OREGON SOLAR + STORAGE INDUSTRIES ASSOCIATION

Oregon Public Utility Commission
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October 24, 2022

To: Oregon Public Utility Commission
Re: Docket No. UM 2011, General Capacity Investigation

Comments of the Oregon Solar + Storage Industries Association (OSSIA) on the Oregon Public Utility Commission (OPUC) Staff's Announcement and Best Practices Document

- **Capacity Contribution.** On September 23, 2022, the OPUC Staff released an "announcement and best practices document" ("staff proposal") that proposes an outcome of the UM 2011 investigation. The Staff proposes guidelines for how the state's utilities should determine the capacity contribution (i.e. MW quantity) of different types of supply resources, using an Effective Load Carrying Cost (ELCC) metric or, to the extent ELCC metrics are not available, using an 8760 Loss of Load Probability metric.

- **System Marginal Capacity Resource.** Staff also provides general guidance on how to determine of the marginal capacity proxy resource for each utility, which we understand would be used to determine the incremental cost (i.e. $/MW cost) of capacity.

- **Deferred Issues.** Beyond these two items above, the staff proposal would defer to specific "use cases" (e.g. PURPA, Renewable tariffs, DER program design, Energy Efficiency avoided cost, utility planning and procurement) all other aspects of capacity valuation, including:
    - Reliability Metrics (e.g. 1-in-10 year LOLP) assumed for ELCC calculations,
    - Implementation of Proxy Marginal Resource Selection and Cost Calculations,
    - System Capacity Sufficiency/Deficiency Determinations,
    - Capacity Compensation Framework for Specific Resources, and
    - Transparency Issues.

Process. OSSIA is concerned that it was left out of the process that has occurred in this docket since the February 15, 2022 workshop. Staff notes that following that workshop, it contracted with E3 to provide further analysis and that it met with each of the three utilities individually to inform this final straw proposal. If Staff has only been informed by utilities, then its recommendation is more likely to favor the utility perspective and not represent a well-balanced resolution of the issues. OSSIA specifically contracted with an expert advisor and has been actively engaged in these this docket over the past few years. A more well-balanced approach would have been to include other experts that have participated in this process in these behind-the-scenes conversations.

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We discuss the above three over-arching issues (capacity contribution, system marginal capacity resource, and deferred issues) below.

1. **Capacity Contribution and ELCC/LOLP issues**

Staff proposes to use an ELCC calculation of capacity contribution that assigns a capacity contribution amount (i.e. annual percentage) to specific resources based upon how much "perfect" capacity a marginal resource addition can provide to the system. The result of the ELCC calculation is an annual percentage amount for each resource type and year. Staff proposes that the utilities calculate ELCCs in four different years, including the first year in which there is a major resource need, and the last year of the utility study period. Hourly generation profiles for resources are to include at least eight years of data, augmented if needed with synthetic (e.g. modeled) data. Staff notes that resource generation profiles should be adjusted, as appropriate, for climate change impacts. Staff proposes that the "baseline resource assumptions" for future years should reflect each utility's "most recently acknowledged" preferred portfolio, including any other known additions or retirements. We assume by preferred portfolio, staff is referring to the utilities' Integrated Resource Plan (IRP) portfolios.

OSSIA is generally supportive of staff's proposal to use ELCCs to determine resource capacity contribution amounts for each resource type. However there are several issues that should be considered:

Last-in ELCC. The "last-in" aspect of ELCC determination is meant to capture the marginal capacity contribution of a system resource addition. As described in the staff proposal (and E3 report), such an approach accounts for the impact of other resources that have already been added to the system. For example, as the staff proposal notes, including expected future solar capacity additions in the preferred portfolio resource additions results in last-in ELCCs for battery storage that are higher (due to positive synergies) and last-in ELCCs for additional solar that are lower (due to diminishing returns). As opposed to last-in ELCC, a portfolio ELCC value indicates the capacity contribution of a utility's entire supply of a particular resource type. For example. It could indicate the capacity contribution of utility's entire portfolio of solar capacity, including both existing and new solar capacity. Thus, the last-in ELCC is intended to distinguish between average and marginal ELCC values for a given resource type.

While the distinction between marginal and average ELCC value makes sense, there is an important subtlety to appreciate, which is that resource additions of a particular type should be combined to the extent they occur as combined additions to the utility's portfolio within a given year or short period of time. Otherwise, there is the risk that ELCC values will differ greatly simply due to the order in which resources are assumed to be added. If resources are added in a particular year, it does not make sense to assign different ELCC values to each of those resources based on the order in which they are assumed to be added. This becomes particularly important to the extent third-party generation capacity competes with utility-owned generation capacity. If a utility's preferred resource plan indicates a resource addition in a particular year, it should not have an ELCC value that is dramatically different than the ELCC value of additional or alternative additions in that year of other similar resource types.

PGE's 2019 IRP update indicates marginal ELCCs for solar PV of about 5%; PGE explains these are less than in the 2019 IRP due to including approximately 200 MW of new solar in the IRP baseline forecast.[1]

PGE 2019 IRP and 2019 IRP Update - Solar ELCCs (as a function of 100 MW addition)

MW	100	200	300	400	500	600	700	800
2019 IRP	15.8%	10.2%	7.2%	4.8%	3.6%	2.6%	2.1%	2.0%
2019 IRP Update	5.5%	5.0%	4.5%	4.0%	4.0%	2.7%	2.7%	2.7%

OSSIA recommends adding some detail to the staff proposal regarding when it would be appropriate to use a last in ELCC *vs.* a portfolio ELCC value, rather than simply favoring blanket-use of last-in ELCC values. Some use cases, such as DER program evaluation, may want to evaluate the capacity value of the existing DER portfolio or of near-term additions to the portfolio, rather than the incremental value of future additions to the portfolio. Also, the staff proposal does not indicate how the 4 years of ELCC values would be used in use cases; for example, if a PURPA use-case analysis of capacity value is to consider the capacity value of current project contracts, it would be inappropriate to consider the last-in ELCC values for future years. Last-in ELCC values for particular future years should only apply to projects that are added in those years, not to projects that are under contract today.

Preferred Portfolio Assumptions. A related ELCC issue is whether the preferred portfolio additions assumed in the baseline forecast allow for reasonable alternatives. Last-in ELCC values applied to third-party developers should not suffer from utility planning assumptions in which all resource need is met through preferred plan resource additions of utility-owned resources. Therefore, it is important, in combining different additions of similar resource types as recommended above, to compute incremental ELCC values that are fair with regard to both ownership and timing. Incremental capacity value is reduced, if all capacity need is already addressed by preferred portfolio resource additions. Yet, a fundamental purpose of the ELCC capacity contribution determination should be to ensure there is a level playing field that does not discriminate in favor of resources in the preferred portfolio.

Examples of the need for a level playing field are evident in recent IRPs. IPC's 2021 IRP shows an ELCC of 34.0% for IPC's Jackpot Solar (expected online in 2023), but then dropping to

[1] See https://assets.ctfassets.net/416ywc1laqmd/7JkfpRUwMrqCwfKsxAPG3g/9703398aa3212f8532ffb5ced616af87/2019-irp-update-04-20-2021.pdf at pages 48-49.

10.2% for all future generic solar PV. It is not apparent why the capacity value of solar on IPC's system should drop by almost 70% due to the addition of one project.

OSSIA is also concerned that including all preferred portfolio resources in the baseline may be problematic in calculating PURPA avoided costs. PURPA avoided costs are calculated as equal to the incremental cost to an electric utility of electric energy or energy and capacity that the utility would generate itself or purchase from another source but for the purchase from a qualifying facility. A capacity contribution value which assumes that planned but not contracted resources are already in the system would mean that qualifying facilities are not fairly compensated for the capacity they can help the utility avoid.

Resource Portfolios. Staff proposes using no less than eight years of recent output data for the resource, or using synthetic data where that is not possible. This recommendation appears to assert that utility ELCC determinations will be specific to each particular resource, rather than to general resource types. If utility ELCC determinations are limited to 4 years, to certain resource types (e.g. solar, wind, battery, etc.), and to selected representative locations, it is unclear how generation portfolios for a specific resource at a specific time and location would go into the ELCC computation. While the 8-year requirement may be fine for the representative ELCC resource assumptions, staff should clarify this requirement is not meant to apply to individual projects.

Hourly LOLP Values. Staff proposes the use of hourly loss of load probabilities in the event that ELCC calculations for many resources and years is not practical. An LOLP method provides an hourly probability distribution against which the resource's hourly generation profile can be arrayed, in order to determine an expected capacity contribution for each resource.

There are at least three points to make regarding hourly LOLPs. First, they are more transparent than a single annual average ELCC percentage, given that the LOLP distribution identifies which hours are deemed to have capacity value. If a resource has a high capacity factor in those hours, its LOLP-weighted average capacity factor will also be reasonably high. If the resource is not able to generate in the hours that are identified as having LOLP weight, the resource can understand why its weighted average capacity contribution is less favorable. In contrast, a single ELCC value that has been computed by a utility is much more of a black box result, in which there is no transparency explaining the result. With the transparency provided by an LOLP distribution (which sums to 1.0 over the year), developers can be assured that there is at least capacity value in some particular hours. Moving generation (e.g. using battery storage) to the high value hours should improve a resource's capacity value. A single ELCC value, on the other hand, cannot be improved through resource changes or combinations unless ELCCs are also calculated for those combinations (e.g. for solar paired with storage).

The second point is the inherent flexibility in using hourly LOLP values. To determine ELCCs in at least four years for various resource types and various resource locations is likely to require many ELCC determinations, or broad assignment of single ELCC results to a large number of locations and resource types that may be only roughly accurate. In this proceeding, we have learned that excessive number of ELCC calculations are difficult and time-consuming for the utilities to produce. Yet, a single hourly LOLP distribution for a given year could be applied to different resource profiles in different locations, and thus would provide much more flexibility in valuing various resources. LOLPs can recognize features similar to last-in ELCCs, to the extent that the LOLP hourly distribution change as new supplies (and loads) are added the system.

The third feature is optionality. Staff proposes to defer the issue of whether to use LOLPs to various use cases. Yet if a project has a higher LOLP-based capacity contribution than with ELCC, why shouldn't it be able to select that value? It makes no sense to force projects into an ELCC approach that lacks sufficient transparency and flexibility, without at least providing them with the option of using the LOLP approach that is both more transparent and flexible than ELCCs, and which can actually provide incentives for resources maximize capacity value. This is not simply a compensation issue. ELCCs should only over-ride LOLP-based capacity contributions if the results are very similar, and the ELCC value is accurately capturing the timing, location, and type of resource under consideration. If this proceeding relegates LOLP to a utility back-up option (i.e. in the event utilities cannot compute enough ELCC values), utilities will have too much discretion when to make LOLP alternatives available. To be fair, third party developers should have the option to make use of hourly LOLPs to determine the capacity contribution of their generation resource profiles, rather than leaving that option at the sole discretion of the utilities. In addition, we note that staff's desire to include at least 8-years of generation profiles or make use of modeled generation could apply to an LOLP-based method, so that the results for specific resources do not rely entirely on generic resource profiles.

2. **Marginal Capacity Resource Guidance.**

Staff proposes deferring to specific use cases the identification (and value) of the marginal capacity resource for each utility. The Staff proposal provides general guidance as to the avoided capacity resource definition to be applied in a use case:

> "The avoided resource should be informed by the feasibility and cost of alternative utility resource options under policy and market realities, including such issues as climate policy, transmission availability and interconnection queues. The avoided capacity resource should be the most cost-effective form of capacity that can be used to serve Oregon load under those principles. Determination of the avoided resource should use ELCC modeling to weight the potential resources on a $/MW of capacity provided scale to identify the appropriate avoided resources unless legal or other considerations warrant the use of an alternative method. " (See page 10).

We note that defining the avoided capacity resource as the most cost-effective capacity that can feasibly built to serve Oregon load is extremely general guidance, which could benefit from at least one example of how the selection would work. If a utility IRP preferred resource plan would add a gas-fired combustion turbine (CT), and that resource is cheaper than other alternatives it would select, is that resource considered to be the marginal resource? What if carbon reduction goals mean that the CT is not selected, even though it is the least-cost capacity resource? If storage is also being added, for both reliability and environmental reasons, is that the marginal resource instead? Can the avoided resource be a blend of various alternatives, i.e. a weighted average of a CT and battery storage, with costs computed in some combined fashion? If the resource would serve load in Oregon, does the resource also have to reside in Oregon? If not, does transmission capacity also have to be included? How would the cost of the marginal resource be determined? Does the avoided resource change in future years? If storage is the avoided resource, should some form of generation capacity to fill the storage also be included? There are so many unanswered questions regarding avoided capacity resource determination, and any associated cost calculations, that staff's extremely brief guidance is not sufficiently clear or detailed to be useful. A worked example could improve matters.

3. Deferred Issues

Staff proposes to defer to use cases (1) choice of the reliability metric, (2) identification of the proxy resource, (3) identification of system sufficiency/deficiency years, (4) compensation structure, and (5) transparency improvements. Each of these elements would benefit from some elaboration in this case, for example, describing the expectations for each of these important choices.

Reliability Level. Staff notes that ELCC modeling requires tuning the system to the desired reliability level, prior to determining the capacity contribution of a resource addition. Clearly, the choice of reliability metric may have an impact on the ELCC determination. Staff notes it has supported a 1-in-10 reliability metric. We expect this is acceptable, but note the proposal also should tie the hourly LOLPs to the selected reliability metric. It could also simply require that LOLP or ELCC determinations make use of whatever reliability metrics are ultimately adopted by the commission.

Marginal Capacity Resource. We have already noted above how the determination of the avoided capacity resource could use more detailed guidance. Deferring the actual determination to use cases may be fine, but more detailed guidance would assist those future use cases.

Sufficiency or Deficiency is another way of saying that, depending on future system conditions, additional capacity on the system can have a relatively low or high value, respectively. This investigation spent significant time discussing whether there should be a (e.g. three year) ramp up period based on IRP forecasts, beginning with low capacity value due to capacity sufficiency and ending with a higher capacity value when capacity deficiency arises. OSSIA had recommended ramping up from a near-term capacity value, possibly based on current (or soon to be implemented) resource adequacy values, to a longer term value that is based on the cost of adding new capacity to the system. Now, the staff proposal would defer the sufficiency/deficiency issue to use cases, which provides no guidance for the capacity value determination over time. Given that ELCC (or LOLP) values for four future years are intended to measure the capacity contribution of various resources over time, a long-run equilibrium solution to the sufficiency/deficiency conundrum may be simply to assign capacity value based on the incremental cost of capacity times the ELCC or LOLP-based values in each year. Simply deferring this issue to use cases raises the possibility that this investigation will fail to provide any firm guidance about how future capacity will be valued during future periods. Thus, a reasonable approach would be to assume that, in the long-run, periods of scarcity and high capacity value will balance periods of surplus and low capacity value, resulting in average capacity value that is equal to (not higher or lower than) the average cost of the marginal resource. Deferring this issue to use cases raises the possibility that supply deficits will only occur in the rear-view mirror, and never in the forward-looking capacity valuations.

Rather than defer this issue to use cases, staff's guidance should be to eliminate the sufficiency/deficiency concept, such that the average cost of the marginal capacity resource is not be adjusted in use cases to reflect future capacity sufficiency/deficiency conditions.

Compensation. Staff proposes that compensation issues should be specific to use cases. However, one particular compensation issue that is interwoven here is the ELCC (single annual percentage) and the recommended LOLP option. Hourly LOLPs raise the potential for different compensation structures. While it may be fine to defer such considerations to use cases, we note that the issue of hourly LOLPs discussed above should not be considered purely as a compensation issue, or as the fallback in case of inadequate ELCC analysis. The granularity of hourly LOLPs can send important price signals – for example, to incentivize the addition of storage to variable resources.

Transparency and Update process. The staff proposal suggests that process and transparency concerns cannot be addressed generically. Certainly use cases should address such issues. Nevertheless, where additional transparency and clarity can be provided in the staff proposal, that would be helpful. We've noted above several improvements to transparency and process that could be specified here: hourly LOLPs as an option for capacity contribution, more detail (and examples) on the methodology for choosing the marginal capacity resource, and how related cost calculations are to be performed.

An important element of transparency and process is the extent to which utilities will share calculation details as well as the results of those calculations. Non-transparent ELCC values are a concern, as are opaque utility determination of avoided capacity resources and related costs. While it may not be possible to address process and transparency issues generically in this investigation, staff could at least note there is a need for processes to be defined and transparent to the maximum extent possible. For example, utilities should be required to provide data underlying their resource assumptions in calculating their ELCCs.

Additionally, Staff recommends that utilities review IRP ELCC methodologies against these UM 2011 principles beginning with the next IRPs filed in March 2023. OSSIA recommends that the Commission strengthen this recommendation and require that the utilities each convene an IRP stakeholder workshop during the pre-filing IRP phase and before the ELCC value is "fully baked" to go over how their ELCCs comport with this UM 2011 recommendation. The utilities should also be required to serve notice of those workshops to this docket and UM 2000 with at least 2 weeks advance notice along with providing the meeting materials 2 weeks in advance.

In addition, this investigation may be the last chance to insist that there be some level of consistency across use cases as to how issues are resolved. An even-handed approach to capacity value cannot be achieved if different and inconsistent approaches are adopted in different use cases (e.g. one set of PURPA QF or DER values for third-party or customer-owned generation vs. another set of values for utility planning/procurement). The burden should be on the utility to justify any differences in capacity valuation between use cases.

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