Oregon Public Utility Commission
201 High Street SE, Suite 100
Salem, OR 97301-3398

March 8, 2021

Dear Chair Decker, Commissioner Tawney and Commissioner Thompson,

Introduction

Oregon Solar + Storage Industries Association (OSSIA) appreciates staff's thoughtful comments in UM 2011 on a capacity valuation framework.[1] OSSIA understands that staff proposes capacity value based on: (1) using a gas-fired generation resource as the proxy resource for providing incremental system capacity, (2) using a forecast of annual last-in (i.e. marginal) ELCC values to measure the amount of capacity effectively provided by a particular resource, (3) an assumed 3-year resource sufficiency period, and (4) a ramp up in capacity value during the resource sufficiency value to full capacity value (prior to the ELCC adjustment) starting in year four. We comment on these issues below.

Sufficiency/Deficiency Period

Staff notes that the current avoided cost methodology for non-renewables assumes that the resource deficiency period starts in the year of the utility's next major resource acquisition. For RPS compliant resources, deficiency is assumed to start in the year of the utility's next planned utility-scale RPS-compliant resource acquisition. Staff notes that not all resource acquisitions are driven by the identified need from the utility's Integrated Resource Plan (IRP). Staff proposes to simplify the approach of looking at the IRP to determine when the next capacity resource will be acquired, by assuming a standardized rolling 3-year resource sufficiency period. Staff suggests that utility resource procurement ahead of need (e.g. for economic rather than reliability reasons) breaks the link between capacity value and need. Similarly, staff finds that utility procurement of RPS complaint resources before there is a need for RECs voids the link between the need for renewables and the start of the deficiency period for renewables. Finally, staff points out the administrative difficulty of determining the deficiency year based on IRPs, which are performed over two-year cycles, given changes can occur between IRP cycles that can impact capacity value. Staff would prefer to avoid contentious/difficult determinations of the resource sufficiency period, and therefore proposes the simple rolling three-year assumption.

First, OSSIA observes that the electric system consists of many load serving entities. So, it is unlikely that wholesale energy market prices will reveal increased capacity values as resource deficiency dates

[1] https://edocs.puc.state.or.us/efdocs/HAC/um2011hac17958.pdf

approach for a particular utility. It is the supply/demand balance of the entire market that likely signals capacity need on a system-wide basis. Nevertheless, OSSIA appreciates that the resource sufficiency/deficiency demarcation is useful for differentiating between current and expected future circumstances.

During the sufficiency period, there may be an excess supply of capacity relative to current demand conditions, such that the value of capacity is less than its average cost. But as load grows and the next major resource addition is required in order to maintain reliability, one can assume that the supply/demand balance has become tight enough that the new capacity resource would able to recover its average costs (i.e., paying a return on capital costs, in addition to covering costs of operation) based on the value of capacity on the system.

OSSIA appreciates staff's desire to minimize the difficulty of updating the determination of resource sufficiency/deficiency periods over time. Given that staff has concluded three years is the approximate average time in IRPs to the next resource acquisition, the proposal to standardize a three-year sufficiency period is reasonable. However, staff should update that assumption over time, for example, if new IRPs indicate a change in that pattern. For example, if there is a trend towards more frequent procurement of smaller capacity amounts, it might be appropriate to reduce the three-year assumption.

OSSIA also recommends considering elimination of the resource sufficiency period altogether. The view that capacity value is less than the average cost of a new resource during the sufficiency period, and is equal to but never more than the average cost of a new resource during the deficiency period, leaves no room for a resource to recover its full costs or to recognize potential scarcity value when it occurs. For example, if the very IRP resource acquisition itself were to be priced in this manner, it would be assumed to have a capacity value that is less than its average cost during the first three years, and capacity value equal to its average net cost during the remaining years, for an average value over its life that is less than its cost. It is important to recognize that resources being paid marginal cost must still recover average cost to stay in business, and thus a marginal cost that is always at or below average cost will not suffice. A simple solution would be to eliminate the sufficiency period completely, or make some other change to capacity valuation that is capable of recognizing scarcity impacts on capacity value when they occur. We expect many parties arguing in this proceeding for recognition that capacity can have very high values during times of scarcity may take comfort that elimination of the presumed sufficiency period will solve the conundrum of a valuation methodology that is unable to recover the average cost of a resource, even if that resource is the very one that was used as the basis for the methodology.

Pricing in Each Period

Staff proposes that capacity value would equal zero in year one, 1/3 of the deficiency period value in year two, and 2/3 of the deficiency period value in year three. E3, as opposed to staff, had proposed pricing should ramp up from the sufficiency period value (the fixed O&M cost of the lowest cost resource) to the full net resource cost by the deficiency date.

OSSIA believes E3's proposal is more reasonable. Staff's view corresponds to the view that there is no capacity value today, beyond what is contained in wholesale energy market prices. Yet, it is very unlikely that current wholesale market prices allow for gas-fired generation to recover its average costs.[2] It would make more sense to base prices during the sufficiency period on actual capacity costs for the existing system. For example, if Oregon or the region develops a resource adequacy (RA) program that is capable of valuing existing capacity in the short-term, that could be used. OSSIA would recommend that staff re-consider E3's proposal, as it would provide for recovery of fixed O&M costs during the sufficiency period, which would seem to be a bare minimum for existing resources to be able to recover their annual going-forward incremental costs, let alone a return on their capital costs. For the resource deficiency period, E3 recommended using the net cost of the lowest net cost new resource available to the utility. We understand this to mean the lowest cost capacity resource the utility will actually consider constructing, including netting out of rents the resource can earn through the sale of energy or ancillary services. The remaining costs of the new resource are the costs it must recover for capacity, outside of any market.

Proxy Resource

Staff asserts that the lowest net cost resource that provides capacity will be a gas-fired combustion turbine (CT). Staff recognizes that parties have expressed interest in whether storage may become marginal source of capacity in Oregon instead of gas-fired capacity. Staff claims purchase of CT capacity is the lowest-cost method of ensuring system reliability. Staff admits this conclusion should be "closely monitored" and provides counter-examples, such as PGE's belief that it can meet capacity needs without new gas-fired generation.

OSSIA suggests that the proxy resource should reflect the lowest-cost capacity resource that the utilities would in fact add to their portfolio. CTs may provide a useful lower bound on the cost of capacity, but if that is not what is being built, it is not a reasonable estimate of actual capacity costs. New natural gas capacity is becoming increasingly unlikely in western states, as environmental goals point more towards the use of renewable generation combined with storage in order to provide incremental capacity on the electric system. We agree that staff should monitor IRP data on planned resource acquisitions, to ensure that its determination of the proxy resource used for capacity valuation is not unreasonable.

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[2] For example, the CAISO's 2019 annual report observes that net revenues for both CCs and CTs were "substantially below annualized fixed costs." See pp. 18-20, at: http://www.caiso.com/Documents/2019AnnualReportonMarketIssuesandPerformance.pdf

In addition, it is important to ensure that gas-fired generation costs represent the type of gas units that would be constructed. For example, EIA's AEO 2021 report lists CT aeroderivative units as having a capital cost of 1,169 $/kW, whereas a simple CT industrial frame unit is $708 per kW.[3] Battery storage, at 1,165 $/kW is similar to the more flexible and environmentally sensitive aeroderivative CT. We do not expect utilities would add a simple CT, even if it is the lowest cost source of capacity. Thus, it is important to recognize environmental constraints in determining the set of resources utilities might add to increase system capacity.

ELCC

Effective Load Carrying Capacity (ELCC) is the factor that is used to define the capacity contribution of a particular resource type (e.g. solar or hybrid solar/storage) in comparison to the proxy (or "perfect") capacity resource that is used for valuation. Staff suggests that ELCCs be determined for multiple years using LOLP models. OSSIA agrees that ELCC are a useful way to measure the capacity a resource can provide when the system is expected to be most stressed or vulnerable to loss of load.

However, last-in or marginal ELCC has the risk of assigning an extremely low or ever-decreasing capacity contribution to solar resources, as more and more solar resources are added to the portfolio. OSSIA would prefer the use of Portfolio ELCC, rather than a first-in or last-in metric. Not only can a portfolio approach capture the interaction between intermittent resources, it provides a value that is more in line with the average capacity value of the entire portfolio. Marginal ELCC has the problem of assigning a potentially too low value for too many years, which may be speculative given the amount of capacity assumed to be added first. For example, PGE's 2016 IRP identified a 15% marginal ELCC value for solar, whereas its 2019 IRP shows a portfolio ELCC for solar equal to 81% in summer and 26% in winter.[4]

Staff recommends that LOLP periods should differ from year to year, in order to reflect expected changes in supply/demand conditions. We agree that it may be useful to compute ELCCs annually, such that changes over time in the hours with high expected LOLP values can be captured. However, it may be very important to do such updates regularly over time and not, for example, only once at the beginning of a long-term contract if the average ELCC value over the life of the contract is to be correct. At a minimum, it may be important to consider whether to allow changes to occur over time based on actual experience, rather than being forecast to change over time in a certain fashion based on

[3] https://www.eia.gov/outlooks/aeo/assumptions/pdf/table_8.2.pdf

[4] See figure 3 of:
https://downloads.ctfassets.net/416ywc1laqmd/6KTPcOKFlLvXpf18xKNseh/271b9b966c913703a5126b2e7bbbc37a/2019-Integrated-Resource-Plan.pdf
and figure 5-11 of the 2016 IRP, for 300 MW solar, at:
https://downloads.ctfassets.net/416ywc1laqmd/1y737MdERELNLNyWAW8bw2/3f150507210f0fba46276de38c0afdfa/2016-irp.pdf

30-year expectations today. For example, if solar additions without batteries push the net load peak into the evening over time, the result may be diminishing solar capacity values. However, if battery adoption is sufficient to create additional mid-day charging loads, or equivalently, if battery storage is able to significantly alter the generation profile of new solar resources combined with storage, one may expect to see higher and more consistent ELCC values over time. Thus, it will be important to maintain flexibility over ELCC determination rather than locking in a long-term forecast of annual values that are likely to change over time.

Also, while it may be premature to adopt region-wide ELCC values that are consistent across all utilities, that will almost certainly be a reasonable outcome at some point in the future, again underscoring the need to maintain flexibility on expected future ELCC values, to the extent they are to change annually.

Out of scope

Staff includes interesting discussion of how capacity prices might be paid over time. We have not commented in detail on these issues to the extent they are considered out of the scope of UM 2011. This includes staff's ideas for the use of "libraries" of resources, grouped by similar characteristics, as a way to differentiate between resources such as solar generation situated in very different locations (e.g. Astoria vs. Klamath Falls). OSSIA appreciates staff's recognition that solar characteristics are location dependent.

Staff also notes that locational capacity value issues, such as whether distributed energy resources provide resiliency value during natural disasters, are out of scope. Staff opines that it agrees with parties that storage may have benefits not offered by CTs.
Thus, we expect the capacity valuation method developed here will exclude certain key elements, such as (1) whether capacity pricing applications (whether "fixed" or "pay as you go") achieve the intended capacity value for generators, or (2) how additional capacity value for local reliability/resiliency -- and ultimately marginal T&D capacity value -- is determined. We note that, early on in this proceeding, it was determined that locational aspects of capacity value should be deferred to another proceeding.

Sincerely,

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