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January 13, 2020

VIA ELECTRONIC FILING

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

Attn: Filing Center

Re: Docket UM 2011 – PacifiCorp's Comments

PacifiCorp d/b/a Pacific Power (PacifiCorp) respectfully provides these comments in response to the Public Utility Commission of Oregon (Commission) Staff's Request for Public Comment in docket UM 2011.

I. Introduction

In Order 19-155, the Commission adopted Staff's recommendation that a general capacity investigation be opened, initiating docket UM 2011. The three-phased general capacity investigation is intended to "ensure a common framework of understanding by parties and stakeholders of appropriate assumptions to value capacity."[1] The goal of the third and final phase of the investigation is to develop a broadly applicable methodology for valuing capacity.

On November 15, 2019, following two workshops that were held on June 14, 2019 and October 24, 2019, Staff issued a request for public comment (November 15 Public Comment Request) on two categories of questions: (1) "Section A" questions address refinement and narrowing of the broad categories of resource attributes that might be considered "capacity;" and (2) "Section B" questions address how to calculate and assign a value to capacity.[2] Comments to all questions were requested by December 16, 2019.

On December 2, 2019, Staff conducted a third workshop where Stakeholders expressed concern that the comment period did not allow sufficient time to answer the complex questions contained in the November 15 Public Comment Request. As a result, Staff staggered the due dates for the two categories of questions. Comments on Section A questions were due December 16, 2019 and comments to Section B questions are due on January 13, 2019.[3] PacifiCorp submitted comments on Section A on December 16, 2019.

The following are PacifiCorp's comments to Section B questions, which concern capacity value as a function, contained in the November 15, 2019 Public Comment Request.

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[1] *In the Matter of Pub. Utility Comm'n of Oregon, General Capacity Investigation*, Docket UM 2011, Appendix A at 4 (Apr. 26, 2019).
[2] *See* Staff's Request for Public Comment at 3 (Nov. 15, 2019).
[3] *See* Staff's Extension of Public Comment Period (Dec. 3, 2019).

II. PacifiCorp's Comments to Section B Questions

Question 6. ***Does capacity value compensation require a capacity resource to be available to meet all reliability needs in all time frames?***

a. Can a dedicated physical asset qualify to meet all reliability needs, or does it need to be supplemented with other resources?
b. Can a portfolio of resources that meet the availability requirement qualify for the same or better compensation than a dedicated physical asset?
c. Can a financial contract qualify for the same or better compensation than a physical asset?

Comment: No. A single resource does not need to be available to meet all reliability needs in all time frames. In fact, no single resource would be expected to be available all of the time, as resources are typically subject to unplanned outages. The key attribute is a resource's contribution to the ability of the overall portfolio to meet reliability needs.

a. As indicated above, a single asset is unlikely to be sufficient to meet reliability needs because it would have to achieve an outage rate of less than one day in ten years. Instead, the company relies on a portfolio that contains a wide variety of assets. Any incremental asset would be a small portion of the total portfolio. While a single dedicated physical asset could meet a large portion of reliability needs, all assets have an expected forced outage rate that should be accounted for (assuming planned outages could be scheduled in advance during periods with very low risk of loss of load events). The contribution of the resource on its own would thus be less than 100 percent. If that resource was supplemented with other resources in the event of outages, such that there was assurance of resource availability at all times, the contribution could be 100 percent. Note that this assumes some other entity is maintaining a portfolio of supplemental resources.

b. As indicated in the answer to subpart (a) of Question #6, a single asset is unlikely to be sufficient to meet all reliability needs. As such, comparing the compensation of a portfolio of resources to a single asset is not an apt comparison. If, however, a single asset is used to meet reliability needs, and the portfolio of resources meets the same availability requirement, the compensation should be the same. To the extent the portfolio of resources meets a higher availability requirement, compensation should be higher. Note that the "same" availability requirement is nuanced. Single-shaft risk refers to the potential for a single generator to be taken offline due to a forced outage. If that generator is large, the system may be less reliable than a system with a number of smaller generators with the same outage rate, as they would be less likely to all be offline at the same time. Given the size of PacifiCorp's system and the number of generators, this is not expected to be a major driver.

c. To provide capacity, a resource must be capable of delivering megawatts when called upon to meet load and/or reliability requirements. A purely financial contract would not

deliver megawatts and would not be considered capacity. However, contracts that provide megawatts, whether or not they are tied to specific resources, can be considered capacity to the extent they contribute to reliable system operation and can be shaped to changes in load as they occur during a 24-hour period. To the extent risks exist in delivery of the contracted volumes, the risks should be considered in a manner similar to forced outages at a physical asset, though the risk is unlikely to be apples to apples with regard to frequency, duration, or magnitude.

Question 7. Regarding the capabilities listed in question 4 above[4], what should be the qualification criteria for determining if a resource can meet these needs, assuming the information, communications and control systems are in place to support development of qualification criteria?

Comment: The overarching premise of "capacity" is that there are physical elements of the electric grid which are necessary to ensure reliable service is provided to customers. This includes both resources as well as transfer capability in the form of transmission and distribution assets. For a particular resource to qualify for a capacity payment based on its availability for Resource Adequacy (RA) needs, flexibility needs, or needs in a certain time frame or location, that resource needs to provide services which either in whole, or in combination with other system changes, allow for physical elements of the electrical grid to be avoided or deferred to a later date with a reasonable degree of certainty. A resource may avoid multiple physical elements at the same time, for instance both a peaking generation resource and a distribution capacity upgrade, while also providing energy and other benefits. The corollary is that the system elements that are avoided or deferred would also be likely to provide multiple capacity, energy, and, other benefits , and these value streams would be lost if those system elements were not acquired. As a result, all of the value streams must be evaluated for both the resource under consideration and any avoided or deferred system elements. PacifiCorp's Integrated Resource Plan (IRP) accomplishes this by assessing the total cost of an entire portfolio, relative to other portfolios that achieve comparable levels of reliability. Due to its complexity and system-wide focus, the IRP may not be suitable for all resource evaluations, but it is appropriate to use it as a benchmark where possible. It is also appropriate to consider whether value streams captured in the IRP are also being captured in a simplified or more focused analysis. Adjustments for elements not captured within the IRP may also be appropriate, for instance for distribution deferral, which the IRP's granularity does not represent in detail.

[4] "Question 4" refers to Question 4 in Section A of Staff's November 15 Public Comment Request. Specifically, Question 4 asked "Are there distinct types of capacity that could be separately compensated, assuming that adequate information, communications and control systems are in place? For example, should capacity that has; (b) the following capabilities be considered distinctly: (a) Available to meet system Resource Adequacy (RA) needs?; (b) Available to meet system flexibility needs?; (c) Available in a certain time frame? And (d) Available in a certain location?" PacifiCorp submitted its response to Question 4 in comments on Section A submitted on December 16, 2019.

***Question 8.** Should supply-side and demand-side resources that demonstrate the capability to satisfy the qualification criteria for that type of capacity be valued in the same way?*

Comment: The fundamental valuation should be the same, and PacifiCorp's IRP models and tools provide the most accurate and comprehensive valuation of portfolio alternatives, so they are the appropriate starting point. Due to its complexity and system-wide focus, the IRP may not be suitable for all resource evaluations, but it is appropriate to use it as a benchmark where possible and to consider whether value streams captured in the IRP are also being captured in a simplified or more focused analysis.

Regardless of the methodology, any valuation should account for the specific characteristics of each resource, and not all of those characteristics will apply to every resource. Adjustments are appropriate to account for a variety of factors. For example, a ten percent credit is applied to the cost-effectiveness tests for demand side management in Oregon and Washington. Demand-side measures and some distributed energy resources can also have subsidiary effects on renewable portfolio standard compliance or transmission cost allocation that may be appropriate to account for. However, the fact that these adjustments do not apply to supply-side resources would not suggest that the fundamental valuation should be different, just that those elements would not be included for a supply-side valuation.

Capacity Value as a Function of Temporal, Durational, Locational and Size Attributes of Resources

***Question 9.** How should the value of each type of capacity be calculated and how should its temporal availability (e.g. short vs. long-term capacity) affect the valuation?*

Comment: The best information about generation capacity value is provided via the IRP tools and IRP portfolio analysis. Note that this analysis does not differentiate energy and capacity value, and such differentiation is not critical. The IRP analysis is performed through a long term horizon, which is appropriate for a resource providing long-term capacity. To the extent a short-term resource is expected to defer a major resource for some number of years, it is still appropriate to run a long term IRP analysis, as the resource which was deferred may not be the same as a resource available in the future. To the extent the costs or dispatch characteristics differ depending on the timing, a short-term resource could have impacts beyond its term that are appropriate to account for. For example, with expectations of declining solar and storage costs and improving performance, the ability to delay acquisition to a later date can provide incremental long-term benefits. On the other hand, if a solar and storage acquisition is delayed such that it receives a reduced investment tax credit, it might result in additional long-term costs. To the extent a short-term capacity resource does not result in any long term changes in the company's portfolio, a long-term analysis may not be necessary.

PacifiCorp has not identified a differential between short-term and long-term capacity acquisitions. In PacifiCorp's recent IRP's, short-term market purchases have represented the lowest-cost source of additional capacity for PacifiCorp's portfolio (other than some highly cost-effective energy efficiency programs). However, the availability of market purchases may be limited and the price is uncertain until a transaction is entered. As indicated above, short-term

capacity may act as a bridge to more cost-effective resources that may be available in future years. However, the availability of any short-term capacity will be uncertain unless it is associated with a contract that has explicit renewal rights. Because long-term acquisitions take time to put in place, the options for replacing short-term capacity at short notice may be limited. Therefore, it may be appropriate to ensure that short-term resources don't all expire at one time and that the reliance on not yet executed short-term resources does not exceed a reasonable level.

Question 10. ***How should temporal and durational attributes of capacity be calculated?***

a. How could temporal and durational availability affect the valuation?
i. How could availability of a system peak capacity product at critical times affect its valuation?
ii. How could availability and sustained duration of ramping capability affect valuation of a capacity product?
iii. How could seasonal availability affect valuation for a capacity product?
iv. How could ability to provide ancillary services at times of system stress affect valuation?

Comment: In its 2019 IRP, PacifiCorp accounted for temporal and durational attributes of capacity using a two-step process. First, the capacity contribution of various resource options was estimated using a loss of load probability (LOLP) study and each resource's hourly availability. The LOLP study contains hundreds of iterations and identifies hours in which loss of load events may occur under a variety of load, hydro, and thermal outage conditions. In each iteration the hourly wind and solar profiles was the same, so the average LOLP in each hour is sufficient to assess those resources' availability, and durational attributes do not need to be accounted for. To incorporate durational attributes, each iteration needs to be assessed independently. While an energy-limited resource could be available in any hour, it will only be available for a limited time before it is depleted and would be unable to cover additional shortfall events until it was recharged, resulting in a reduced capacity contribution relative to resource that was not energy-limited.

The second step in the capacity valuation process in PacifiCorp's 2019 IRP was a reliability assessment which ensured a minimum level of capacity was available for load service and operating reserves in each hour under normal conditions. This additional step is necessary because the capacity contribution values identified above are not strictly additive and are dependent on the other resources in a portfolio. For example, consider a 5-hour loss of load event. The first hour of the event occurs during the day, and can be covered by a new solar resource, which would be attributed a 20 percent capacity contribution. However, five new solar resources with 20 percent capacity contribution each would not result in reliable operation in the four hours after the sun sets, even though the "capacity" adds up to 100 percent. The reliability assessment ensures that capacity is covering the entire study period and not being procured for periods that already have adequate supply.

a. PacifiCorp's 2019 IRP does not inherently attribute capacity value to specific hours. However, to help inform the results, PacifiCorp calculated updated LOLP-based capacity

contributions using one of the final portfolios in its analysis. Because the portfolio is very similar to the preferred portfolio, the marginal capacity value identified using the LOLP-approach should be a reasonable estimate. The 12 month by 24 LOLP results are shown in Figure 1 below.

Figure 1: PacifiCorp 2019 IRP Final Capacity Contribution Values

Month \ Hour	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
4	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
7	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	0%	1%	5%	9%	6%	2%	0%	0%
8	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	3%	1%	1%	8%	17%	17%	11%	0%	0%	0%
9	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
10	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%

Note that the distribution of LOLP results does not indicate that all of the events have equivalent value. A year-round asset, such as a simple-cycle combustion turbine or a battery, might be the most cost-effective solution. Alternatively, a combination of incremental solar resources to cover shortfalls during the day, seasonal load control programs during summer evenings, and a year-round energy efficiency program could prove to be a more cost-effective combination. The incremental costs of the different components in the portfolio vary – implying that the capacity cost during different seasons and times of day also varies. In the Resource Value of Solar (RVOS) methodology approved in Commission Order 19-021, the capacity value is weighted based on the LOLP values. Using the values in Figure 1 above, 3 percent of the generation capacity value would be paid to resources available in hour ending 15 in August, while 17 percent would be paid for availability in hour ending 19 in August. More detailed IRP analysis would be necessary to benchmark this result to determine if it was reasonably accounting for impact of potential resource alternatives. These values would also be expected to evolve over time.

i. Using the values in Figure 1, a resource that was available from 5:00pm to 9:00pm daily in July and August would provide a 75 percent capacity contribution. This captures a majority of the LOLP events with a limited window. The actual value in that period might be higher or lower depending on the relative costs of resources which could cover the remaining portion of the year. Whether alternative supply exists to cover the remaining portion of the LOLP events, and at what cost, would require portfolio analysis, such as the IRP models.

ii. PacifiCorp did not identify any ramping shortfalls in its 2019 IRP, so there wouldn't be any specific incremental capacity value to fast-ramping units. There would still be potential benefits from fast ramping resources in energy dispatch.

iii. Please refer to PacifiCorp's response to part (i) of Question 10.

iv. PacifiCorp did not identify any ancillary service capability shortfalls in its 2019 IRP, so there wouldn't be any specific incremental capacity value to units that can provide ancillary services. While the reliability assessment sometimes identifies shortfalls in reserve allocations, this is because the model prioritizes load service, indicating a generic capacity shortfall rather than a shortfall in ancillary services capability. There would still be energy dispatch benefits from resources that provide ancillary services.

Question 11. ***If locational capacity is something that should be compensated, which factors should be used to inform the locational value of capacity?***

a. Avoided transmission costs (or needed upgrades),
b. Avoided distribution costs (or needed upgrades),
c. Impact of new capacity in a "load pocket," if applicable, or
d. Other factors

Comment: PacifiCorp agrees that locational capacity is reasonable to be compensated for avoided transmission and distribution costs.

a. The value attributed to avoided transmission or distribution costs requires a resource to be located in an area which contributes to the reasonably certain avoidance of transmission and/or distribution costs. Note that lost benefits from improved reliability or reduced congestion associated with additional transmission capacity would also need to be accounted for in determining compensation.

b. Please refer to the response to part (a) of Question 11.

c. To the extent resources are located in an area that results in an incremental need for transmission upgrades or third-party transmission wheeling to move all or part of the resource to load, it is appropriate for the that resource's compensation to be reduced to reflect the incremental transmission costs.

d. Generally, generation capacity is contemplated as a system marginal cost. However, the IRP models optimize the generation portfolio to ensure that each load area has adequate resources to meet local load and the planning reserve margin, with allowance for transfers between load areas. To the extent transfer capability into an area is constrained, the value of generation capacity in that area may be higher than in areas which have unconstrained access to transfers from other areas. PacifiCorp's 2019 IRP also identifies transmission upgrades necessary to accommodate resource additions. As a result, some of the locational value of capacity may already be reflected in the resources identified in the preferred portfolio.

Question 12. ***How does the scale of a given resource affect its value?***

a. Is there a threshold size of a project, above or below which its value to the system as a whole changes categorically, or out of proportion to an increase or decrease the number of MWs of power it can produce?
b. Could a threshold size in a specific location sometimes affect valuation?
c. Could a threshold size affect whether MW-year or MWh compensation is appropriate.

Comment: Theoretically, each increment of capacity that is added can allow an increment of planned resources to be removed, starting with the deferrable resources with the highest capacity cost (the highest cost after netting out energy and other benefits). As more capacity is added the net capacity cost of the remaining planned resources available for deferral will decline, resulting in lower capacity value. Once all planned resources are deferred, capacity value would approach zero. In practice, many planned resources, such as gas plants, come in discrete sizes and cannot be deferred on a MW by MW basis. Rather than attribute the deferral of the entire plant to the resource that provides the last MW, it may be appropriate to uniformly allocate the plant's capacity costs to all of resources that enabled it to be deferred, not just the last one. This would result in step-wise declining capacity value resulting from the discrete deferrable resources in a portfolio. Within the IRP models, the lumpy nature of the available resources is accounted for and can result in shifts before and after a resource need or a resource additions. For example, a small acquisition of more expensive resources, such as load control programs, may be appropriate before building a large gas plant, even if the $/kW capacity cost of the gas plant is lower, because the size can be tailored to the need.

a. Yes. Any large resource that exceeds the current needs for capacity (or for capacity at the highest deferrable capacity cost) will have a lower value until it is fully utilized as a result of load growth or retiring or expiring resources.

b. Yes. To the extent transmission constraints prevent a resource from delivering its output to the rest of the system during peak conditions, the effective capacity value of that resource (or that area) would be reduced.

c. Generally, MWh compensation is appropriate for any resource that cannot be dispatched by the utility. If a resource has limited ability to adjust its output, a customized on-peak/off-peak definition may provide an appropriate incentive and compensation for deliveries during the periods that are expected to have the greatest system benefit. Even for resources that are dependent on external forces (sun or wind) on-peak and off-peak definitions can help ensure that the pattern of deliveries is consistent with forecasted levels used to develop pricing and that compensation is commensurate with the benefits actually provided.

MW-year compensation is generally fixed through the term of the contract, or only subject to a resource meeting specified availability or other performance requirements. As a result, MW-year compensation is most appropriate for resources

whose dispatch is subject to a utility's discretion, but in order to align the interests of the project owner and the utility, a contract would likely also include MWh compensation aligned with the marginal dispatch cost of the resource. That way, a resource will be fairly compensated regardless of the level of dispatch, which will be likely to vary from year to year and between forecast and actuals.

Benchmarking and Other Valuation Techniques for Capacity

Question 13. Currently, simple-cycle gas plant costs are generally used to value capacity. Is this method still appropriate for some types or categories of capacity?

a. If yes, for which types?
b. If no, for which types?
i. Further, is a new or different benchmark or proxy more appropriate? If so, for which types/categories of capacity?

Comment: No, the existing capacity valuation based on simple-cycle natural gas plants is not appropriate. PacifiCorp's 2019 IRP includes several simple-cycle gas plants, so their costs are part of the future capacity resources that are expected to be available to be avoided. However, the existing capacity valuations based on simple-cycle gas plants do not account for the dispatch benefits of these resources, essentially assuming they will never be dispatched. As a result of low natural gas prices and the "duck curve" resulting from widespread additions of solar resources across the west, average energy prices are relatively low while prices are often very high for a few hours per day – well above the variable cost of a simple-cycle. This is expected to continue to be true, even with future greenhouse gas costs, given the already low and declining cost of solar resources. To the extent a methodology comprehensively accounts for all of the costs and benefits of a resource under consideration and the expected alternative, it should be appropriate to apply to a variety of resource options. However, care should be given to ensure that portfolio effects are accounted for, such that portfolios contain adequate resources at all times.

a. n/a

b. n/a

i. The primary candidate to replace the simple-cycle gas plant in PacifiCorp's 2019 IRP in terms of a capacity resource is stand-alone battery storage. These battery resources are expected to charge and discharge every, or nearly every day, so accounting for dispatch benefits is of even greater importance than with a simple-cycle combustion turbine.

<u>Question 14.</u> Should capacity compensation for Distributed Energy Resources (DER) be based solely upon contribution to meeting an identified system need, or should it be supplemented with other factors considered in DER valuation? How relevant are the following factors for capacity valuation, and which are missing?

a. Avoided environmental costs
b. Avoided fuel costs
c. Avoided plant O & M costs
d. Avoided generation capacity costs (capex)
e. Avoided cost of transmission upgrade
f. Avoided distribution capacity costs
g. New costs for new distribution system technologies
h. Costs associated with forecasting (variable renewables)
i. Ability to dispatch (i.e. small turbines, gen sets, storage) vs. lack of ability to dispatch (i.e. variable renewables)
j. Avoided (or differently calculated) costs of reserve capacity

<u>Comment:</u> Subparts (a) through (f): For PacifiCorp, in docket UM-1910, the Commission has already adopted a comprehensive set of elements for compensation as part of the company's RVOS docket, and those elements include generation capacity as well as transmission and distribution capacity. As noted several times in these comments, the variable costs of an avoided resource, including environmental costs, fuel, and variable Operating and Maintenance (O&M) costs, are relevant to determining the avoided resource's lost dispatch value, when combined with estimates of energy and operating reserve value. PacifiCorp recommends that capacity compensation reflect the avoided resource's cost less the margin earned from the other value elements provided by the avoided resource. Within the IRP models, these calculations are made simultaneously, based on the differences in portfolios under consideration. Within the context of RVOS, it may be feasible to calculate the energy and emissions values for a simple cycle combustion turbine proxy within the existing model, for instance by adapting the resource profile to reflect economic unit commitment, but operating reserve value would need to be considered separately. Regardless of the RVOS result, benchmarking against the IRP model results would be appropriate.

g. With regard to costs for new distribution system technologies, interconnection costs associated with a new resource are generally the responsibility of the project developer rather than incorporated in the compensation as part of an avoided cost rate. Further, PacifiCorp does not anticipate developing a methodology for reducing capacity compensation to cover upgrades to the wider distribution system that are not directly associated with the cost of interconnection of specific resources, such as up-sizing modifications to accommodate future development, improvements to increase operating flexibility, enhancements to real-time measurement capabilities or other distribution system improvement opportunities associated with new technology.

h. PacifiCorp's contracts with variable energy resources typically require the developer to provide forecasts of their expected output on a five-minute basis for a rolling 48-hour

period from a qualified forecasting vendor. Forecasting costs are borne by the developer, but may be contracted with PacifiCorp's existing forecast vendor.

i. Given identical operating characteristics, a dispatchable resource will be worth more than a resource that is not dispatchable. This is true not only for thermal or battery units, but also for solar and wind resources which can be dispatched down (i.e. curtailed). For example, solar resources can be economic to dispatch down whenever the energy price drops below zero, or below the value of the renewable energy credits produced. The proxy wind and solar resources in the 2019 IRP are all assumed to be dispatchable in this manner. A resource which cannot be dispatched could potentially deliver power during periods when prices are negative, resulting in a cost to customers as a result of the delivery.

j. PacifiCorp considers operating reserves to be part of the dispatch of its system, as holding operating reserves can result in the dispatch of higher cost resources. To the extent a resource option provides operating reserves, defers a resource that provides operating reserves, or results in an increase or decrease in operating reserve obligations, it is appropriate to calculate the associated cost or benefit. The calculation of operating reserve costs is closely tied to the resources in a portfolio, and the reserve obligations throughout the course of a study, so the use of a production cost model is appropriate.

Question 15. How can proper calculation of RA capacity help to cost effectively address the region's RA issues?

Comment: At present the primary method for sharing capacity resources within the western interconnect is via transactions between utilities for standard blocks of energy, typically heavy-load hour products with delivery from 6:00 a.m. to 10:00 p.m. To the extent two parties have a well-defined capacity obligation under an RA program, they may be able to transact for more specific needs, such as a "share" of a specific resource that has intra-hour scheduling capability or a tolling agreement for a specific resource. A utility with significant hydro resources might increase its energy supply by purchasing during daylight hours from a utility with an excess of solar resources. This could free up hydro energy to be sold during the evening, when solar resources are no longer available. The RA program can provide assurance that both parties have planned for and are maintaining an adequate supply to serve expected peak load and helps identify the best region-wide dispatch by highlighting the periods with highest needs.

Question 16. Given your answers to all of the above questions, do you have recommendations about what types of capacity should be compensated, how to define those types of capacity, and do you have examples of calculations or methodology suggestions you would like to offer?

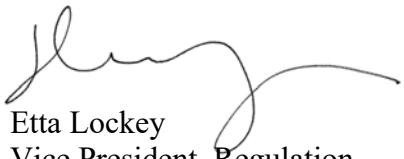
Comment: To the extent resources are committing to deliver into a utility's portfolio, it is reasonable to provide compensation such that the expected revenue requirement from retail customers is the same or lower than what would otherwise be incurred if different resources were acquired. This principle is used for all of PacifiCorp's resource decisions. Ideally, compensation should account for capacity, energy, and other impacts, both from the resource

under consideration, and from its interaction with the rest of a utility's portfolio in terms of both resource dispatch and portfolio changes. This analysis is performed using IRP models and tools as part of the IRP, during RFP evaluations, and for other major resource decisions, and is the best representation of resource value available. It is worthwhile to have simplified resource value estimates that do not require detailed IRP analysis; however, it can be difficult to ensure that the results of calculations drawn from IRP assumptions are accurately representing a resource's value given the multiple elements of value and the many moving parts in a utility's portfolio. Given the ongoing changes in the utility operating environment, it is appropriate to revisit long-standing assumptions using the best tools available.

III. Conclusion

PacifiCorp appreciates the opportunity to provide these comments and looks forward to continuing to actively participate in this proceeding.

Sincerely,



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