ORDER NO. 18 413

ENTERED OCT 23 2018

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1793

In the Matter of IDAHO POWER COMPANY, Wind Integration Study and Additional Analysis Compliance Filing.	ORDER

DISPOSITION: STAFF'S RECOMMENDATION ADOPTED

At its public meeting on October 23, 2018, the Public Utility Commission of Oregon adopted Staff's recommendation in this matter. The Staff Report with the recommendation is attached as Appendix A.

BY THE COMMISSION:

Michael Grant
Chief Administrative Law Judge

A party may request rehearing or reconsideration of this order under ORS 756.561. A request for rehearing or reconsideration must be filed with the Commission within 60 days of the date of service of this order. The request must comply with the requirements in OAR 860-001-0720. A copy of the request must also be served on each party to the proceedings as provided in OAR 860-001-0180(2). A party may appeal this order by filing a petition for review with the Circuit Court for Marion County in compliance with ORS 183.484.

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ITEM NO. CA6

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: October 23, 2018

REGULAR ____ **CONSENT** X **EFFECTIVE DATE** N/A

DATE: October 16, 2018

TO: Public Utility Commission

FROM: Brittany Andrus

THROUGH: Jason Eisdorfer and JP Batmale

SUBJECT: IDAHO POWER COMPANY: (Docket No. UM 1793) 2018 Wind Integration Study and Additional Analyses Compliance Filing.

STAFF RECOMMENDATION:

Accept Idaho Power Company's (Idaho Power) Variable Energy Resource (VER) Integration Analysis filed on July 31, 2018 in compliance with Order Nos. 17-075 and 17-223.

DISCUSSION:

Issue

Whether Idaho Power's VER Integration Analysis filing complies with Commission Orders No. 17-075 and 17-223 in Docket No. UM 1793.

Applicable Orders

Order No. 17-075, in addition to approving Idaho Power's solar integration charge, directed the Company to produce additional analyses, using a process that includes a Technical Review Committee (TRC). Order No. 17-223 clarified the Commission's intent that the TRC be created and involved from the beginning of the analysis processes.

Background

Docket No. UM 1793 was opened August 10, 2016, upon Idaho Power's filing of an Application for Approval of Solar Integration Charge. In Order No. 17-075, the

Commission approved Idaho Power's 2016 Solar Integration Study (SIS). Additionally, the Commission directed Idaho Power to 1) file revisions to Schedule 85, Cogeneration and Small Power Production Standard Contract Rates, to add solar integration charges; 2) conduct a new Wind Integration Study (WIS); 3) evaluate the effects of participation in the Energy Imbalance Market (EIM); 4) establish a TRC to assess the feasibility of estimating the unified costs of integrating wind and solar, and 5) submit the updated SIS, WIS, and assessment of the feasibility of a unified integration study by April 30, 2018.[1]

Subsequently, in Order No. 17-223, the Commission responded to Idaho Power's Petition for Clarification of Order No. 17-075 by clarifying its intent that the TRC be created and involved from the beginning of the WIS development and the evaluation of EIM participation.[2]

On April 11, 2018, Idaho Power filed a motion to extend the filing deadline due to concerns that it would not be "...possible to complete the requested directives and filing by the April 30, 2018, deadline without compromising the thoroughness of the investigation and the TRC's opportunity for review and to provide input."[3] The Company's motion to extend the study filing deadline to July 31, 2018, was granted.[4]

Idaho Power filed revisions to incorporate solar integration charges into Schedule 85 on July 21, 2018. Staff reviewed the filing for correctness, and the revisions became effective upon filing.

Idaho Power filed its VER Integration Analysis report on July 31, 2018. This report contains the three analysis components that were directed by the Commission: the 2018 WIS, the evaluation of EIM effects, and the feasibility assessment of performing a unified integration study. Staff addresses these three report components separately in the Analysis section below.

Analysis

Establishment and Use of the TRC
Idaho Power's VER Integration Analysis report development process included significant involvement from the TRC. Order 17-075 directed the establishment of a TRC to assess the feasibility of estimating the unified costs of integrating wind and solar. Order No. 17-223 clarified that the TRC should be also be involved from the

[1] Order No. 17-075, p. 8.
[2] Order No. 17-223, p. 5.
[3] Docket No. UM 1793, Idaho Power's Motion to Extend the Filing Deadline, p. 4, April 11, 2018.
[4] Order No. 18-130, April 12, 2018.

beginning of the WIS development and the EIM evaluation. TRC membership included Staff, as well as Idaho PUC staff, and representatives of the Idaho National Laboratory, the Northwest Power and Conservation Council, Renewable Northwest, and the University of Idaho. Staff agrees with Idaho Power that, "The TRC provided important guidance in the design and vetting of the approach Idaho Power adopted in re-evaluating the cost of integrating wind and solar resources."[5]

2018 WIS
The 2018 WIS incorporates several improvements over previous wind integration cost studies:

- Use of actual observed wind data from Idaho Power's system.
- Use of actual two-hour ahead load and wind forecasts.
- Use of the AURORA model to simulate Idaho Power's system.
- Hydro conditions (exceedance) applied: 50 percent, ten percent, 90 percent.
- Operating reserves were derived from the NERC BAL standard.

The 2018 WIS report results for the average wind integration costs at various wind MW are shown in Table 1.[6]

Table 1.

Wind MW	300	500	727*	800	900	1000
Average integration cost $/MWh	$2.29	$2.88	$4.52	$4.88	$5.56	$5.96

*727 MW is the level of wind capacity currently operating on Idaho Power's system.

The integration costs above are average cost for all projects at a particular tier, not the incremental cost of adding the next project. For example, with 800 MW of wind, the average cost of integrating all 800 MW is $4.88. However, the application of average cost means that earlier projects pay more than the Company incurs, while those coming on later pay less than the costs incurred. In addition, an average cost approach means that Idaho Power would need to modify contracts for those earlier projects in order to recover the total costs.

[5] Idaho Power VER Integration Analysis, p. 2.
[6] Ibid, p. 3.

With the use of an incremental cost approach, each new project pays the cost incurred for integrating that higher tier. Table 2[7] shows incremental costs for different wind capacities.

Table 2.

Wind MW	0-300	301-500	501-726	727-800	801-900
Incremental integration cost $/MWh	$0.00	$3.84	$8.36	$8.60	$11.14

For the SIS, the Commission decided to apply the incremental solar integration costs in Idaho Power's Schedule 85.[8]

The current Schedule 85 wind integration costs are based on an older methodology from Idaho Power's 2013 WIS, and the charge is $17.51 per MWh in 2018.

The Commission did not require an update to Idaho Power's current wind integration charges, so the absence of such a filing does not impact Staff's assessment of compliance. However, Staff intends to address VER integration costs and updates to integration charges in the 2019 IRP.

Effects of EIM
The VER Integration Analysis report addresses the EIM in a limited fashion, due in large part to the Company's limited experience in that market. The report provides two observations regarding the Company's participation in the EIM: 1) because the EIM allows fewer minutes of system imbalance than is allowed under the NERC BAL standard, participation has required more frequent resource moves, periodically exposed Idaho Power to the EIM location marginal pricing cap of $1,000 (the report attributes this to the current penetration levels of VERs with large forecast errors); and, 2) Idaho Power has experienced an increase in the quantity of flexible operating resource required to pass the EIM flexibility tests.[9] The conclusion of this section states, "As Idaho Power continues to gain experience participating in the EIM, the company will be better able to assess the resulting impact on VER integration costs."[10]

[7] Idaho Power VER Integration Analysis, p. 3.
[8] Order No. 17-075, p. 5.
[9] Ibid., p. 28.
[10] Ibid., p. 28.

Feasibility of Estimating Unified Costs
With respect to the Commission directive to assess the feasibility of estimating the unified costs of integrating wind and solar, Idaho Power completed two analyses to evaluate those resource characteristics and costs. The first evaluation compares equal capacity amounts of wind and solar, and the second evaluates the reserves for Idaho Power's current 727 MW of wind plus 289 MW of solar, calculated using the NERC BAL standard used in the 2018 WIS. Idaho Power states in the report that, "[E]valuating the combined effects of wind and solar on reserve requirements and costs has been a valuable exercise...Additional investigation is warranted into the combined effect of wind and solar, in a unified VER integration costs analysis..."[11]

Additional Information
As noted in 2018 WIS section of the VER Integration Analysis report, the AURORA model identifies periods when Idaho Power's reserve requirements are not met in the "load net wind" scenario. The number of these "reserve violations" in the model increases dramatically with increasing wind penetration as shown in Table 3.[12]

Table 3. Number of reserve violations, load net wind scenario.

Wind MW	300	500	727	800	900	1000	1,100
Total reserve violations	3	14	76	232	799	1,434	2,434

The report states, "AURORA's failure to maintain reserves at increasing levels of wind is a strong indication additional wind may not be accommodated without significant changes to Idaho Power's system load and resources, or changes to increase the control of wind during periods of low regulating reserves."[13] Staff expects that this aspect of the report, including any analysis of potential VER integration limits, will be addressed in the 2019 IRP currently in progress.

[11] Idaho Power VER Integration Analysis, p. 28.
[12] Ibid., p. 27.
[13] Ibid., p. 26.