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BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF IDAHO POWER)	
COMPANY'S APPLICATION TO UPDATE)	CASE NO. IPC-E-16-11
SOLAR INTEGRATION RATES AND)	
CHARGES)	COMMENTS OF THE
)	COMMISSION STAFF
)	

COMES NOW the Staff of the Idaho Public Utilities Commission, by and through its Attorney of record, Daphne Huang, Deputy Attorney General, submits the following comments.

BACKGROUND

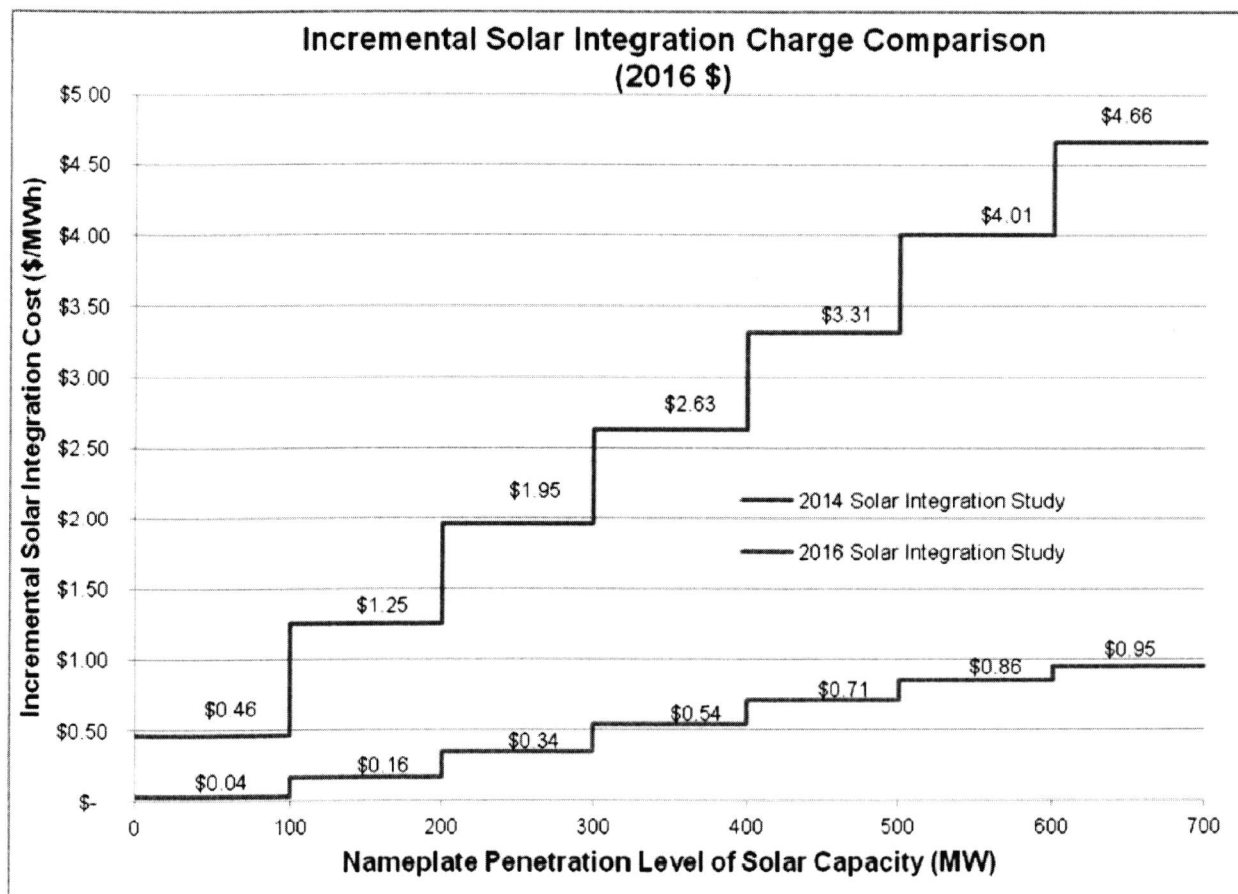
On May 6, 2016, Idaho Power Company asked the Commission for authority to update its solar integration rates and charges consistent with its completed 2016 Solar Integration Study. As described by Idaho Power in testimony, "The greater variability and uncertainty exhibited by solar resources requires an electric utility integrating solar to modify its operating practices by holding extra operating reserves on dispatchable generation resources. The effect of having to hold operating reserves on dispatchable resources is that the capacity held in reserve restricts the use of those resources and they cannot be economically dispatched to their fullest capability." DeVol, DI at 4. Generally, the average cost of integrating solar generation increases as the electric system's nameplate solar generation increases. Where the utility has contracted to purchase solar power

under the Public Utility Regulatory Policies Act (PURPA), the rates for such power must not exceed the utility's "avoided cost" – what the utility would have incurred had it generated or acquired the power elsewhere. If solar integration costs are not calculated and properly allocated to these PURPA project developers, those costs will be impermissibly passed onto utility customers in the avoided costs.

In February 2015, the Commission approved a settlement stipulation which implemented solar integration rates and charges for Idaho Power based on the Company's first solar integration study, completed in 2014. The solar integration rates and charges were set forth in a new tariff Schedule 87, Variable Generation Integration Charges, at the incremental cost of solar integration for each 100 megawatts (MW) of solar nameplate penetration. The settlement stipulation provided that Idaho Power would initiate a second solar integration study within the next year, using a Technical Review Committee (TRC).

2016 Solar Integration Study and Report

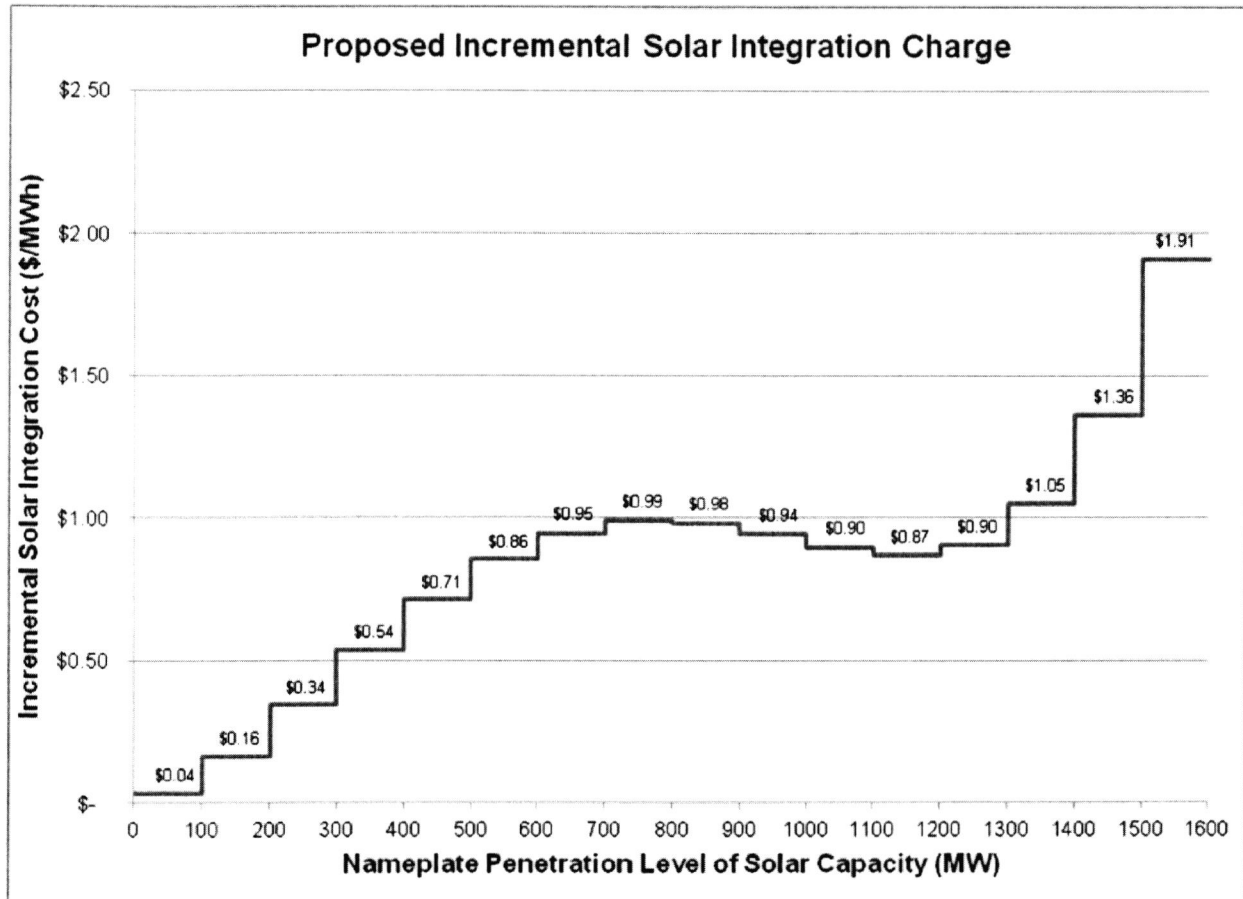
As a result of the 2016 Solar Integration Study, Idaho Power proposes updated incremental integration costs at each 100 MW of solar generation penetration, extending out to 1,600 MW. Application at 5. The costs determined in the 2016 Study are substantially less than those from the 2014 solar integration study, as shown in the following graph.



Id.

Idaho Power attributes the comparatively lower integration costs in the 2016 Study results primarily to the accounting of the combining effects of load, wind, and solar variation in the reserve methodology. This change was discussed in great detail with the TRC, and is a notable change in methodology from the 2014 solar integration study.

The 100 MW incremental costs of solar integration to 1,600 MW is shown in the following chart:



Id. at 6.

Exhibit 4 to Mr. Youngblood's testimony contains tables that will replace the current Schedule 87, Sheets 87-9 through 87-15, and create new Sheets 87-16 through 87-24. *Id.* The charges in Schedule 87 are amounts to be deducted from avoided cost rates beginning the year a project comes on-line, and based on the nameplate capacity penetration level of solar generation at the proposed project's scheduled operation date. *Id.* Each 100 MW increment or penetration level has its own table, set forth in Schedule 87, which identifies the levelized integration charge and the non-levelized stream of integration charge amounts listed by year. *Id.*

The Company requests that the Commission approve the updates to the solar integration costs in Schedule 87, Variable Generation Integration Charges, as set forth in Mr. Youngblood's Exhibit 4, based on the 2016 Study.

STAFF ANALYSIS

The settlement stipulation signed in conjunction with the 2014 solar integration study identified numerous issues that should be considered in the second 2016 Study. The parties to the stipulation agreed that Idaho Power, together with the TRC, would consider whether the second solar integration study should include the following — and if so, what should be the appropriate methodology to be used for consideration of each issue:

- Alternative water-year types (e.g., low-type and high-type), range of water years or normalized water year
- Intra-hour trading opportunities
- Shortening the hour-ahead forecast lead time from 45 minutes to 30 minutes
- Clustered solar build-out scenarios
- Other solar plant technologies (e.g., tracking systems or varied fixed-panel orientation)
- Correlation between solar, wind, and load variability, uncertainty, and forecasting error
- Improved forecasting methods
- Energy imbalance markets, or other market structures
- Voltage/frequency regulation
- Increased transmission capacity, changes in operation of hydroelectric facilities, addition of demand-side technologies
- Gas price forecast(s)
- Modeling of sub-hourly scheduling of load and generation
- Identification of the existence of low occurrence events that contribute to proportionately higher integration costs and possible remedies, including operational or contractual solutions to mitigate these events and reduce integration costs and charges.

IPC-E-14-18, Joint Settlement and Motion, at 4-5.

The TRC, in consultation with Idaho Power, considered and discussed each of the issues listed in the Joint Settlement. Idaho Power provided feedback to the TRC regarding the time and difficulty associated with addressing each of the issues in the 2016 Study. The TRC was asked to prioritize the issues based on their perceived importance, the time and difficulty to address them, and the time available to complete the study. Through the ranking and discussion with the TRC, Idaho Power was able to reach consensus on which issues could reasonably be addressed in the study and which could not. Unfortunately, not all of the issues could be fully addressed in the

allotted time; consequently, some issues, as Staff will later discuss, should be addressed in future studies.

Technical Review Committee

The TRC was comprised of Idaho Public Utilities Commission Staff, Public Utility Commission of Oregon Staff, personnel from Idaho Power, and a technical expert designated by each of the parties to the settlement stipulation. The TRC developed and finalized a study plan and was involved throughout the development of the Study Report, completed April 2016.

Although listed simply as an “observer” to the process, Staff actively participated in every meeting of the TRC. Staff asked questions, offered suggestions, reviewed results, and carefully critiqued the draft report. Consequently, for the most part, Staff’s input has already been considered and incorporated into the conduct of the study and the final report. Staff believes the process was collaborative amongst all TRC participants and that all of the parties involved in the TRC made good faith efforts to achieve accurate and reasonable results. Staff does not believe there was any bias by TRC members to skew the results of the study.

Reasonableness of the Study Results

In the 2016 Study, Idaho Power focused almost exclusively on short-term (i.e., within-hour) impacts caused by the variability and uncertainty of solar generation. Yet, Idaho Power states that “... for the system operator responsible for maintaining system balancing, integration impacts arise because of variability and uncertainty over the coming minutes, hours, or perhaps days.” DeVol, DI at 12. “The 2016 Study focused on the assessment of variability and uncertainty occurring from the perspective of hour-ahead forecasting. This assessment for each of load, solar, and wind was based on the extent to which five minute observations differ from hour-ahead forecasts.” *Id.* at 12. “Thus, at a fundamental level, the statistical-based analysis to characterize variability and uncertainty was an analysis of deviations between five-minute observations and hour-ahead forecasts.” *Id.* at 13.

By analyzing only deviations between five-minute observations and hour-ahead forecasts, the 2016 Study only captured costs in the hour-ahead time frame. Staff believes there could also be costs in the greater-than-hour-ahead time frame that are not being captured, either as an integration cost or as an avoided cost. For example, if Idaho Power knows with high certainty that the next day will be cloudy, it will plan to dispatch its resources differently than it would if it

knew the next day would be sunny. Idaho Power should more closely examine whether all costs in all time frames are being captured, and if so, identify how and where those costs are captured.

If costs incurred due to variability and uncertainty are not captured as an integration cost, they should arguably be captured as an avoided cost. However, in the Surrogate Avoided Resource (SAR) methodology for computing published avoided cost rates for small facilities, there is nothing to address intermittency at any time interval. In the Integrated Resource Plan (IRP) modeling process for larger projects, hour-ahead or day-ahead intermittency could possibly be addressed; however, as it is currently applied, AURORA¹ is used in a single-run methodology only to derive hourly marginal prices without solar generation being a part of the resource portfolio. Because the intermittency of solar is not modeled in AURORA, higher costs that might be incurred by being forced to run more expensive resources are not captured. How significant those costs may be is unknown. Nonetheless, Staff believes that the consequences of not considering greater than hour-ahead variability and uncertainty may be that either the integration costs for solar are conservatively too low or, alternatively, the avoided costs for solar are conservatively too high.

Issues for Future Studies

As previously mentioned, not all of the issues identified in the 2014 study could be addressed in the 2016 Study. In addition, Staff believes there may be additional emerging issues that should be addressed in future studies.

1. Future updates should consider the following:
 - a. Idaho Power joining the Western Energy Imbalance Market (EIM) in April 2018
 - b. The Boardman to Hemingway transmission project and any other transmission changes
 - c. Resource changes or additions including demand response
 - d. Energy storage
 - e. Self-provided integration services to the extent qualifying facilities (QFs) can and may be willing to provide them
 - f. Future changes in curtailment of QFs, either through policy changes or contractual arrangements

¹ AURORA is a comprehensive electricity market forecasting tool that allows utilities to produce electric market price forecasts.

2. Future updates should consider combined effects of both new solar and new wind. The 2016 Study assumed current level of wind development was “frozen.” Integration costs for new solar and wind will not be directly additive, so it will be important to consider the timing and quantities of each in order to allocate integration costs between the two types of generation.
3. The Study should be periodically updated to reflect changes in the following:
 - a. Gas/fuel price
 - b. Actual build-out of wind and solar
 - c. Other changes in study assumptions
4. Future studies should consider the effects of distributed and community solar as it develops. A method should be developed to fairly allocate the costs of integrating distributed and community solar so that PURPA solar projects are not assigned costs of non-PURPA solar.
5. The 2016 Study only considers energy costs because all reserve requirements are met using existing resources. At some point in the future, however, new, highly flexible resources may need to be built or acquired to provide additional up-regulation and down-regulation capability. The capital cost of these new resources should be considered along with the energy costs. Decisions will need to be made about who should pay for these capital costs.
6. The methods and models used to perform solar and wind integration studies should be easily updated in order to keep Schedule 87 rates updated going forward.

Tariff Additions

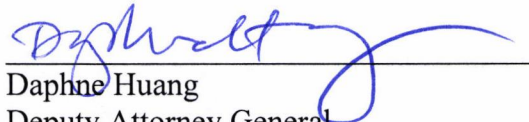
Staff believes that a couple of additions to Schedule 87 would be helpful to avoid possible confusion and to better clarify how the rates in the tariff are to be applied.

1. Clarify that the tariff rates will be included in QF contracts at the time those contracts are executed and, once added, shall remain unchanged in the contract for its duration. Subsequent changes to the tariff rates only apply to new contracts at the time those contracts are executed.
2. Clarify that the tariff rates will be applied to all PURPA contracts, both SAR-based and IRP-based.

RECOMMENDATIONS

Staff recommends approval of the solar integration charges as proposed by Idaho Power in its Schedule 87. Staff also recommends that clarifying language be added to Schedule 87 as discussed above. Finally, Staff recommends that Idaho Power update its solar integration study at reasonable intervals as assumptions and circumstances change.

Respectfully submitted this 30th day of June 2016.



Daphne Huang
Deputy Attorney General

Technical Staff: Rick Sterling
Yao Yin

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY THAT I HAVE THIS 30TH DAY OF JUNE 2016, SERVED THE FOREGOING **COMMENTS OF THE COMMISSION STAFF**, IN CASE NO. IPC-E-16-11, BY MAILING A COPY THEREOF, POSTAGE PREPAID, TO THE FOLLOWING:

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