictability. Staff believes that a TRC is the appropriate mechanism for evaluating methodologies to for calculating the costs of integrating wind and solar on a comprehensive basis.

2. Energy Imbalance Market

Idaho Power entered into an Implementation Agreement with the California Independent System operator on April 6, 2016, stating that Idaho Power will join the Western Energy Imbalance Market ("EIM") in April of 2018, subject to necessary regulatory approvals. Idaho Power reports that the Federal Energy Regulatory Commission (FERC) accepted the Implementation Agreement on June 27, 2016. On August 19, 2016, the Company filed an application before the IPUC requesting acknowledgement of the benefits related to joining the EIM and authorization for specific accounting treatment associated with the costs of joining.

Among the benefits commonly associated with an EIM is its capability to provide flexibility for balancing variable energy sources, such as solar. Thus, Staff suspects that when Idaho Power enters the EIM in April 2018, its solar integration costs should be reduced due to the availability of 15-minute scheduling and 5 minute dispatch of resources. Idaho Power has conducted a preliminary analysis of EIM benefits related to solar integration.

3. Implementation of Solar Integration Charges

Idaho Power proposes tiered integration charges that increase as the level of intermittent resource penetration increases. Currently, Schedule 85 lists avoided cost

prices by baseload, wind, and solar resources, for on- and off-peak hours, and it does not list display the integration charge component embedded in those prices.¹⁶ Staff does not oppose Idaho Power's proposal for tiered charges, but believes the components must be clearly set forth in Idaho Power's Schedule 85. Further, when a capacity threshold is reached and the charge should therefore be increased, QFs and other interested parties should receive notice of that proposed change. Staff does not anticipate that a new approval of the charge at the higher penetration level will require approval of the Commission, but Idaho Power should provide notice through a filing, and Staff should validate the resulting price change. The Commission could direct Idaho Power to file these changes immediately following the exceedance of the threshold, or it could include the integration cost changes in the avoided cost price updates due by May 1 of each year.¹⁷

Specifically, Schedule 85 must include tables for both wind and solar charges to Schedule 85, showing the charges for different tiers of penetration, with a statement explaining that the charges have been applied to the on- and off-peak avoided cost prices. Schedule 85 should also clarify whether penetration determination is based on installed capacity only, or capacity that is contracted for and capacity that is installed.

Conclusion and Recommendation

Staff recommends that the Commission accept the 2016 Solar Integration Study and approve the solar integration charges that Idaho Power proposes in this docket based on the solid methodology employed in the 2016 Study, the process of early and active involvement by the TRC, and the inclusion of Oregon PUC Staff as observers of the entire TRC process.

However, Staff recommends approval of the solar integration charges subject to the following:

- Idaho Power should list all integration charges (wind, solar) individually on Schedule 85.
- When Idaho Power passes another increment of capacity, it should file a revised Schedule 85. Because, if approved in this case, the charges will be approved at each level of capacity, the revised avoided cost prices should go into effect after sufficient notice and subject to correct calculation.

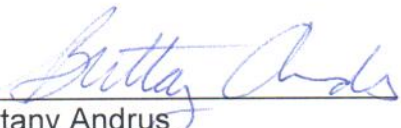
¹⁶ On-peak hours are defined by the North American Electric Reliability Corporation (NERC) as 6:00 a.m. to 10:00 p.m. Monday through Saturday, excluding specified holidays.

¹⁷ Order No. 14-058 at 25-26.

- Going forward, integration studies should be submitted exclusively with IRPs, and approved via the IRP acknowledgment process. Idaho Power should update Schedule 85 in accordance with future IRP acknowledgments.
- Idaho Power should provide an updated wind integration study with its 2017 IRP, which will be filed June 30, 2017. In addition, the wind integration needs should be examined in conjunction with solar integration needs to the extent there is interaction. This consideration should be addressed by a TRC for future studies. This study should also expand on the preliminary analysis of the potential benefits of Idaho Power's participation in the EIM.

This concludes Staff's Comments.

Dated at Salem, Oregon, this 14th day of October, 2016.


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