BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON

UM 2011

In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, General Capacity Investigation.	Initial Comments of Renewable Northwest Dec. 16, 2019

I. INTRODUCTION

Renewable Northwest is grateful to the Oregon Public Utility Commission ("the Commission" or "PUC") for the opportunity to comment on Commission Staff's questions to "help refine and narrow the broad categories of resource attributes that might be considered 'capacity'" in this General Capacity Investigation docket.[1]

II. BACKGROUND

Under ORS 756.040(2), the Commission has the broad "power and jurisdiction to supervise and regulate every public utility and telecommunications utility in this state, and to do all things necessary and convenient in the exercise of such power and jurisdiction." ORS 756.515(1) further gives the Commission authority to open an investigation into any matter relating to public utilities. Following conversations across a number of Commission dockets, the Commission issued Order No. 19-155, opening a general capacity investigation. The Staff Report forming the basis for the Commission's order observed that "[t]here have been several methodologies used to establish capacity values based on resource type, such as distributed generation, utility-scale generation, energy efficiency and other upcoming technologies such as energy storage and demand response."[2] Thus the Commission opened this investigation in the hope that "[a] holistic investigation into … issues related to capacity could lead to a harmonization of some of these disparate approaches."

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[1] Oregon Public Utility Commission, Docket No. UM 2011, *Phase III, Capacity Valuation -- Request for Public Comment* at 3 (Nov. 15, 2019) (hereinafter "Request for Comment").

[2] Oregon Public Utility Commission, Docket No. UM 2011, Order No. 19-155 at Appx. A, p. 2 (Apr. 26, 2019).

Accordingly, Staff held a series of workshops designed to explore stakeholders' understandings of capacity -- how it is defined, why and how it is acquired, and how the concept of capacity is evolving in concert with a modern grid. In coordination with the most recent workshop, Staff released a request for comment, specifically seeking responses to questions oriented around two broad topics: "(1) Questions that help refine and narrow the broad categories of resource attributes that might be considered 'capacity,' and (2) Questions that address how to calculate and assign a value to capacity."[3] Following the workshop, Staff broke these questions into two separate comment opportunities; accordingly, these comments of Renewable Northwest address only the questions that fall into the first topic, which questions are set forth in Part A of the Request for Comment.

III. COMMENTS

Renewable Northwest has structured these comments around the questions presented in Staff's Notice, responding to the prompts in Part A of the notice as requested. Where we have no comment on a particular item, we so indicate below.

1. Which of these capacity definitions are applicable for which types / categories of capacity, if at all?

a. Nameplate capacity

Nameplate capacity refers to the maximum capacity contribution of a resource at a particular point in time under certain conditions and is an important concept for determining more specific elements of capacity.[4] It applies to all resources that discharge electric power, including generating resources and storage.

b. Maximum dependable capacity

Renewable Northwest has no comment on this term at this time.

c. Baseload capacity

Baseload capacity refers to an increasingly outdated concept in which inflexible generators provide energy and capacity at a near constant output for all or most hours in the day, and even

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[3] Request for Comment at 3.

[4] *See*, *e.g.*, IEEE Standard Definitions for Use in Reporting Electric Generating Unit Reliability, Availability, and Productivity (IEEE Std 762-2006) 5.8, *available at* https://www.nerc.com/docs/pc/gadstf/ieee762tf/762-2006.pdf;

extending into weeks. The term is often used to refer to the declining practice by which LSE operators resources would meet customer loads according to a resource stack, with so-called baseload resources sitting at the bottom of the stack — operating all or most of the time — while other resources would be dispatched as needed to meet additional load beyond what the baseload resources were able to supply.

A modern, flexible grid with high penetrations of variable renewable resources instead requires dynamic balancing that matches the known generating profiles of those variable resources with both load and demand-side management, dispatching other resources as necessary to fill gaps in the system. Ideally such a system will use storage as a dispatchable resource, effectively to shift generation in time; for example, a storage resource could capture energy from later-afternoon solar generation that would otherwise be curtailed and store it to meet the evening ramp. Additionally, curtailment of renewable resources can itself add flexibility to a system. This modern operating paradigm, however, is incompatible with the concept of baseload capacity.

d. *Ability to meet energy needs*

Fundamentally, ability to meet energy needs has been synonymous with capacity as that latter term is used in resource planning — load-serving entities ("LSEs") must procure enough capacity to meet forecasted peak energy demand plus a reserve margin. This concept is still deeply important for LSEs to ensure reliable service. However, as systems become more complex, conversations about capacity and reliability now often include additional concepts such as ability to meet other system needs, such as spinning reserves, non-spinning reserves, and regulating reserves. Ability to meet energy needs remains important, but capacity does cast a broader net.

e. *Effective Load-Carrying Capability (ELCC)*

Effective load carrying capability, or ELCC, refers to a percentage value determined from inputs specific to a resource or resource portfolio and that resource or portfolio's operational context to determine probabilistically how much the resource or portfolio contributes to a capacity need by reducing expected reliability issues. ELCC has emerged as a key concept as LSEs are relying on increasing levels of variable renewable generation. ELCC values can help and LSE determine not only a particular resource or portfolio's contribution to that LSE's capacity needs, but also how variable generators with diverse characteristics may work in concert with one another to meet capacity needs while reducing or abandoning reliance on traditional thermal generation.

f. Peaking capacity

Peaking capacity refers to a resource or resource portfolio's ability to dependably contribute energy coincident with peak demand. The concept is a reasonable one inasmuch as LSEs must offer supply sufficient to meet peak demand in order to ensure reliability; however, the concept is sometimes used in a manner that fails to reflect the full capacity contribution of variable resources or portfolios of resources including demand-side management.

2. How should flexibility and dispatchability be considered?

Flexibility is important to a modern grid powered by diverse resources and relying on high levels of variable renewable generation. Both PacifiCorp and Portland General Electric have undertaken efforts to understand and quantify flexibility benefits in this 2019 Integrated Resource Plan ("IRP") cycle, and Renewable Northwest has appreciated those efforts.[5] However, until stakeholders arrive at a more common understanding of what flexibility benefits mean, it is premature to consider flexibility benefits as a separate and distinct category of capacity.

As for dispatchability, that term has some value but is often wrongly used as shorthand for thermal resources. A "dispatchable" thermal plant may be unavailable due to maintenance issues, fuel constraints, or other causes. On the other hand, solar-plus-storage may effectively be dispatchable if energy from surplus solar generation is stored and dispatched coincident with load, and even solar itself may be considered dispatchable given predictable generation patterns and the ability to curtail. Standalone battery and pumped hydro storage may also be considered dispatchable, depending on the storage resource's capabilities and the time duration performance metrics necessary to consider a resource "dispatchable." Additionally, the increasing ability to predict the hours and extent of generation from variable resources and ability derive power from portfolios of diverse resources are growing considerations that render the concept of dispatchability less important.

All in all, the concepts of flexibility and dispatchability are important to bear in mind but are also among the elements of evolving electricity systems whose meaning and value are changing rapidly. Now may not be the time to attempt to crystalize definitions and valuation methodology for either concept.

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[5] Portland General Electric, *2019 Integrated Resource Plan* at 163, section 6.2.2 (Jul. 19, 2019); PacifiCorp, *2019 Integrated Resource Plan (IRP) Public Input Meeting* at 8-12 (Oct. 9, 2018), *available at* https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2019-irp/2019-irp-presentations-and-schedule/2018-10-091%20-%20General%20Public%20Meeting%20(conference%20call).pdf.

3. How should ancillary services be considered?

Ancillary services generally refer to services beyond energy and capacity that help ensure system reliability; they may include some of the services briefly discussed above, such as reserves and regulation. Renewable Northwest will monitor this topic and has no position at this time other than to note that electricity-system stakeholders nationwide are developing their understanding of the extent to which renewable resources are able to provide these services.

4. Are there distinct types of capacity that could be separately compensated?

To the extent capacity and ancillary services are considered separate elements necessary for reliability, these distinct concepts have been compensated separately in some organized markets.[6] Other elements of capacity may be factored into market constructs, where they affect compensation but not as standalone elements.[7] It is appropriate to consider adjusting capacity compensation to reflect system needs and resource or portfolio values, and there are other sources Oregon stakeholders can look to in considering how to structure that compensation.

a. Resource Adequacy needs

It is appropriate to compensate resources or resource portfolios that contribute to meeting Resource Adequacy needs; however, it is important not to focus on individual resources to the exclusion of diverse resource portfolios. Recently, for example, the Rocky Mountain Institute ("RMI") has released two recent reports discussing the ability of clean energy portfolios or "CEPs" to meet system capacity and reliability needs with lower costs, lower risks, and significantly lower carbon emissions than traditional thermal generation.[8] For this reason, RMI recommends that utilities, regulators, and organized markets focus on necessary grid services, not individual resource characteristics.[9]

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[6] *See*, *e.g.*, ISO New England, *2018 Annual Markets Report* (May 23, 2019), *available at* https://www.iso-ne.com/static-assets/documents/2019/05/2018-annual-markets-report.pdf (discussing energy, capacity, and ancillary services markets).

[7] *See*, *e.g.*, ISO New England, "About the [Forward Capacity Market] and Its Auctions," *available at* https://www.iso-ne.com/markets-operations/markets/forward-capacity-market/fcm-participation-guide/about-the-fcm-and-its-auctions (discussing the interplay between the auction construct and capacity zones designed around possible locational constraints).

[8] *See* Rocky Mountain Institute, *The Growing Market for Clean Energy Portfolios* (2019), *available at* https://rmi.org/insight/clean-energy-portfolios-pipelines-and-plants/; Rocky Mountain Institute, *The Economics of Clean Energy Portfolios* (2018), *available at* https://rmi.org/insight/the-economics-of-clean-energy-portfolios/.

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b. System flexibility needs

As is discussed above, stakeholders are still working to come to a collective understanding of system flexibility needs and benefits. While it may be appropriate to compensate flexibility benefits at some point, doing so now may be premature.

c. Temporal availability

Given issues with ramping and load-resource balance associated with higher penetrations of variable resources, temporal availability is likely a trait worth accounting for in determining compensation for capacity.

d. Locational availability

Likewise, system constraints mean that locational availability can be important to meeting capacity needs. Locational availability is also likely a trait worth accounting for in determining compensation for capacity. As is discussed briefly above, locational availability is an element of capacity compensation in some organized markets.

5. Are there other comments to clarify, deepen, or add nuance to parties' understanding of capacity?

The Commission and stakeholders are now grappling with the concept of capacity at the same time the electricity system in the west is subject to rapid change. Renewable Northwest recommends caution in determining definitions or values that may prove to be barriers to a fully functional low- or no-carbon grid. Indeed, stakeholders should take note that regulators in other jurisdictions are increasingly rejecting resources traditionally relied upon for their capacity value as imprudent due to the risks associated with building new thermal generation.[10] Policy in the Pacific Northwest is pushing utilities to move away from carbon-intensive thermal generation.[11] Third-party experts are accordingly pointing to the growing risk that new thermal resources may become stranded assets, not only due to policy considerations but also because of shifting financial dynamics.[12] Therefore, at each step of this investigation, Renewable Northwest

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[10] *See*, *e.g.*, Indiana Utility Regulatory Commission, Cause No. 45052, *Order of the Commission* (Apr. 24, 2019), *available at* https://www.in.gov/iurc/files/45052_ord_20190424102046480.pdf; Arizona Corporation Commission, Docket No. E-00000V-15-0094, Decision No. 76632 at 48-53 (Mar. 29, 2018).

[11] *See generally*, *e.g.*, Oregon Legislative Assembly, SB 1547 (2016), *available at* https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled.

[12] *See*, *e.g.*, Rocky Mountain Institute, "A Bridge Backward? The Risky Economics of New Natural Gas Infrastructure in the United States" (Sept. 9, 2019), *available at*

recommends that the Commission and stakeholders ask themselves whether the framework we are establishing here is consistent with a modern grid with high levels of inexpensive renewable generation and an aggressive decrease in reliance on carbon-intensive thermal resources, and whether it is flexible enough to capture and compensate the capacity values of non-traditional capacity resources.

IV. CONCLUSION

Renewable Northwest again thanks the Commission for this opportunity to comment regarding resource attributes that contribute to capacity needs. We look forward to continued participation in this investigation.

Filed this 16th day of December, 2019,

/s/ Max Greene
Max Greene
Staff Counsel and Analyst
Renewable Northwest
421 SW Sixth Ave. 975
Portland, OR 97204
(503) 223-4544

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https://rmi.org/a-bridge-backward-the-risky-economics-of-new-natural-gas-infrastructure-in-the-united-states/ (discussing two RMI reports and concluding that "continued investment in announced gas projects risks creating tens of billions of dollars in stranded costs by the mid-2030s").