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Oregon Public Utility Commission
Administrative Hearings Division
201 High St. SE Suite 100
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Re: NWPP Detailed Design Doc

NWPP,

OPUC Staff thanks NWPP for the opportunity to provide thoughts and concerns on the detailed design document. Staff generally supports NWPP's program and finds that it would provide a greater level of transparency and reliability in the region. Staff provides these comments to discuss areas of potential improvements for NWPP and stakeholders consideration. Staff thanks NWPP for all of the hard work and effort done thus far to get the program to this stage and looks forward to further discussions as the program gets underway.

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Introduction

The Oregon Public Utility Commission Staff appreciates the hard work and thoughtfulness with which the NWPP put forth its detailed design. The OPUC Staff largely supports the general structure and program as outlined in the document. The following comments are intended to provide the NWPP and stakeholders with some considerations for future revisions but maintains its general position of support for the program regardless of any changes to the methodology. Some of the larger concerns raised by Oregon PUC Staff in these comments are as follows:

- The three year data minimum may need to be raised as it will not result in robust capacity valuations for variable energy resources.
- Removal of the worst performing year of a thermal resource when calculating UCAP, could result in over-estimation of true capacity value and bias capacity contribution in the resource stack away from renewables.
- Further explanation of the scaling down methodology and how it relates to the planning reserve margin calculation is warranted.
- The uncertainty adjustment should be set at a baseline value for participants who agree to follow load and variable energy resource generation forecasting best practices outlined by the Program Operator.
- The penalties/pricing mechanism may result in adverse incentives to the optimal solution.

Load Forecast

Staff supports the Program Operator developing its own load-forecasting function (page 50). This would be an important step for transparency and reflects the fact that generally weather is the most-impactful driver of load for all regional utilities.

Staff supports the postseason review of the load forecasts (page 50). This will identify if participants tend to over or under forecast and will promptly identify if there is as-yet-unidentified incentive to under or over-forecast load. As a hypothetical example, a planning reserve margin above or below 12 percent might have some unforeseen feedback effect on participants' incentives versus a 12 percent planning reserve margin. Investor owned utilities (IOUs) generally make higher total profit when they earn additional returns from prudent investments. As the load forecasts play a large role in the determination of necessary capacity, one potential incentive for IOU's would be to over-forecast load.

Annually updating the interchange analysis is very important since "capacity sold in economic sales was presumed to be available to the RA footprint if necessary" (page 56). Staff finds the distinction between economic sales and scarcity sales reasonable and at this time modifying the load shape to add back in the economic sales seems appropriate. The planned imports and exports will be included in the LOLE/PRM assessment (page 52). It is also important to update the interchange analysis since carbon regulation will affect market prices and the quantity of energy sales.

For the PO created forecasts, seven load forecast probabilities will be used per month to create load forecast uncertainty (page 94). These load patterns will reflect weather and other load drivers (page 94). Variable energy resource generation will be correlated with the load shapes (page 95). Staff emphasizes the importance of matching the correlation between the variable energy resource generation and load to the true correlation, for example including higher solar generation on hot days. This suggestion would impact the LOLE hours.

Qualified Capacity Contribution of Resources

How the capacity contribution calculation methodology differs in NWPP versus Oregon:

Inputs:

NWPP	Oregon
	1. The load and resource balance is by utility.

1. The load and resource balance is by climate/fuel supply zone and each zone is modeled separately (page 66). 2. Imports and exports are assumed in the load and resource balance based on historical data (page 56).	2. Staff advocates that only contracted resources or resources expected to be operational be included in supply. Treatment of imports/exports in IRPs currently differs by utility.

1. A recent LBNL paper states, "a regional capacity accreditation that considers variable resources pooled across the region would most likely produce a lower capacity credit than a local IRP assessment. Therefore, if states grant capacity credits that are different than what the RA program recognizes, an LSE may have a capacity deficit with the RA program, but meet the state's capacity requirement."[1] This might be particularly problematic for states like Oregon that have a large quantity of variable energy resources.

It is described that "at this time, the FS Program has not made a final determination of VER zones for any VER resource types" (page 114). Staff finds merit in the proposal to differentiate by fuel supply zone.

2. NWPP's proposal to include imports and exports seems appropriate to Staff. It is important to note that California sends significant solar generation to the Northwest. The value of additional stand-alone solar in the Northwest depends on whether these solar imports are included in the load and resource balance, currently Oregon IRPs do not necessarily include these imports, so it seems like the value of capacity for Oregon solar would be substantially lower in the NWPP calculation versus in current Oregon IRPs.

Modeling standards:

NWPP	Oregon
3. For variable energy resources, the ELCC is calculated as the reduction in the amount of perfect capacity needed to meet the planning reserve margin (page 113). 4. For variable energy resources, a minimum of three years of hourly generation data (page 68). And ELCCs are calculated for each historical year and then averaged together (page 112).	3. ELCC modeling is the standard approach for computing capacity values in Oregon. 4. To sufficiently capture the correlation between generation and weather, Staff advocates for a minimum of seven or eight years of data. Idaho Power's current IRP averages the yearly ELCC values, whereas PGE and PAC model all years at once.

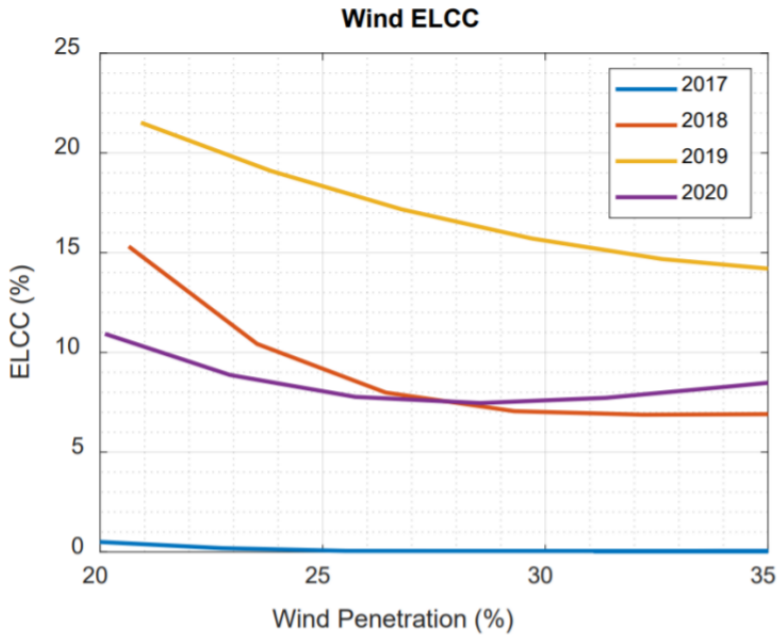
3. Staff concurs with NWPP that a probabilistic approach is an equitable method to value variable energy resources and that ELCC is a well-established method.

4. Staff worries that analyzing just three years of data will allow too much variation in the capacity value of variable energy resources. Consider for example Idaho Power's current IRP showing that yearly variation in wind generation can vary the ELCC significantly:

Figure 1: Reproduction of Idaho Power's Wind ELCC Results[2]

[1] Carvallo et al, 2020, "Implications of a regional resource adequacy program on utility integrated resource planning Study for the Western United States," funded under Lawrence Berkeley National Laboratory contract, pages 34-35

[2] Idaho Power 2021 IRP, April 8, 2021 Advisory Council slide deck, page 35, accessed September 6, 2021 at https://docs.idahopower.com/pdfs/AboutUs/PlanningForFuture/irp/2021/2021_ELCC_IRPAC.pdf



In the Idaho Power example in Figure 1, the years 2017 and 2019 have significantly different wind ELCC values than the other years which illustrates the importance of having many years to average over. Conducting modelling using one table or limited observation set for renewable generation will likely overstate power reliability if the historical period is relatively stable in weather conditions. The E3 December 2020 Capacity Report states that, " Most LOLP models use at least thirty (30) years of historical weather data and eight (8) years of renewable generation profiles in order to accurately converge on statistically significant ELCC values."[3] Given the great importance of the resource adequacy effort, a high level of modelling complexity including use of multiple years of generation profiles is warranted.

Many years of weather and generation data are important to capture years that stress the system. Further, Staff believes there would be value in modeling extreme events that might not be in the historical data. "To capture a wide range of variability around the operating conditions of storage hydro resources, it was determined that ten years of historical data should be considered… if assessing firm energy capability in the future, looking to a much longer period of time that includes critically low stream-flows would be needed" (page 103). Staff suggests a longer dataset to ensure reliability in critically low water years. Sensitivity runs could be made to address whether climate change has affected the water availability distribution for peak generation considerations. However, capacity output of the federal system is much less impacted by hydroelectric conditions than is energy generating capability.

Staff recommends to incorporate the impacts of climate change on projected generation data for new resources. Oregon should align with the NWPP and the other participants so that the same load and resource data inputs result in the same capacity values. "Across SPP, for example, states reach consensus on capacity accreditation for renewable resources and their LSEs' IRPs incorporate these assumptions into their analyses."[4]

[3] E3 Energy + Environmental Economics, "Principles of Capacity Valuation," prepared for Oregon PUC Docket No. UM 2011 General Capacity Investigation, December 15, 2020, available at: https://edocs.puc.state.or.us/efdocs/HAH/um2011hah82625.pdf

[4] Carvallo et al, 2020, "Implications of a regional resource adequacy program on utility integrated resource planning Study for the Western United States," funded under Lawrence Berkeley National Laboratory contract, pages 34-35

Outputs:

NWPP	Oregon
5. Updated annually (page 65). 6. Capacity values by month and shoulder months are ignored (page 112). 7. The capacity values of variable energy resources are scaled down so that the sum of the zones equals the program total (page 114).	5. Updated biannually in IRPs. 6. Annual ELCC values based on all hours.

5. Projected supply side resources will be included in the yearly ELCC study (page 111). Staff agrees with the proposal to align the supply resources with the year of study. This differs from the Oregon IRP capacity value studies where a future snapshot load and resource balance year is used. Staff emphasizes that it will be important for the NWPP to appropriately include planned resource retirements. Staff believes that the capacity value of variable energy resources should increase due to thermal resource retirements providing an incentive to build more resources to replace retiring resources.

6. Staff agrees that considering net peak instead of gross peak is the correct approach. Thermal resources consider the capacity critical hours defined as, "those hours where the net regional capacity need is above the 95th percentile (highest capacity need hours)" (page 51). Oregon IRPs currently include the shoulder months, but indeed, the LOLE is low outside of summer and winter, so likely that difference is minor.

Because the interchange imports and exports are included in identifying the capacity critical hours, it is important that the imports can be relied on. By definition, the hours are likely to be the hours with the highest load and the least variable energy resource generation, so ensuring that the thermal resource does not have outages during these net peak times is appropriate. Staff is concerned with the proposal to remove the worst performing year for thermal resources because those resources actually being unavailable during a historic time of net peak need is potential indication that they will have lower capacity value in the future (page 66). Assumptions should be conservative to guarantee resource adequacy. Further, it seems to arbitrarily prefer thermal resources over variable energy resources since the worst performing year for variable energy resources is not removed.

7. Staff is interested to learn more about the scaling down calculation. Each participant is required to meet the planning reserve margin in full (page 50). Staff would especially like to confirm that the scaling down is not necessary because the RA program will exceed the planning reserve margin when each participant individually meets it.

Sharing Requirement Calculation

"Uncertainty is the relationship of the accuracy of the performance of historical forecasts, by Participant, in comparison to historical actuals. This uncertainty will be Participant specific and include adjustments for possible variations in load, solar/wind, and run-of-river forecasts… participants who submit forecasts which are unreliable have been shown to greatly increase the magnitude of potential Sharing Events in the Program" (Page 153). Staff suggests that participants who agree to follow load and variable energy resource generation forecasting best practices outlined by the Program Operator might have their uncertainty set at an identical level for the sake of equity, particularly small participants might not have as many resources to dedicate to improving forecasting accuracy.

Transmission

The NWPP's transmission program design, overall, seems reasonable for the purposes of the resource adequacy program. The program would require Participants to demonstrate having transmission rights to deliver at least 75 percent of its Forward Showing (FS) resources in the FS portfolio from RA resource to load with demonstrated NERC priority 6 or 7 transmission service. The NWPP has also set up a system that would verify the ability to procure transmission service and impose penalties when a Participant fails to procure sufficient transmission. However, there is flexibility built in such that penalties could be waived during exceptional regional events (Page 177).

While the current Program's transmission framework places a heavy focus on procuring sufficient transmission capacity to meeting load requirements, one issue that is not yet addressed in the Resource Adequacy (RA) program is the situation that arises when a specific Load Resource Zone (LRZs) needs additional import capability, either through acquisition of firm service or, potentially, constructing new transmission infrastructure. Alternatively, this could also determine whether certain LRZs will be required to have a higher Planning Resource Margin (PRM) than the Program's requirement (Page 89).

The NWPP has indicated that the details around the potential for new transmission capacity or the assignment of higher PRMs will be addressed in later planning phases of the RA program (Page 89). The OPUC has questions regarding any additional transmission capacity findings and subsequent recommendations. Because these details have not yet been included in the current planning phase, the OPUC has questions about how obligated participants would be directed to build additional capacity to satisfy the program requirements. As a result, a mechanism that would include non-binding, but meaningful state participation should be included as part of the RA program, particularly in areas have implications for resource planning and new transmission builds.

Penalties

The pricing mechanism for Energy Deployments was designed as to not be punitive while the failure to deliver Energy Deployments is designed to be punitive. This may not result in appropriate incentives. It is lax in the requirement to plan and hold adequate reserves while also ensuring strong incentives for those with adequate reserves to make those available to those that "find" themselves short. For entities that do not have captive customers to pay for invested capital, there will be an increasing incentive to control costs and possibly overstate QCCs.

An alternative recommendation is to increase the pricing incentives to hold sufficient reserves. This will also reinforce the need to accurately estimate QCCs. An alternative more moderate pricing scheme could be made available to LREs that use third parties to estimate the QCCs.

As an alternative to the price basis as in the Proposal, the price could be set as some multiple of the per kWh price for a generation capacity resource, spread over a limited number of peak hours within a year, assuming a shortened depreciation schedule for purposes of incenting LREs

to have sufficient reserves.