BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM - 2011

In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, General Capacity Investigation.	Renewable Northwest's Comments on Staff Workshop **April 26, 2021**

I. INTRODUCTION

Renewable Northwest thanks the Oregon Public Utility Commission (the "OPUC" or the "Commission") and OPUC Staff ("Staff") for this opportunity to provide reply comments on discussions in staff's workshop held on March 17th, 2021 regarding Staff and E3's report in the General Capacity Investigation docket. In previous comments, RNW supported the use of a probabilistic and data-intensive effective load carrying capability ("ELCC") to calculate capacity contribution of resources. In these comments, we elaborate on the need to tailor ELCC calculations for emerging resources such as storage, hybrids, and demand response, and we offer additional support for the need to incorporate multiple weather years into ELCC analysis..

II. COMMENTS

1. Effective Load Carrying Capability or ELCC methodology should be tailored for emerging resources in the electricity sector.

There is a general agreement among stakeholders that effective load carrying capability or "ELCC" of a resource is the most appropriate method to calculate a resource's contribution toward meeting capacity needs during high loss of load probability ("LOLP") hours. The ELCC for conventional resources as well as renewable resources such as wind and solar can be calculated using probabilistic modeling methods that are currently being used by utilities in the region for their integrated resource planning efforts. In our previous comments, we encouraged Staff to focus on emerging resources such as standalone storage, hybrids, and demand response, which may be undervalued if a standard ELCC is applied to these resources because they can be optimized for different systems given their flexibility as to both physical configurations and operational profiles. For example, hybrid resources have significant capabilities in shifting energy from off-peak to peak hours, thereby providing the dual benefit of reducing renewable curtailment and delivering energy during capacity critical hours. As the capacity-critical or high

LOLP hours shift yearly, the storage component of the hybrid resources could be programmed to hold the energy and dispatch during hours of highest need and thus their value should not be diminished as their penetration increases. It is also important to note that hybrid resources and standalone storage can provide firm capacity instead of operating on a pure energy arbitrage basis. In fact, research has shown that the capacity value of storage and hybrid resources tends to increase with increasing penetration of renewable energy on the grid. Thus, we strongly recommend Staff consider evaluating resource capacity values on a case-by-case basis as these resources come online instead of relying on a "one-size fits all" ELCC value for storage and hybrid resources.

Coming to the issue of whether heuristic methods are appropriate or not, we recommend not using heuristic ELCC methods for calculating capacity contributions from short and long duration storage resources. ELCC analysis conducted only on particular hours of the year (during the summer or winter) results in a value that is effectively an approximation, likely undervaluing battery storage and pumped hydro storage resources given that these resources can contribute to achieving a utility's target loss of load probability in other hours as well. We also agree with Swan Lake's comments[1] that "...to accurately evaluate the potential capacity contribution of a given resource, it is critical to use ELCC models that optimize in a time sequential manner and over a longer time horizon (at least one week.)." This goes back to our statement that storage resources are not pure generation resources which have a specific generation profile, but can be designed and controlled to maximize their state of charge ("SOC") and as a result their capacity value instead of just arbitraging based on market prices. In fact, capacity revenue typically forms a significant portion of storage resources' overall revenue stream, so accurately determining a resource's ELCC and valuing its capacity contribution can result in systems that are optimized to serve a capacity need.

2. **Resource ELCC values are inherently dependent on the modeling inputs and assumptions.**

Resource ELCC values should typically be based on data consisting of a sizable number of meteorological years and generation profiles to capture the inter-annual variability of renewable energy resources. We appreciate Staff's recognition of the importance of including at least three years of weather and generation data to calculate ELCC values for wind and solar resources. We also agree with comments from NewSun Energy that the ELCC calculations "should be based on as many years of solar insulation data as is available and reflect both the geographic diversity and the interannual production."[2] This is similarly true for wind resources. The number of years should typically be more than five, although the NWPP's RA program is currently considering

[1] Comments of Swan Lake - https://edocs.puc.state.or.us/efdocs/HAC/um2011hac105752.pdf

[2] Comments of NewSun Energy - https://edocs.puc.state.or.us/efdocs/HAC/um2011hac173131.pdf

three years of resource profiles to calculate ELCC for renewable resources. Resource ELCC values based on a single facility or a single year may over- or undervalue the resources, skewing their actual operational value in real-time and causing inefficiencies in the electric grid. Utilities have previously stated that a lack of operational solar projects as one of the reasons for selecting single year of data, so it is important to state that that the National Solar Resource Database[3] ("NSRDB") -- a data repository developed by NREL -- has a collection of hourly and half-hourly values of meteorological data and the three most common measurements of solar radiation: global horizontal, direct normal, and diffuse horizontal irradiance. This data source in addition to proxy generation could be leveraged to create benchmarks for years preceding 2017. Also, E3 in their report (pg 5) mentions System Advisor Model ("SAM") as a resource to create generation profiles using irradiance data from the aforementioned NSRDB.

III. CONCLUSION

Renewable Northwest again thanks the Commission for this opportunity to provide reply comments in this docket. We hope to participate, engage and provide further feedback on the staff workshop to be held on April 30th, 2021.

Respectfully submitted this 26th day of April, 2021,

/s/ Sashwat Roy
Technology & Policy Analyst
Renewable Northwest
421 SW Sixth Ave. #975
Portland, OR 97204
(503) 223-4544

/s/ Max Greene
Regulatory & Policy Director
Renewable Northwest
421 SW Sixth Ave. #975
Portland, OR 97204
(503) 223-4544

[3] National Solar Resource Database - National Renewable Energy Laboratory (NREL). Available at: https://nsrdb.nrel.gov/