BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UE 307

In the Matter of PACIFICORP, dba PACIFIC POWER, 2017 Transition Adjustment Mechanism.	STAFF'S RESPONSE BRIEF

I. INTRODUCTION

Staff of the Public Utility Commission of Oregon (Staff) responds to the Opening Brief submitted by PacifiCorp d/b/a Pacific Power (PacifiCorp or Company). In its Response Brief, Staff addresses the following issues which remain of continuing concern with PacifiCorp's 2017 Transition Adjustment Mechanism (TAM) filing:

(A) Coal Costs for Jim Bridger Plant;

(B) Day-Ahead Real-Time Transactions Adjustment;

(C) Energy Imbalance Market (EIM) Benefits;

(D) Qualifying Facility (QF) Contracts;

(E) Direct Access Issues;

(F) Forced Outage Rate Modeling;

(G) Coal Plant Dispatch and Coal Stockpile Flexibility; and

(H) Avian Protection Compliance Adjustment.

Staff summarizes its recommended adjustments to the Company's proposed "net power costs" (NPC) on each of these issues in the Table 1 shown on the next page.

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Table 1:

Issue	Staff's Recommendation (OR-allocated)
Coal Costs for Jim Bridger Plant	$23.5 million
Day-Ahead Real-Time Adjustment	$9.23 million
Total Energy Imbalance Market (EIM) Benefits	$46.1 million (system-allocated) (not including NV Energy benefits)
Qualifying Facility (QF) Contracts	Apply Risk Factor
Forced Outage Rate Modeling	No dollar adjustment
Avian Protection Compliance Adjustment	$.064 million
Coal Plant Dispatch	$3.9 million
Direct Access Issues	No dollar adjustment

Staff briefly summarizes its rationale behind each of its proposed adjustments as follows.

Staff recommends that the Commission find PacifiCorp imprudent for failing to adequately analyze the least-cost, least-risk fuel source for Jim Bridger plant. Staff's recommended prudence disallowance is based upon its analysis finding that had PacifiCorp conducted the appropriate analysis in 2013, based on what the Company knew or should have known, customers would have saved $23.5 million (Oregon-allocated) in 2017 NPC by the Company's switch to Powder River Basin (PRB) coal.

Regarding the Company's system balancing transactions adjustment, also known as the Day-Ahead Real-Time (DA-RT) Adjustment, Staff recommends that the Commission reject the Company's modeling change based on the new evidence in the record in this proceeding. Staff's testimony demonstrates that the DA-RT Adjustment is unrealistic, arbitrary, and does not appropriately account for impacts to other areas of NPC.

As to EIM benefits, Staff proposes to decrease PacifiCorp's proposed NPC in the amount of $12.3 million[1] to account for the Company's failure to include *intra*-regional benefits as a

[1] *See* Staff/100, Crider/17-18; Staff/300, Crider/7 for this number. Unless otherwise expressly noted, all numbers are stated on an Oregon-allocated basis.

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benefit that arises from its joining the EIM. Staff further recommends a decrease of $31.2 million to the Company's proposed *inter*-regional benefits due to the Company's over-estimate of its "actual production costs" that are incurred as part of its inter-regional energy transfer activities with the EIM and as determined by Staff's calculation method.[2]

Regarding the QF contract issue, Staff proposes that the Company apply a "historical success factor" to the QF capacity it includes in its TAM test year to account for the fact that not all QFs become operational by the end of the test year.[3]

As to the two direct access issues raised by Nobel Americas Energy Solutions LLC's (Noble), Staff recommends the Commission reject each for the reason they were decided by Commission Order No. 15-394 and the Order is still applicable to the present circumstances underlying these two issues.[4]

Upon further review of information from the Company, Staff no longer has a monetary adjustment related to the Company's modeling of forced outage rates. Staff's initial concerns were that the Company's methodology inflated costs related to starting up generation resources and about the Company's calculation. Although Staff will continue to review this adjustment in future TAM proceedings, Staff no longer recommends a dollar adjustment in this proceeding.

With regard to the Company's modeling methodology for coal plant dispatch, Staff believes that the Company's approach constitutes an improper modeling change, and on that basis, should be rejected. If adopted, this would reduce PacifiCorp's NPC by $3.9 million (Oregon-allocated).

Finally, Staff recommends that the Commission reduce PacifiCorp's 2017 forecast of net power costs by $.064 million (Oregon-allocated) because PacifiCorp knew, at the time that the decisions involving the planning and siting of the two wind projects were being made, that it was

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[2] Staff/300, Crider/12-15; Staff/305. Note that Staff originally believed that the $31.2 million was a confidential number. The Company has since confirmed that it is not.

[3] *See generally* Staff/300, Crider/17-19.

[4] Staff/500.

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disregarding relevant federal guidance against the advice of federal agencies. The Company's failure to head agency advice resulted in an enforcement action and corresponding curtailment of wind resources from what was approved by the Commission when the projects were initially added to rates.

II. LEGAL STANDARD

PacifiCorp argues that the adjustments advocated for in this proceeding are "facially unreasonable given that NPC has not been [as low as $333 million] since 2011" and that such a result would be even more unreasonable "in light of the Company's persistent under-recovery of NPC since at least 2008."[5] However, even assuming these statements are true, they are not relevant to the Commission's obligation to approve rates that are fair, just and reasonable based on the evidence in the record of this proceeding. PacifiCorp's TAM filing is a ratemaking matter that is reviewed under ORS 757.210. As such, the Company has the burden of proof to show that its proposal is fair, just and reasonable.[6] PacifiCorp bears this burden of proof throughout the proceeding and it has the responsibility to present sufficient and adequate evidence to establish its proposed TAM increase of approximately $16.2 million.[7]

III. ARGUMENT

(A) PacifiCorp has not prudently analyzed coal costs for Jim Bridger plant, and should therefore be subject to a prudence disallowance.

Staff and PacifiCorp are in agreement that the Company has an ongoing obligation to prudently analyze least-cost/least-risk fuel sources for Jim Bridger plant, as it does for all of its thermal resources.[8] PacifiCorp also contends that its fuel strategy for the Jim Bridger plant in 2017 is fair, just and reasonable.[9] However, the record in this proceeding does not support

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[5] PacifiCorp Opening Brief at 3.

[6] *See* ORS 756.040(1); ORS 757.210(1).

[7] *See* PAC/400, Dickman/7.

[8] *See* PacifiCorp Opening Brief at 11.

[9] PacifiCorp Opening Brief at 10.

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PacifiCorp's position. Although the Company cites to several sets of analyses, Staff's testimony has demonstrated that the Company has failed to conduct a comprehensive, long-term analysis of Jim Bridger fuel supply alternatives. The Company's failure to act is an act of imprudence.

1. The Company's decision-making process is relevant to a prudence determination.

PacifiCorp cites to the prudence standard articulated in Order No. 02-469, arguing that the Commission "examines the 'objective reasonableness of a decision at the time the decision was made'" and that the utility's decision must be upheld if it is objectively reasonable, considering established historical facts and circumstances, and without the benefit of hindsight.[10] Although Staff generally agrees with PacifiCorp's articulation of the prudence standard, the crux of the disagreement between Staff and PacifiCorp related to Jim Bridger plant fuel costs is centered on the Company's decision-making process for the plant's fueling strategy for the 2017 TAM.

In Order No. 12-495, the Commission made clear that a utility's decision-making process is a relevant and important consideration in determining whether the utility's actions were prudent.[11] Specifically, the Commission stated that "the process used by the utility to make a decision…is highly valuable in determining whether the utility's actions were reasonable in prudent in light of the circumstances which then existed. The prudence standard examines all actions of the utility—including the process that the utility used to make a decision."[12]

Accordingly, PacifiCorp's decision-making process with regard to the least-cost, least-risk fuel source for Jim Bridger plant in 2017 is relevant to a prudence determination by the Commission.

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[10] PacifiCorp Opening Brief at 8-9 (internal citations omitted).

[11] *In re PacifiCorp*, OPUC Docket No. UE 246, Order No. 12-493 at 26 (Dec. 20, 2012).

[12] *Id. See also In re PacifiCorp*, OPUC Docket No. UE 227, Order No. 11-435 at 7 (Nov. 4, 2011) (Commission finding that PacifiCorp's decision-making process for certain hedging contracts was "crucial" in determining whether the hedges were prudent.).

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2. The Company failed to conduct analysis adequate to support its current fueling strategy for Jim Bridger plant.

PacifiCorp argues that its fuel strategy for Jim Bridger plant is fair, just and reasonable.[13] The Company relies on four analyses in support of its fueling strategy for Jim Bridger plant in the 2017 TAM: (1) the BCC mine plan, which utilizes a 10-year planning horizon for anticipated output from BCC,[14] (2) the life-of-plant fueling plan used in the Company's Integrated Resource Plan (IRP),[15] (3) the Company's Long-Term Fuel Plan filed with the Commission filed with the Commission in December 2015,[16] and (4) the Company's 2013 Black and Veatch Study.[17] However, Staff's testimony in this case has demonstrated that each of these are fundamentally inadequate to support a finding that its fueling strategy for the 2017 TAM is least-cost, least-risk.

First, the Company's 10-year Mine Plan for BCC does not evaluate market alternatives at all.[18] Rather, the 10-year Mine Plan merely evaluates BCC's potential production levels and costs in relation to anticipated electricity market conditions and generation levels at Jim Bridger plant.[19]

Second, the Company argues that it develops a life-of-plant fueling plan for its IRP,[20] but then concedes that [redacted] for Jim Bridger plant.[21] The Company did not perform a long-term comparison of market options because of Black and Veatch's preliminary

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[13] PacifiCorp Opening Brief at 10.
[14] PAC/1000, Ralston/8.
[15] PAC/1000, Ralston/8.
[16] PAC/1000, Ralston/8-9.
[17] PAC/1000, Ralston/11.
[18] *See e.g.* Staff/227.
[19] PAC/500, Ralston/29.
[20] PAC/1000, Ralston/8.
[21] Highly Conf. Tr. at 10; *see also* PacifiCorp's 2015 IRP (LC 62).

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estimate of retrofit costs and because the 2013 BCC coal cost was purportedly less than the 2013 PRB cost, despite also arguing that collaborative, long-term planning is more beneficial than "litigating Jim Bridger coal supply issues on a year-by-year basis as costs fluctuate in NPC filings."[22] While the Black and Veatch study [redacted],[23] Staff's testimony demonstrates that the ongoing fuel savings that market coal would have provided were also large,[24] and therefore PacifiCorp should not have dismissed a long-term market comparison in its 2013 IRP.

Notably, the Company incorrectly states that [redacted].[25] The 2013 BCC 10 year budget shows a 2013 BCC coal cost of $[redacted] per ton.[26] The 2013 price per ton for 8400 Btu PRB coal was $[redacted],[27] and the Company's estimated rail transport cost was $[redacted],[28] for a total cost per ton of $[redacted], well below the 2013 BCC coal cost. Staff's testimony also points out that in 2013, PacifiCorp expected the BCC coal costs to escalate rapidly, exceeding $[redacted] dollars per ton by 2027.[29] The 2013 SNL forecast for 8400 Btu PRB coal in 2027 was $[redacted] per ton (exclusive of transportation), well below the projected BCC cost.[30] The Company was not prudent to use only 2013 prices when it decided to not evaluate PRB coal supply options for Jim Bridger.

Third, the Company's 2015 Long-term Fuel Supply Plan (LTFSP), which is based on the Company's 2015 IRP, contains only a limited analysis of one point in time to transition to the market.[31] The LTFSP does not test an early transition to market coal.[32] A review of this

[22] PacifiCorp's Opening Brief at 13.
[23] PAC/1002, Ralston/5-6.
[24] Staff/400, Kaufman/3.
[25] Highly Conf. Tr. at 10.
[26] Staff/227, Kaufman/2.
[27] Staff/403, Kaufman/8.
[28] This value is calculated as (13.23/2 +18.38/2)*1.1 as described in Staff/407, Kaufman/3.
[29] Staff/200, Kaufman/39.
[30] Staff/403, Kaufman/9.
[31] Staff/200, Kaufman/61; Staff/215.

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document makes clear that the Company did not engage in comprehensive, long-term analysis of fuel source options for the Jim Bridger plant. PacifiCorp claims that an evaluation of the prudence of market coal in 2017 requires evaluation of 2013 decisions.[33] The 2015 LTFSP does not represent a 2013 viewpoint, and as such, does not satisfy PacifiCorp's obligation to evaluate market alternatives in 2013.

Finally, the Black and Veatch Study relied upon by the Company is similarly inadequate in informing the best long-term fuel supply strategy for Jim Bridger plant. Although the Study may be from a reputable engineering firm, the parameters placed on it by PacifiCorp call its value into question. In the first paragraph of the Study, Black and Veatch explains that the study [redacted].[34] [redacted].”[35] Black and Veatch also noted that [redacted].[36] [redacted].”[37] Based on the 2013 Study, the

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[32] *See* Staff/215.

[33] PAC/500, Ralston/18.

[34] PAC/1002, Ralston/1.

[35] *Id.*

[36] *See id.* at 3.

[37] *Id.* at 11-12.

Company [redacted]. Yet, the Company did not take the next recommended step in the Study—[redacted]."[38]

PacifiCorp also insinuates that its conclusion in prior TAM proceedings that PRB was an uneconomic and infeasible option is instructive in the present case.[39] However, PacifiCorp's reliance on these cases is misplaced for several reasons. First, ratemaking is inherently legislative in nature, meaning that the Commission has broad discretion to carry out ratemaking and other regulatory functions on a prospective basis.[40] Second, the Commission must base its decisions solely on the record before it in any given proceeding.[41] To the extent that a specific argument has not previously been raised, it is incorrect to assume that the Commission's prior decision, without the benefit of considering the new evidence, should hold constant. Third, the referenced proceedings do not contain long-term cost comparisons of market based coal. Finally, the Commission is not bound by *stare decisis*.[42] In determining the precedential effect of prior decisions, to the extent that a particular issue has been explicitly considered by the Commission, the Commission must determine whether the facts underlying both cases are substantially similar enough to apply the prior decision, must find balance in the competing considerations of stability in decisions and to be able to correct past errors, and must consider principled arguments that would suggest that the Commission erred in deciding the issue in question.[43]

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[38] Conf. Tr. at 17.

[39] *See* PacifiCorp's Opening Brief at 6-7, 9.

[40] *See Gearhart v. Public Utility Com'n of Oregon*, 255 OrApp 58, 61 (2013).

[41] ORS 756.558.

[42] *See e.g.* ORS 756.568.

[43] *In re Central Lincoln People's Utility District*, OPUC Docket No. UM 1087, Order No. 05-981 at 4 (Sept. 7, 2005).

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In the present case, Staff has criticized the Company for its failure to conduct comprehensive, long-term analysis for fueling Jim Bridger plant. Both the Company and Staff agree that BCC costs "must be assessed over a period of years…because of the nature of the mining operation."[44] However, PacifiCorp retains an on-going obligation to assess the least-cost, least-risk fuel sources for Jim Bridger plant. PacifiCorp has not performed a long-term evaluation of BCC alternatives for 2017 coal receipts, despite acknowledging that it could have had sufficient time to upgrade facilities to receive and burn PRB coal in 2017 and that it was aware, in 2013, that BCC coal costs were above PRB coal costs, and were expected to escalate even more over the life of the Jim Bridger plant. The Company's failure to conduct adequate analysis in a timely manner should be found imprudent.

3. Had PacifiCorp undertaken a long-term evaluation of market alternatives for Jim Bridger plant in 2013, it would have discovered that the market option was viable and warranted more thorough analysis.

Staff's Opening Testimony undertook a 20-year look at operations using 2015 data available to PacifiCorp, and determined that customers in 2017 would have been economically advantaged by the Company's consideration of market alternatives.[45] PacifiCorp criticized Staff's analysis, claiming that the Company would have had to decide in 2013 to burn PRB coal in order to burn PRB coal at Jim Bridger plant in 2017.[46] Accordingly, Staff's Rebuttal Testimony revised its initial analysis, continuing with a 20-year look at operations but using information that was available to PacifiCorp in 2013.[47] Based on Staff's conclusion that the Company would have had time to make investments in time to burn PRB coal at Jim Bridger plant in 2017, and that continued reliance on BCC coal for the plant was not least-cost/least-risk, Staff undertook a second layer of analysis to calculate the 2017 TAM savings that would have occurred had PacifiCorp prudently evaluated market coal options.[48] When evaluated from both

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[44] PacifiCorp Opening Brief at 9-10, citing to Order No. 13-387 at 15.

[45] Staff/400, Kaufman/4 at fn. 8.

[46] PAC/500, Ralston/15.

[47] Staff/400, Kaufman/4.

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the 2013 perspective and the 2017 perspective, PRB provides a lower cost of coal to Jim Bridger than BCC.

a. Bridger Coal Company costs have been rising and will remain high.

In this case, PacifiCorp is requesting a price increase for Bridger Coal Company, largely related to a reduction in annual coal production at BCC associated with decreased dispatch of Jim Bridger plant due to depressed power prices.[49] Staff's testimony demonstrates that this is a trend that is very likely to continue.[50] PacifiCorp criticizes Staff's testimony, arguing that BCC unit costs did not escalate rapidly before 2016, and that Staff's analysis relies on "outlier" data.[51] However, Staff's inclusion of March, April, and May 2016 is appropriate—[redacted],[52] and [redacted],[53] particularly in light of the overall trend in costs. As Staff pointed out at the hearing, "[redacted]."[54]

b. PacifiCorp's analysis constitutes an impermissible, hind-sight review.

In its final round of testimony, PacifiCorp provides its first and only testimony on the long-term cost of PRB coal,[55] which was subsequently substantially altered on the date of the hearing. PacifiCorp's long-term model is fundamentally flawed for several reasons. First, it constitutes a hind-sight review because it relies on the 2014 BCC 10 year mine plan for production volumes and prices,[56] which was not finalized until [redacted],[57] despite the fact

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[48] Staff/400, Kaufman/4.
[49] Staff/200, Kaufman/27.
[50] Staff/200, Kaufman/27-31.
[51] PacifiCorp Opening Brief at 14.
[52] Conf. Tr. at 29.
[53] Conf. Tr. at 30.
[54] Conf. Tr. at 29.
[55] PAC/1003, Ralston.
[56] Staff/611 at14.
[57] Conf. Tr. at 22.

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that the Company has repeatedly argued that it would have had to know in the fall of 2013 that it was making a switch to PRB coal. According to PacifiCorp's own testimony, this would leave insufficient time to plan and prepare Jim Bridger to burn PRB coal in January 2017.

c. Staff's long-term analysis does not constitute an impermissible, hind-sight review.

Contrary to PacifiCorp's claims otherwise, Staff's recommended prudence disallowance is based entirely upon what PacifiCorp knew or should have known during the time period that decisions for the 2017 TAM needed to be made.[58] PacifiCorp argues that Staff's base case constitutes an "improper hindsight review" because the Company did not contemplate switching to PRB coal in 2013 *at all*, but rather assumed the underground operation would be replaced with increased coal from BCC surface and Black Butte mines.[59] However, as explained more fully below, the Company should have known that it could not rely on Black Butte mine to fill the void left by the closure of BCC's underground operations. The Company requested engineering studies from Black and Veatch in 2011 and again in 2013 to develop a plan for receiving PRB coal at Jim Bridger. This suggests that contrary to its testimony, the Company was aware that additional rail facilities would be needed when the underground mine closed.

The Company argues that PacifiCorp's 2013 IRP plan should represent the base case for capital investment in Jim Bridger.[60] Staff demonstrates that the 2013 IRP was insufficient in that it did not reasonably account for the anticipated closure of the BCC underground mine.[61] The 2013 PacifiCorp IRP contains no discussion of the 2024 BCC closure, and as such does not provide a valid basis for a base case analysis of Jim Bridger coal source.

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[58] Staff/400, Kaufman/4.

[59] PacifiCorp Opening Brief at 17.

[60] PacifiCorp Opening Brief at 17.

[61] Staff/200, Kaufman/68.

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d. The Company's base case is flawed.

PacifiCorp criticizes Staff's analysis for "including numerous errors and unreasonable assumptions."[62] However, the Company's base case[63]—i.e. sole reliance on BCC surface and Black Butte mines—is flawed because Jim Bridger does not have sufficient rail unloading facilities to receive that volume of Black Butte coal, and Black Butte mine does not have the capacity to provide substantial volumes of coal.[64]

Based on what the Company claims that it knew in 2013, the BCC volumes beginning in [redacted] were anticipated to drop substantially due to the closure of the mine's underground operations in [redacted], leaving the Company to rely on a much larger amount of Black Butte coal beginning in [redacted].[65] Under the Company's 2013 BCC Base Case Scenario, the Company's annual share of Black Butte coal beginning in [redacted] would be [redacted] tons and would escalate to [redacted] tons in [redacted].[66] PacifiCorp's has a two-thirds ownership interest in Jim Bridger plant, meaning that the Company's base case plan requires Jim Bridger to receive up to [redacted] tons of coal from Black Butte. PacifiCorp was aware as early as September 2010 that the estimated production of Black Butte mine was [redacted] tons.[67] This means that PacifiCorp's base case receives coal from Black Butte mine at [redacted] percent of its known production capacity. In addition, even if Black Butte mine could produce [redacted] tons of coal, Jim Bridger plant cannot receive [redacted] tons of coal from Black Butte under its current rail unloading facilities. The *total facility* unloading capacity (tons per year) for Black Butte at the Jim Bridger

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[62] PacifiCorp Opening Brief at 14.

[63] Staff notes that there is some inconsistency surrounding the date that underground operations were anticipated to close based on information known to the Company in 2013. The Company's Revised 2013 BCC Base Scenario (PAC/1002, Ralston/3) has reduced volumes beginning in [redacted], whereas the Company's Opening Brief does not challenge Staff's 2013 BCC Scenario, which has reduced volumes beginning in [redacted] based on the Company's 2013 BCC Mine Plan. *See* Staff/227, Kaufman/11.

[64] Staff/212, Kaufman/14.

[65] PAC/1000, Ralston/32; PacifiCorp Opening Brief at 17.

[66] PAC/1003, Ralston/3 and 4.

[67] Staff/212, Kaufman/14.

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plant is currently ranges between [redacted] tons and [redacted] tons.[68] The Company does not explain how the current facilities, without upgrades, will accommodate the additional volumes from Black Butte beginning in [redacted]. Logic would dictate that facilities upgrades would be necessary; however, those costs are not included in the Company's 2013 BCC Base Case Scenario.[69] If PacifiCorp had correctly included rail facilities at a cost consistent with the market scenario, the present value revenue requirement of PacifiCorp's base case scenario would have increased by $[redacted].[70]

e. The Company's market case is also flawed.

PacifiCorp argues that Staff's market case also contains several flaws related to capital costs,[71] amortization period of capital costs,[72] size of the regulatory asset resulting from the early closure of BCC, the amortization period for early closure of BCC,[73] the transportation costs for getting PRB coal to Jim Bridger plant,[74] and consideration of the risk of relying exclusively on PRB coal.[75] However, PacifiCorp's criticisms are misplaced.

(i) PacifiCorp's analysis overstates capital costs.

PacifiCorp argues that in 2013, it was relying on the capital cost estimate from its 2013 Black and Veatch Study, which estimated capital costs for a conversion to PRB coal at just over $[redacted].[76] As discussed more fully above, the value of the Black and Veatch Study for a definitive cost estimate for capital improvements is called into question for several reasons. Additionally, contrary to PacifiCorp's assertion otherwise, the $[redacted] estimate is

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[68] Conf. Tr. at 19; Staff/603 at 2.

[69] PAC/1003, Ralston/2.

[70] Staff/611 at 13.

[71] PacifiCorp Opening Brief at 18.

[72] PacifiCorp Opening Brief at 18-19.

[73] PacifiCorp Opening Brief at 20-22.

[74] PacifiCorp Opening Brief at 22-25. This value represents the capital investment costs in 2013 dollars.

[75] PacifiCorp Opening Brief at 25-26.

[76] PAC/1002, Ralston/6.

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predicated on a test burn, and contains ranges for certain costs.[77] The Study also has considerable [redacted].[78] To provide a frame of reasonableness, the Company's own estimate in 2015 reduced the anticipated capital expenditures necessary by $[redacted], to $[redacted] for PacifiCorp's share.[79]

In contrast, Staff's estimation of capital costs is reasonable for several reasons. First, the Company provides no analysis to support the considerable difference in capital costs to upgrade the rail facilities at Jim Bridger compared to its other coal unloading facilities.[80] The Company argues that in 2013, capital costs related to unloading and handling facilities were estimated at $[redacted] (in 2017 dollars).[81] This is perplexing given that the physical characteristics of the PRB coal that would be delivered to Jim Bridger plant are largely the same as the PRB coal delivered to Dave Johnston plant,[82] whose coal unloading facilities were recently installed at a cost of approximately $[redacted].[83] Dave Johnston unloading facilities have an annual capacity of [redacted] tons per year,[84] which is roughly half of Jim Bridger plant's annual fuel burn of [redacted] tons per year.[85] PacifiCorp's estimated capital costs were generally much higher than other Company facilities.[86] Staff's estimate of facility upgrade costs of $[redacted] continues to be many times more than the cost of PacifiCorp's existing coal unloading facilities.[87]

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[77] PAC/1002; Conf. Tr. at 41.
[78] PAC/1002, Ralston/6; Conf. Tr. at 60.
[79] Staff/400, Kaufman/19.
[80] Staff/400, Kaufman/20.
[81] PAC/1002, Ralston/5-6.
[82] Conf. Tr. at 21.
[83] Staff/603 at 4.
[84] Staff/603 at 2.
[85] Staff/215, Kaufman/4.
[86] Staff/400, Kaufman/20.
[87] Staff/400, Kaufman/20.

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Second, the Black and Veatch estimate provides a range of costs, and PacifiCorp's number is near the top of this range.[88] The study states [redacted].[89] PacifiCorp argues that its diligence in conducting the test burn in 2015 lead to reduced capital costs that would not have been possible had the Company begun conversion to PRB in 2013.[90] However, Staff has not advocated that the Company should have rushed to convert to PRB coal in 2013 without comprehensive, long-term analysis including additional studies and test burns.[91] At the hearing, Staff stated that "[redacted],"[92] which comports with Staff's position in this case that PacifiCorp's imprudence lies with the Company's failure to comprehensively and timely assess market alternatives for Jim Bridger plant.

(ii) PacifiCorp's analysis inappropriately assumes specific regulatory treatment of BCC following a transition to market coal.

PacifiCorp argues that if the BCC mine were to close, which it argues is a certainty if PRB coal were to replace BCC coal at Jim Bridger plant, the Commission would find that the public interest is served and that customers would be responsible for the undepreciated investment at the time and the closure and remediation costs.[93] However, other than sweeping statements in testimony, the Company offers no studies or analysis that there would be no viable market for BCC coal.[94] Additionally, the Company assumes that the Commission would find

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[88] Conf. Tr. at 41.

[89] PAC/1002, Ralston/15.

[90] PacifiCorp Opening Brief at 19.

[91] Conf. Tr. at 51-52.

[92] Conf. Tr. at 51. Staff further notes that the Black and Veatch Study was provided to PacifiCorp on [redacted] (PAC/1002, Ralston/1), and the timeframe identified by the Company was approximately one year to conduct the recommended follow-up analysis. Conf. Tr. at 51.

[93] PacifiCorp Opening Brief at 20.

[94] Staff/200, Kaufman/67.

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that BCC's closure is in the public interest, and therefore would order ratepayers responsible for undepreciated investment at the mine and closure and remediation costs, relying on the Commission's treatment of the Company's Deer Creek mine closure.[95] However, the Company fails to appreciate that the ownership structure and ratemaking treatment of Deer Creek mine and BCC are different, which raises the question whether the Commission would, in fact, treat the two closures identically for ratemaking purposes.[96] Regardless of this fact, Staff's analysis included closure costs.[97] Nevertheless, the Company criticizes Staff's analysis as understating the unrecovered investment portion of the regulatory asset that would be created upon the mine closure, for utilizing a 20-year amortization period, and for assuming a 3.43 percent time value of money.[98]

Staff's estimate of the unrecovered investment portion of the regulatory asset is not understated. Rather, PacifiCorp's market case overstates the unrecovered investment portion of the regulatory asset that would be created upon mine closure. Specifically, the Company's calculation of capital expenditures includes capital investments that could otherwise be avoided with an early closure of the mine. For example, the Company's analysis includes Deadman Wash, which "[redacted]."[99] A review of the specific costs and timelines make clear that such expenditures could be wholly avoided, as the expenditures are related to mining activities that would take place after 2016.[100]

[95] PacifiCorp Opening Brief at 20.

[96] Deer Creek (unlike BCC) was wholly owned by PacifiCorp, not an affiliate, and included in PacifiCorp's electric plant in service. *In re Pacific Power and Light*, OPUC Docket No. UI 105, Order No. 91-513 (Apr. 12, 1991).

[97] Staff/400, Kaufman/16; Staff/403, Kaufman/4.

[98] PacifiCorp Opening Brief at 21.

[99] Conf. Tr. at 22.

[100] Staff/602.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

Contrary to PacifiCorp's arguments to the contrary, Staff's amortization period is not unreasonably long at 20 years. In determining the appropriate amortization period, the Commission has broad discretion, and can take into account considerations such as rate shock.[101] Staff's analysis in this case assumed a 20-year amortization period, because it represents the remaining life of Jim Bridger plant.[102] In contrast, the Company advocates that analysis be based on a four-year amortization period beginning in 2014. However, Staff's testimony identified two issues with the Company's proposal. First, the Company's proposal creates an unreasonable mismatch between benefits and costs from BCC in relation to Jim Bridger plant's remaining life.[103] Second, PacifiCorp's proposal overstates the cost per ton impact by loading 25 percent of all closure costs into one year.[104] The Company relies upon the amortization period chosen for Deer Creek mine (four years) as an indicator that its proposal is reasonable,[105] but fails to provide any evidence or substantive argument that the specific circumstances of the two mines dictate an identical amortization period. Notably, Deer Creek's unrecovered investment portion of the regulatory asset was $21 million,[106] whereas the Company's assumed unrecovered investment in BCC is substantially higher at $[redacted][107]--almost [redacted] times more than the costs at issue in Deer Creek. The Company's provides no evidence that amortizing these costs over a four year period would not have resulted in an unnecessary burden or rate shock to customers.

Finally, PacifiCorp's assumption of a 7.69% weighted average cost of capital interest rate on the regulatory asset is also unreasonable for several reasons. First, the Company's proposed

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[101] *Gearhart v. Public Utility Com'n of Oregon*, 255 OrApp 58, 95-96 (2013).

[102] Staff/400, Kaufman/16.

[103] Staff/400, Kaufman/16.

[104] Staff/400, Kaufman/16.

[105] PAC/1000, Ralston/24.

[106] *In re PacifiCorp*, OPUC Docket No. UM 1712, Order No. 15-161 at 7 (May 27, 2015).

[107] PAC/1210.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

amortization period—[redacted][108]—is after the BCC mine would be closed, meaning that the plant is no longer used and useful pursuant to ORS 757.355. This means that the PacifiCorp would not be permitted to earn a return *on* its unamortized investment.[109] Additionally, before the Company would be permitted to earn a return *of* its undepreciated investment, the Commission would have to make a finding that its closure was in the public interest pursuant to ORS 757.140(2).[110] Accordingly, the Company's proposal to use its weighted average cost of capital is contrary to Oregon law. Staff's proposal, however, is based on the Treasury bond rate over the Staff's proposed amortization period, which is consistent with the Commission's decision on the appropriate time value of money for PGE's Trojan plant.[111]

(iii) PacifiCorp's transportation price is unsupported by the evidence in the record.

Transportation costs for PRB coal are the single largest cost component of the market case.[112] Staff's estimated transportation rate per ton is $[redacted] for 2016,[113] whereas the Company argues that $[redacted] per ton in 2017 is the most appropriate estimate.[114] Despite PacifiCorp's arguments to the contrary, Staff's transportation cost estimate takes a reasonable approach. Staff analyzed PacifiCorp's coal transportation contracts, and concluded that the PRB to Jim Bridge Plant was clearly an outlier.[115] To gain additional perspective, Staff also analyzed data from the Energy Information Administration (EIA) from the Surface Transportation Board (STB).[116] The

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[108] PAC/1210.

[109] *Citizens' Utility Board of Oregon v. PUC*, 154 Or App 702 (1998).

[110] *Id.* at 714 ("We conclude that, read together, ORS 757.140(2) and ORS 757.355 allow only the principal amount of the undepreciated investment to be recovered through rates.").

[111] Staff/400, Kaufman/17.

[112] Staff/400, Kaufman/9.

[113] Staff/400, Kaufman/12.

[114] PAC/1000, Ralston/17.

[115] Staff/400, Kaufman/12.

[116] Staff/400, Kaufman/10.

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1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

EIA data on fuel transport costs is objective and based on plant level fuel cost data.[117] The STB data is also objective and based on actual rail contract prices. All four of Staff's rail transport cost analyses demonstrate a consistent cost for PRB rail transport.[118] PacifiCorp nevertheless argues that Staff's estimate of transportation costs for PRB to Jim Bridger plant in its market case is "facially unreasonable."[119]

PacifiCorp argues that the Commission should find persuasive evidence of transportation costs under its current contract to transport PRB to Jim Bridger plant;[120] however, reliance on that contract is inappropriate given its effective date after the fall of 2013,[121] material differences that would need to be negotiated, such as potential discounts for a much higher volume contract, and the Company's potential bias towards continued reliance on BCC coal.[122]

The Company also dismisses Staff's analysis based on an objection to relying on generic, limited data.[123] However, the Company's own analysis contains similar flaws. The Company purports to rely upon the U.S. Department of Transportation Surface Transportation Board's Uniform Rail Costing System (URC Model), but does not know whether its estimate assumes rail cars are owned by carrier or shipper and is not aware of whether the URC Model includes fuel costs, both of which would impact the calculation of cost estimates in the URC model and would be potentially duplicative of costs in the long-term market comparison.[124] Moreover, the Company criticizes Staff's transportation cost analysis for not considering the fourteen "key

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[117] Staff/400, Kaufman/10.

[118] Staff/402.

[119] PacifiCorp Opening Brief at 22.

[120] PAC/1000, Ralston/20.

[121] PAC/1001, Ralston/1.

[122] Staff/400, Kaufman/13. Staff's testimony presented evidence that the Company's Long-Term Fuel Supply Plan for Jim Bridger over-estimated rail transportation costs. Although the Company's LTFSP was developed after the Fall of 2013, it provides evidence that the Company may have a bias in analyzing transportation costs from PRB to Jim Bridger plant.

[123] PacifiCorp Opening Brief at 24.

[124] Conf. Tr. at 15. Fuel costs are included in Mr. Ralston's model in addition to the base STB cost estimate. *See* Staff/611 at 1.

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1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

considerations" in its testimony, but acknowledges that its own cost-estimate fails to consider these "key considerations" as well.[125] In addition, the Company states that its rail cost for the market comparison is based on "internal calculations,"[126] but provides no detailed testimony on how this number was calculated.[127]

Finally, the Company's rail estimate for PRB coal is at a rate that is above the level required to initiate a rate review with the STB.[128] PacifiCorp has not provided a reasonable justification for estimating rail rates substantially above the level that justifies rate relief from rail regulators.

(iv) PacifiCorp's assertion of the risk inherent in the market case is not persuasive.

PacifiCorp criticizes Staff's market case for failing to account for the risk of relying exclusively on PRB coal.[129] PacifiCorp provides no testimony regarding the risk of relying on PRB coal, and there is no evidence in the record that shows that a diversified market supply like PRB is more risky than receiving coal from a single captive coal mine with depleting and uncertain reserves. PacifiCorp relies on citations from Staff Exhibit 212, PacifiCorp's 2010 Coal Inventory Policies and Procedures (Coal Inventory Policy) document, but PacifiCorp's Brief confuses transportation supply risk with transportation price volatility risk.[130] PacifiCorp implies that Dr. Kaufman addressed transportation supply risk during the hearing, but the hearing transcript clearly refers to transportation price.[131] Regarding transportation supply risk, [redacted].[132]

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[125] Conf. Tr. at 15-16.

[126] PAC/500, Ralston/20, Confidential Figure 2.

[127] PAC/1000, Ralston/17, citing to PAC/500, Ralston/20 at Confidential Figure 2.

[128] Staff/400, Kaufman/13.

[129] PacifiCorp Opening Brief at 25-26.

[130] PacifiCorp Opening Brief at 25-26.

[131] Conf. Tr. at 53.

[132] Staff/212, Kaufman/15.

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Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

The Coal Inventory Policy also notes that [redacted].[133] Additionally, [redacted].[134] [redacted].[135]

Regarding price risk, Staff's model relies on prices involving single year contracts at PRB.[136] Single year contracts provide PacifiCorp with less exposure to the minimum take costs that it is currently experiencing, but results in potentially greater price volatility.[137] Receiving coal from a market gives PacifiCorp the option of selecting short term contracts with low coal requirement risk, or long term contracts with low price risk. The base case of relying on BCC eliminates PacifiCorp's choice, and forces PacifiCorp to be exposed to both minimum take risk and price risk.

PacifiCorp currently models BCC as a minimum take contract in GRID. In PacifiCorp's initial filing, the dispatch cost of Jim Bridger was modified in order to burn BCC's expected production and all of the Black Butte minimum-take requirements.[138] PacifiCorp also claims that the BCC cost per ton increases as the volume of production decreases.[139] PacifiCorp's forecast for BCC coal costs vary wildly from year to year and from forecast to forecast.[140] Given the

[133] Staff/212, Kaufman/15.
[134] Staff/212, Kaufman/15.
[135] Staff/212, Kaufman/15.
[136] Conf. Tr. at 55-56.
[137] Conf. Tr. at 58.
[138] Staff/400, Kaufman/39.
[139] PAC/200, Ralston/12.
[140] Staff/611 at 14. For example, the 2013 Budget forecasts BCC coal costs to swing from [redacted]

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(503) 947-4520 / Fax: (503) 378-3784

amount of variation in both historic BCC coal costs and future BCC coal costs it is not surprising that no PacifiCorp testimony addresses the issue of BCC coal supply or price risk.

(v) PacifiCorp's calculation of unrecovered BCC capital includes costs that are clearly avoidable in the market scenario.

Staff's analysis of unrecovered BCC capital expenses excludes new capital additions after 2013.[141] This approach is reasonable for expenses that could be deferred until closure. PacifiCorp includes expenses such as new trucks and heavy equipment, and permitting costs for the Deadman Wash expansion.[142] The Deadman Wash is not expected to produce coal until [redacted].[143] It is unreasonable to assume that PacifiCorp would continue to invest capital in projects such as Deadman Wash, or to buy new, long lived heavy equipment, in a scenario where BCC closes in 2017. PacifiCorp's capital spend in the base case shows a clear decline in capital spending in the three years prior to plant closure.[144] PacifiCorp's base case closure plan also shows that the last three years of underground operations, [redacted][145] In the last three years of the surface operations, [redacted].[146] This clearly demonstrates that the final years of the BCC mine can operate with minimal capital additions.

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[141] Staff/400, Kaufman/18.

[142] Staff/611 at 3.

[143] Confidential Tr. at 22.

[144] Staff/231, Kaufman/1.

[145] Staff/231, Kaufman/1.

[146] Staff/231, Kaufman/1.

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4. *Jim Bridger plant fuel costs in the current proceeding are higher than they otherwise would be had PacifiCorp undertaken the appropriate analysis and transitioned to market coal.*

Staff's testimony demonstrates that in 2017, PacifiCorp's customers will be paying a premium for fueling Jim Bridger plant due to the Company's failure to engage in adequate long-term planning for the plant, and that trend is expected to continue in the future.[147] Because the market option is less expensive for customers, Staff argues that PacifiCorp should bear the burden of the difference.[148] Specifically, Staff calculated the 2017 TAM savings, using current data because it provides the most accurate net power cost forecast, to be $23.5 million (Oregon-allocated).

5. *The Commission has the authority to order an alternative prudence disallowance.*

Staff continues to believe that its analysis is sound and recommends a prudence disallowance based on its calculation of the 2017 harm to customers for PacifiCorp's failure to convert to PRB coal beginning in 2017. However, if the Commission finds that it is unable to adequately quantify the harm to PacifiCorp's customers for the 2017 TAM based on the record in this proceeding, there is precedent for a prudence disallowance for lack of meaningful analysis related to alternative courses of action.

In PacifiCorp's 2012 general rate case, the Commission imposed a $17 million disallowance for PacifiCorp's scrubber upgrades, to be amortized over one year, due to the Company's failure to reasonably examine alternative courses of action and to perform adequate analysis to support its investments.[149] The Commission found that PacifiCorp's failure to perform this analysis put ratepayers at a financial risk, and therefore determined that full

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[147] Staff/200, Kaufman/58 and 66; Staff/400, Kaufman/3.

[148] Staff/400, Kaufman/4.

[149] *In re PacifiCorp*, OPUC Docket No. UE 246, Order No. 12-493 at 31-32 (Dec. 20, 2012).

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

recovery for the costs of the investments resulting from the imprudence should not be recoverable in rates.[150]

In the present case, Staff's testimony has demonstrated that PacifiCorp has similarly failed to adequately analyze market alternatives for coal to fuel the Jim Bridger plant, placing customers at a financial risk of overpaying for generation from Jim Bridger plant. As such, if the Commission is unable to quantify the harm suffered by customers related to PacifiCorp's failure to analyze alternative fuel sources for Jim Bridger plant, including a conversion to PRB coal, Staff recommends that the Commission determine the appropriate level of disallowance based on PacifiCorp's imprudence.

6. The Commission should not adopt PacifiCorp's proposal to open an expedited proceeding in lieu of a prudence disallowance in this case.

Given the import and complexity of the issue, PacifiCorp argues that a separate, expedited proposal is appropriate to address long-term fueling issues at the Jim Bridger plant.[151] Although Staff is not opposed to a good-faith effort to work through the long-term issues through a collaborative process, this would not address the ratemaking harm to ratepayers related to the Company's 2017 TAM. Because these costs are included in the TAM, Staff does not agree that the litigation process in the TAM is an inappropriate venue to address these issues. Accordingly, Staff continues to advocate for a prudence disallowance in the present proceeding, but also accepts PacifiCorp's proposal to initiate a separate, expedited proceeding that will address least-cost, least-risk fueling sources for future years.

(B) The Company's Day-Ahead Real-Time Transactions Adjustment should be rejected.

PacifiCorp argues that its historic under-recovery for NPC is due in part to the fact that GRID does not have the functionality to accurately reflect the costs that PacifiCorp incurs for

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[150] *Id.* at 31.

[151] PAC/1100, Dalley/5-6.

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balancing its system on an hourly basis in real-time markets.[152] In order to address this issue, PacifiCorp introduced its system balancing transactions (also known as "Day-Ahead Real-Time Transactions" or "DA-RT") modeling change in the 2016 TAM. The Company's system balancing transactions adjustment is actually composed of two distinct modeling changes—first, the Company modifies market energy prices used in GRID in order to account for the fact that the Company tends to be a price-taker, paying more in heavy-load hours (HLH) than average actual market prices, and selling for lower than average market prices during light load hours (LLH) ("Price Adder");[153] second, the Company includes additional volumes of purchases and sales to better reflect the Company's actual volumes in transactions when balancing its system on an hourly basis in real-time markets ("Outboard Cost Increase").[154]

The Commission approved the Company's system balancing transactions adjustment, based on the evidence in the record of that proceeding, but also imposed a moratorium on modeling changes in order to allow the Company and parties an opportunity to examine the modeling change in greater detail in the 2017 TAM.[155]

In light of the direction from the Commission to further examine the Company's modeling adjustment, Staff's testimony in this case analyzed the Company's modeling change in greater detail. Staff and PacifiCorp agree that "short-term power purchase prices systematically exceed short-term power sales prices."[156] However, PacifiCorp provides no evidence that there is a relationship between historic market power prices and PacifiCorp's past net power cost forecast error.[157] PacifiCorp's historic operations also have other offsetting factors that are not accounted for by DA-RT.[158] Additionally, the DA-RT adjustment does not improve the accuracy

[152] PAC/100, Dickman/16.

[153] Staff/200, Kaufman/4; PAC/100, Dickman/15-16.

[154] PAC/100, Dickman/16.

[155] *In re PacifiCorp*, OPUC Docket No. UE 296, Order 15-394 at 4 (Dec. 11, 2015).

[156] PacifiCorp Opening Brief at 45.

[157] Staff/400, Kaufman/34.

[158] Staff/200, Kaufman/12.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

of PacifiCorp's net power cost forecast. Staff's testimony concludes that the Commission should reject the Company's proposal to address this problem through the DA-RT adjustment because it is arbitrary, unrealistic, incorporates historic costs without incorporating historic benefits of past market transactions, and reduced the accuracy of the GRID model. Accordingly, Staff recommends that the Commission reject the Company's DA-RT adjustment which would reduce 2017 forecast NPC by $[redacted] (system-basis), and order PacifiCorp to work with the parties towards improving the market price inputs used in GRID.[159]

1. PacifiCorp's historic net power cost forecast error does not validate the Day-Ahead Real-Time Transactions Adjustment.

PacifiCorp presents the DA-RT adjustment as an improvement to the net power cost forecast accuracy. However, PacifiCorp offers no evidence supporting this position. Instead, PacifiCorp assumes, without any demonstration, that previous power cost models have a fundamental bias towards low power costs, and that this bias is related to market transactions. PacifiCorp's historic forecast error is fundamentally grounded in error forecasting the model inputs, such as fuel costs and hydro generation. PacifiCorp does not rebut Staff on this point, and has not performed the basic model evaluation required to determine the source of the model error.[160]

If PacifiCorp's recent forecast error is driven by model inputs, and not balancing transactions, continued use of the DA-RT adjustment will result in an over-correction.[161] As such, the Commission should reject PacifiCorp's DA-RT adjustment for lack of clear and convincing evidence that it improves accuracy of the power cost forecast.[162]

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[159] Staff/400, Kaufman/37.

[160] Staff/608.

[161] Staff/400, Kaufman/35.

[162] Staff/400, Kaufman/33 and Kaufman/34.

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(503) 947-4520 / Fax: (503) 378-3784

2. The Company's Day-Ahead Real-Time Transactions Adjustment is arbitrary and unrealistic.

Staff's testimony argues that PacifiCorp's adjustment to the price of system-balancing transactions ("Price Adder") is arbitrary for several reasons. Although PacifiCorp attempts to rebut Staff's arguments, the Company's rationale is unpersuasive.

First, the size of the adjustment depends on the period of time PacifiCorp chooses to average prices over—if the Company were to choose a period of time, such as daily or yearly averages, the Price Adder would be smaller.[163] Inversely, if PacifiCorp chose a larger period of time to average prices over, the Price Adders would be larger.[164] PacifiCorp defends the use of a monthly time horizon by claiming that it matches the forward price curve.[165] Staff's testimony demonstrates, however, that the price actually included in GRID is reshaped by day of week and hour of day to match historic patterns.[166] Given that the prices included in GRID are more granular than the forward price curve, the monthly time period remains arbitrary. PacifiCorp criticizes Staff for not offering an alternate time period;[167] however, under Staff's rationale, any time period would be arbitrary.

Second, adjusting the price of system-balancing transactions does not directly address GRID's fundamental modeling flaw—the correlation between market price and demand.[168] Contrary to reality, the Company's modeling change creates a separate price for both purchases and sales, with prices for purchases always higher than prices for sales.[169] However, in any given market at any one point in time, there is simply a single clearing price, which will at times be either lower or higher than the forecasted price.[170] PacifiCorp argues that this fact does not

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[163] Staff/200, Kaufman/4-5.
[164] Staff/200, Kaufman/4-5.
[165] PAC/400, Dickman/27.
[166] Staff/200, Kaufman/8.
[167] PAC/400, Dickman/27.
[168] Staff/200, Kaufman/5.
[169] Staff/200, Kaufman/5.
[170] Staff/200, Kaufman/5.

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1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

mean that the adjustment is unrealistic, because in each hour GRID is either buying or selling and therefore there is only ever one price,[171] and that modeling two separate price streams "better represents the actual operations and is reasonable given the difficulty of forecasting a single market price for every hour of every day of the year."[172] However, this rationale misrepresents how the GRID model optimizes dispatch. The price adders decrease market sales and market purchases because the GRID model optimally makes purchase and sale decisions based on the market prices available.[173]

While GRID results may only have a single price at a single hub, PacifiCorp often makes purchases at one hub and sales at another hub. Under the DA-RT mechanism, when this happens, the price of the selling hub is increased above forecast and the price of the buying hub is decreased below forecast. This highlights Staff's concern that the Price Adder component of DA-RT does not directly address the correlation between market prices and PacifiCorp's demand.[174]

PacifiCorp agrees with Staff, ICNU, and CUB that a single price, when properly correlated, would accomplish the objective of PacifiCorp's two price system, namely the representation of market prices within GRID.[175] However, PacifiCorp complains that parties have not provided specific enough methodology for this.[176] Staff's testimony provides a specific methodology and demonstrates that the methodology is well within PacifiCorp's modeling experience.[177] Despite acknowledgment of the validity of Staff's proposal, and evidence that the

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[171] PAC/400, Dickman/26.

[172] PAC/400, Dickman/25-26.

[173] Staff/200, Kaufman/5.

[174] Staff/200, Kaufman/5.

[175] PAC/800, Dickman/34.

[176] PAC/400, Dickman/19.

[177] Staff/400, Kaufman36.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

proposal could be implemented, PacifiCorp proposes continuing a second year of using the DA-RT methodology, and to delay the application of a more rational approach.[178]

Finally, the Company's adjustment to volumes ("Outboard Cost Increase"), leads to irrational, extreme outcomes.[179] Although a decrease in real-time transactions should lead to a decrease in needed monthly and daily transactions, the Company's Outboard Cost Increase has the effect of *increasing* system balancing costs as real-time purchases decrease.[180] As Staff's testimony pointed out, in an extreme situation when there are no real-time transactions (and therefore the above-average cost of transactions in GRID would be $0), the historic value would not change and could be equal to the historic value of the above average cost of transactions, or $[redacted].[181] The Company attempts to dismiss Staff's concern, arguing that "[t]he system balancing transactions adjustment was not designed to work in such an extreme scenario, but it does work in the situations that the Company expects to experience during 2017."[182] However, at the hearing, PacifiCorp was unable to identify specifically what range the adjustment would apply to,[183] but suggested that the adjustment may be problematic in the event that the Company's forecast consistently overestimates actual costs.[184] This further confirms the arbitrary nature of the Company's DA-RT adjustment.

Moreover, the illogical nature of the DA-RT adjustment is not only evident in the extreme case of no market transactions. The change from PacifiCorp's initial filing to PacifiCorp's reply filing also shows illogical results, but remains well within the historical, and therefore "reasonable," range. PacifiCorp's Reply Update increases market transactions by [redacted]

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[178] PacifiCorp Opening Brief at 52-53.

[179] Staff/200, Kaufman/11.

[180] Staff/200, Kaufman/11.

[181] Staff/200, Kaufman/11.

[182] PAC/800, Dickman/32.

[183] Reg. Sess. Tr. at 59.

[184] Reg. Sess. Tr. at 60.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

[redacted] relative to the initial filing, but decreases the DA-RT adjustment by [redacted].[185] The rationale for DART is that market transactions add balancing costs, but in practice, the opposite relationship exists. This further highlights the arbitrary nature of DA-RT. PacifiCorp attempts to dismiss DA-RT's illogical pricing of balancing transactions by focusing on the fixed nature of monthly transactions.[186] However, Staff's criticism is specific to the pricing in DA-RT of the monthly transactions; specifically, the fact that as monthly transactions decrease, the price of transactions is increased to maintain a fixed level of cost recovery.[187]

3. The Company's DA-RT adjustment is based on historic market transactions, but does not account for offsetting benefits of historic transactions.

The DA-RT adjustment increases PacifiCorp's system net power costs by [redacted] (system).[188] This adjustment is robust to large changes in forecasted market prices and fuel costs.[189] The robustness is due to the arbitrary and historic nature of the adjustment. Staff argues that the DA-RT adjustment pushes historic transaction costs into the net power cost forecast.[190] Staff further observed that the DA-RT adjustment takes into account only historic patterns of market transactions, and fails to account for all the other moving components of power costs that could potentially offset market transaction costs.[191] Staff identified fuel prices as one of many examples of historic factors that are not accounted for by DA-RT.[192] When PacifiCorp makes a market energy sale, PacifiCorp experiences incremental costs in the form of fuel. PacifiCorp acknowledges that the DA-RT model does not account for historic variation in

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185 Staff/400, Kaufman/32.

186 PacifiCorp Opening Brief at 51.

187 Staff/200, Kaufman/9 through Kaufman/11.

188 Staff/200, Kaufman/2.

189 Staff/400, Kaufman/33.

190 Staff/200, Kaufman/11.

191 Staff/200, Kaufman/12.

192 Staff/200, Kaufman/12.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

fuel costs.[193] This is problematic because to the degree that the cost of a sale is less than the price of the sale, the sale reduces net power costs. PacifiCorp's DA-RT assumption reduces power cost sale prices while holding fuel prices constant,[194] which results in a reduced benefit from the sale. However, if fuel costs reduce with sale prices, there is no net impact on net power costs.

Staff offers arbitrage as another example of DA-RT not accounting for other moving parts of net power costs.[195] PacifiCorp requested Staff identify all transactions that appeared consistent with arbitrage. Staff identified [redacted] MWh of historical transactions as potential arbitrage sales.[196] The transactions included in the DA-RT adjustment have total sales of [redacted] MWh.[197] This means that over the historic DA-RT time period, the volume of potential arbitrage transactions represents [redacted] of the total DA-RT transactions.[198]

PacifiCorp also fundamentally misunderstands Staff's argument with regard to the inclusion of arbitrage transactions in the DA-RT adjustment. Staff's testimony in this case criticized the Company's inclusion of costs associated with arbitrage transactions when calculating the system-balancing transactions adjustment itself, but failure to include the *benefits* of arbitrage transactions as an off-set to the calculation.[199]

PacifiCorp claims that because arbitrage transactions are included in the historic DA-RT data, the benefits from arbitrage are incorporated into GRID,[200] and elaborates on how DA-RT

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[193] PAC/400, Dickman/28.

[194] *See* Staff/200, Kaufman/12.

[195] Staff/200, Kaufman/12.

[196] See Staff/610. This value is calculated by adding the MWh column numbers for rows 2 through 21,685.

[197] See Staff/609. This value is calculated by adding the values in the sheet named "Adders" cells AC56 through AC103.

[198] *See id.*

[199] *See* Staff/200, Kaufman/3, lines 14-17 ("Staff is concerned that the cost increase may include the *cost* of arbitrage and hedging transactions and other potentially revenue producing events *whose benefits may not be accounted for.*" (emphasis added)).

[200] PAC/400, Dickman/32.

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incorporates benefits in hearing: "[s]o there are times when we do better than average in market, and there are times when we do worse than average in the market... We are actually able to buy for less than average, and sell for more than average... any transactions that resulted in us doing better than market, as long as they have fit within the criteria, they are in our adjustment."[201] But this argument is flawed. According to Mr. Dickman, arbitrage benefits are only incorporated into the DA-RT adjustment to the extent that the purchase occurs below average monthly price and the sale occurs above average monthly price. Arbitrage transactions reduce net power cost through the variance between purchase price at one hub and sale price at another hub. The benefit is dependent on price differences across market hubs, not the relationship of price within the hub to average price.[202] The benefit of arbitrage can occur at above average monthly prices or at below average monthly prices. PacifiCorp's price adders increases sales prices and decreases purchase prices in GRID, reducing or eliminating the value of arbitrage transactions.[203]

Examining specific historical transactions elaborates this point. The historical period used to calculate the DA-RT adjustment includes numerous arbitrage transactions. A specific example of such transactions is provided in the table below.[204]

Table 2:

[redacted]

[201] Reg. Sess. Tr. at 62-63.

[202] PAC/1205 at 3.

[203] Staff/200, Kaufman/7.

[204] Staff/610. Records are selected by matching the "Trade Number" with the values in the first column of the exhibit.

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These trades are all executed by the same person on January 21, 2014, for delivery on January 22, 2014 over the same hours. The delivery points match the same arbitrage points analyzed by Staff in PAC/1205. The purchases are all made at Mid-Columbia, and sales are all made at COB. PacifiCorp calculates the benefit of the historic arbitrage transaction without comparing the transaction price to the monthly average market price. According to PacifiCorp, the DA-RT adder only incorporates arbitrage benefits to the extent that sale prices are above average and purchase prices are below average.[205]

4. The evidence does not support PacifiCorp's claim that it performs monthly balancing transactions.

In its Rebuttal/Cross-Answering Testimony, Staff demonstrates that PacifiCorp does not perform monthly balancing transactions in most months for most hubs.[206] PacifiCorp claims that this result is specific to illiquid hubs.[207] PacifiCorp claims that for hubs included in the system balancing transaction adjustment, PacifiCorp makes monthly transactions in every month and hub.[208] PacifiCorp's briefing deviates from the analysis performed by both PacifiCorp witness Mr. Dickman[209] and Staff witness Dr. Kaufman because it ignores the high load hour-low load hour distinction.[210]

At the hearing PacifiCorp identified the seven hubs considered to be liquid and included in the system balancing transaction adjustment: COB, Four Corners, Mead, Mid Columbia, Mona, NOB, and Palo Verde.[211] Staff Exhibit 606 includes [redacted] hub-month-load hour records for these seven hubs. However, only [redacted] of these hubs include monthly transactions. This confirms Staff's original analysis finding that PacifiCorp does not perform monthly transactions at the

[205] Reg. Sess. Tr. at 62-63.

[206] Staff/400. Kaufman/35.

[207] Pack/800, Dickman/34.

[208] PacifiCorp Opening Brief at 49.

[209] PAC/400, Dickman/27.

[210] Staff/400, Kaufman/35.

[211] Reg. Sess. Tr. at 70 to 72.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

majority-50.1 percent- of the hubs, even when narrowing the scope to liquid hubs. Mr. Dickman noted that the NOB hub, while liquid, was not included in the system balancing adjustment.[212] When evaluating only hubs included in the system balancing transaction adjustment, the percent of time without monthly transactions decreases from [redacted] percent to [redacted] percent.[213]

5. The DA-RT Adjustment Should Not be Extended While Parties Develop an Alternate Solution.

PacifiCorp claims that no parties have provided new evidence or argument regarding the DA-RT adjustment.[214] However, PacifiCorp now concedes that an improved methodology proposed by Staff in this case may be appropriate,[215] and proposes that parties work together to develop such methodology.[216] PacifiCorp proposes that while parties work towards a rational solution, the problematic DA-RT adjustment should remain in place. Although parties may choose to work together with the Company and identify a more acceptable alternative solution, it is clear that the parties to this case would be unlikely to recommend that the Company continue with its current DA-RT proposal. For the foregoing reasons, Staff does not believe it is appropriate to continue with the DA-RT adjustment in the interim, and therefore continues to recommend that the Commission reject the Company's DA-RT adjustment.

(C) The Company's alleged intra-regional and inter-regional benefits due to its joining the EIM are grossly-understated.

The benefits that arise from PacifiCorp's participation in the EIM are reflected as a reduction to the NPC forecast. There are three types of benefits related to PacifiCorp's EIM activities: intra-regional, inter-regional and flexibility reserve benefits.[217] "Intra-regional"

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[212] Reg. Sess. Tr. at 72.

[213] Calculated by counting the number of times each relevant hub appears in Staff/603 with no monthly transactions divided by the number of times each relevant hub appears in Staff/603.

[214] PacifiCorp Opening Brief at 46.

[215] PAC/800, Dickman/34.

[216] PacifiCorp Opening Brief at 53.

[217] Staff/100, Crider/4.

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
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benefits are due to the optimized dispatch of PacifiCorp's generation on a five-minute sliding window within PacifiCorp's two "balancing authority areas" (BAAs).[218] "Inter-regional" benefits are those that come about because of PacifiCorp's connection of its transmission system and generation assets with the California Independent System Operator (CAISO) system of transmission and generation assets to allow for energy transfers on an inter-regional basis (simply stated, exports and imports dispatched between EIM participants).[219] Finally, "flexibility reserve" benefits stem from the fact that the connection between CAISO and PacifiCorp allows both entities to use the capacity from either balancing area to hold as shared reserves for reliability, thus providing a benefit in the form of avoided capacity costs.[220]

PacifiCorp's filing, as revised by its Reply Testimony, which references its Reply Update, includes \$23.79 million (total-company basis) in benefits arising from its participation in the EIM.[221] Of relevance to this proceeding, PacifiCorp estimates no (\$0.00) additional intra-regional benefits and \$19.2 million in inter-regional EIM benefits.[222] Finally, the Company's revised filing includes \$4.5 million for flexibility reserve benefits.[223]

Conversely, Staff estimates that PacifiCorp's participation in the EIM will produce \$12.3 million in intra-regional benefits and \$31.2 million in inter-regional benefits.[224] Staff has no issue with the Company's proposal to include its requested amount for flexibility reserve benefits.[225]

PacifiCorp increased its inter-regional EIM benefits in its Reply Testimony primarily because of the additional benefits that arise from NV Energy joining the EIM in December 2015

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[218] Staff/100, Crider/5; PAC/400, Dickman/52.

[219] Staff/100, Crider4; PAC/400, Dickman/52-53.

[220] Staff/100, Crider/5; PAC/100, Dickman/31.

[221] PAC/400, Dickman/55.

[222] PAC/100, Dickman/26 (initial filing); PAC/400, Dickman/56 (revised filing).

[223] PAC/400, Dickman/56.

[224] Staff/300, Crider/15; Staff/305.

[225] Staff/100, Crider/15-16.

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and also to include inter-regional benefits for the 12 months ending May 2016.[226] The Company calculates these additional benefits as approximately $9.8 million (total-company basis).[227]

It is important to note that Staff's recommended adjustment for inter-regional benefits does *not* include the additional inter-regional benefits that arise due to the addition of NV Energy joining the EIM in December 2015 and the additional months in 2016. Staff does not necessarily agree with PacifiCorp on the precise amount of additional inter-regional benefit provided by these events, but stipulates that the $9.8 million number may be relied upon for purposes of this docket.

1. PacifiCorp's NPC should be reduced to account for $12.3 million of intra-regional benefits.

Staff began its analysis of intra-regional benefits by reviewing the estimates of such benefits prepared by: (1) CAISO; (2) the Energy and Environmental Economics, Inc. (E3); and (3) PacifiCorp spokesman Robert Gravely set forth in the well-known publication entitled "Clearing Up." Staff discusses each of these estimates immediately below.

a. Use of CAISO Estimate of PacifiCorp Intra-regional Benefits

CAISO estimated total-company EIM benefits for PacifiCorp at $26.2 million (total-company basis) for calendar year 2015.[228] In reviewing CAISO's estimated level of total benefits, Staff observed that it included an amount for intra-regional benefits and further noted that PacifiCorp initially calculated its EIM benefits as $13.9 million, an amount that expressly did not include intra-regional benefits like CAISO's estimate did.[229] Staff requested that PacifiCorp calculate the amount of intra-regional benefits[230] and PacifiCorp has consistently

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[226] PAC/400, Dickman/53-56.

[227] PAC/400, Dickman/53-56 (the $9.8 million number is Staff's understanding of PacifiCorp's testimony on this issue).

[228] Staff/100, Crider/6; Staff/102.

[229] Staff/100, Crider/7.

[230] Staff/100, Crider/17.

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stated that it is unable to do so.[231] Under these circumstances, Staff determined that an appropriate method to estimate the intra-regional benefits would be to (1) accept CAISO's total benefit amount of \$26.2 million (which includes both intra-regional and inter-regional benefits but does not include benefits related to NV Energy's participation in the EIM); (2) accept the Company's then-claimed total benefit amount of \$13.9 million (which does not include intra-regional benefits and does not include NV Energy's EIM participation); and (3) determine the difference between the two estimates – which Staff calculated as \$12.3 million.[232] In this brief, Staff sometimes refers to its method of calculating intra-regional benefits as the "Equation."[233]

b. Use of E3 Estimate of PacifiCorp's Intra-Regional Benefits

Staff also reviewed the estimated EIM benefits for PacifiCorp in a report prepared by E3 (E3 Report). E3 prepared the Report in 2013, at the request of PacifiCorp, to estimate the level of benefits that could arise under different scenarios in 2017 due to PacifiCorp's participation in the EIM.[234] The E3 report at issue is in the record as Staff/106. E3's Report calculated the total EIM benefits for PacifiCorp under three different transfer capabilities scenarios (i.e. energy transfers between PacifiCorp and CAISO): low (100 MW), medium (400 MW) and high (800 MW).[235] Within each scenario, E3 modeled a "low" and "high" range of benefits.[236] PacifiCorp's current transfer capability is approximately 200 MW.[237]

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[231] Reg. Sess. Tr. at 51-52 (Dickman).

[232] Staff/100, Crider/17-18.

[233] As stated, Staff's Equation calculates the difference between CAISO's total EIM benefits (\$26.2 million) and PacifiCorp's total claimed EIM benefits (the \$13.9 million it initially claimed) for a total benefit of \$12.3 million. The addition of the \$9.8 million in benefits by PacifiCorp due to NV Energy does not change Staff's recommendation of \$12.3 million for intra-regional benefits. It is also necessary to add \$9.8 million to CAISO's \$26.2 million because CAISO's total benefit has not been updated for NV Energy. Within Staff's Equation, the \$9.8 million thus becomes a "wash" with no effect on Staff's recommendation.

[234] Staff/100, Crider/6.

[235] Staff/106, Crider/8.

[236] *Id.*

[237] Staff/100, Crider/6 (relying upon PAC/104, Dickman/1).

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A review of the E3 Report at Staff/106, Crider/35 shows that the range of total EIM benefits for PacifiCorp in 2017 in the "low" range is estimated to be between $10.5 million and $34.6 million (total-company basis). Similarly, E3 estimated total EIM benefits for the "medium" range as between $16.7 million and $46.8 million. The range for intra-regional benefits across all scenarios was estimated to be between $2.3 million and $23.0 million. Intra-regional benefits remain constant across each of E3's three scenarios because they are not subject to the same type of transfer capability concerns as are inter-regional and flexibility reserves benefits.[238] It is of interest that Staff's estimate of CASISO's intra-regional benefits ($12.3 million) falls almost exactly at the mid-point of the E3 Report's range for these same benefits ($2.3 million to $23.0 million).

c. PacifiCorp Spokesman Gravely's Estimate of Benefits

Finally, more as a "reality check" on the scientific modeling approaches employed by both CAISO and E3, Staff reviewed the Company's published statements about what it expected EIM benefits to be in 2017. Along these lines, PacifiCorp's spokesman Robert Gravely stated in the June 17, 2016 issue of "Clearing Up" that the Company had "realized almost $16 million in benefits from the EIM during the first three months of 2016…"[239] PacifiCorp submitted nothing in the UE 307 record that attempted to dispute, explain or correct Mr. Gravely's pronouncement in Clearing Up.

d. PacifiCorp's argument against Staff's estimate of Intra-regional Benefits

As stated, Staff relied upon CAISO's estimate of total EIM benefits to calculate the intra-regional benefits of $12.3 million for PacifiCorp. In doing so, Staff analyzed CAISO's modeling approach, which utilized two modeling runs of its production cost model (CAISO Model): one run reflects post-EIM participation by PacifiCorp and the other run models PacifiCorp's dispatch operations without the EIM (i.e. pre-EIM participation). The latter model run is referred to as

[238] Staff/106, Crider/29.

[239] Staff 100, Crider/7.

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the "Counterfactual." Both Staff and PacifiCorp agree that the Counterfactual assumes that the Company manually dispatched its generators prior to joining the EIM.[240] Staff and PacifiCorp further agree that the manual dispatch method is a less-efficient, more costly method of dispatch than that achieved by PacifiCorp under the EIM. Thus, PacifiCorp's participation in the EIM should, all else being equal, produce intra-regional benefits (as compared to its pre-EIM operations).

It is important to understand how the Counterfactual models PacifiCorp's pre-EIM "manual dispatch." PacifiCorp and Staff describe CASISO's modeling technique, which attempts to mimic manual dispatch, as one that relies upon using a "limited pool" of dispatchable units to make up a predetermined stack of resources.[241] PacifiCorp was unable to identify which units are included in CAISO's "limited pool of resources." However, at the evidentiary hearing, PacifiCorp witness Dickman stated that CAISO's limited pool of generating resources in the Counterfactual should consist of generators that can ramp up quickly, such as gas units, in order to best mimic what an operator would manually choose to dispatch pre-EIM.[242]

The key area of dispute on this issue is PacifiCorp's assertion that its GRID model *already* accounts for the intra-regional benefits that both CAISO and E3 include in their respective calculations.[243] In PacifiCorp's view, for Staff's Equation to be valid, the Counterfactual would have to be identical to the GRID model. PacifiCorp claims Staff's view is incorrect because GRID, as an optimized model, it assumes perfect, non-manual dispatch, while the Counterfactual is not optimized in that it recognizes and assumes manual dispatch of

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[240] Staff/100, Crider/9-12; Staff/300, Crider/4-7; PAC/400, Dickman/59.

[241] PAC/400, Dickman/60-61; PAC/411; Staff/100, Crider/9-10; Staff/108 (CAISO Technical Bulletin);

[242] Reg. Sess. Tr. at 54-55 (Dickman); *see also* Hearing Transcript at 91-92 (Brown).

[243] PacifiCorp makes this assertion repeatedly throughout its Reply Testimony and Sur-rebuttal Testimony, as well as in its Opening Brief. *See, e.g.*, PAC/400, Dickman/58-62; PAC/800, Dickman/15-16; PacifiCorp Opening Brief at 34-37.

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generating units.[244] From this, PacifiCorp asserts that Staff's Equation actually double-counts the intra-regional benefits because such benefits are already included in GRID.

e. PacifiCorp is incorrect – the Counterfactual is identical, or nearly so, to GRID

It is important to understand that *both* the Counterfactual and GRID are computer models. Each has inputs.[245] So, what PacifiCorp is asserting in essence is that the Counterfactual has an "input," that being manual dispatch of generators pre-EIM, that GRID does not have. In this way, according to PacifiCorp, the Counterfactual is not "optimized" in the same way that GRID is. Staff disagrees with PacifiCorp and views the Counterfactual as indeed being an optimized, "security constrained economic dispatch" (SCED) model like GRID and Staff explains at length how it reaches its conclusion on this critical point in its testimony as discussed below.[246]

PacifiCorp first attempted to dispute Staff's conclusion about the Counterfactual by relying upon a CAISO Technical Bulletin from August 2014 for the assertion that the Counterfactual is not an economic dispatch model (like GRID).[247] However, Staff carefully explained that PacifiCorp's reliance upon the CAISO Bulletin was misplaced, and that the Counterfactual and GRID were both "security constrained, economic dispatch solutions to balancing load on PacifiCorp's grid, isolated from the CAISO EIM market."[248]

PacifiCorp returned to its primary argument in its Sur-rebuttal Testimony, arguing that the Counterfactual is not a model like GRID because "it [referring to the Counterfactual] is really an exercise intended to determine how the Company would have met load imbalance *using a manual process* with limited flexible resources prior to EIM's existence."[249]

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[244] *Id.*

[245] *See, e.g.*, Reg. Sess. Tr. at 43 (Dickman).

[246] Staff/100, Crider/9-12; Staff/300, Crider/4-6.

[247] PAC/400, Dickman/60-61, relying in turn upon PAC/411, Dickman/6.

[248] Staff/300, Crider/6.

[249] PAC/800, Dickman/15.

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PacifiCorp's argument, focusing on the Counterfactual's use of a "manual dispatch" input, fails to recognize the full scope of how the Counterfactual operates. Preliminarily, Staff agrees that the Counterfactual recognizes and accounts for PacifiCorp's manual dispatch of its generators pre-EIM. Staff agrees with PacifiCorp that "it would not make sense" for the Counterfactual to not include this as an input to its model.[250]

However, it is critical to understand and appreciate how the Counterfactual accounts for and uses the "manual dispatch" input. As Staff explained earlier, the Counterfactual models the "manual dispatch" input by limiting the pool of resources that are available in the CAISO Counterfactual model. PacifiCorp did not know precisely which resources were included in the pool, but PacifiCorp witness Dickman testified at the hearing that they ought to be those types of units that were able to ramp up quickly, like gas units.[251] In this way, the Counterfactual's use of a limited pool of resources as an input to mimic "manual dispatch" is essentially identical to how the so-called "fully optimized" GRID would model dispatch of the Company's generating resources.[252] In other words, both the Counterfactual and GRID use the same type of resources – those that can be ramped up quickly. As such, any difference between the Counterfactual and GRID on the manual dispatch input should be inconsequential. The use of a limited pool of resources by the Counterfactual as a surrogate for manual dispatch of generators thus supports Staff's conclusion that the Counterfactual is identical, or nearly so, to the dispatch solutions produced by GRID. Staff's use of its Equation to calculate PacifiCorp's intra-regional benefits is appropriate.

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[250] *Id.*

[251] Reg. Sess. Tr. at 45-46 (Dickman).

[252] Indeed, even though PacifiCorp claims that GRID is fully optimized, the Company acknowledges that it still adjusts its end result in order to ensure that it better reflects the Company's true operations, such as the adjustment for system balancing accounts. *See* PAC/800, Dickman/6-7; Hearing Transcript at 43-44 (Dickman).

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(503) 947-4520 / Fax: (503) 378-3784

Finally, Staff notes that its calculation of intra-regional benefits is conservative in that it does not account for the efficiencies achieved by the EIM's five-minute balancing market.[253] PacifiCorp claims, similar to its intra-regional benefits argument, that GRID, being perfectly optimized, already incorporates these benefits.[254] But, despite PacifiCorp's testimony on the topic, the Company's argument is hard to follow and accept.

GRID balances load on an hourly basis and the EIM does so on a clearly more efficient five-minute basis. While acknowledging the efficiencies of five-minute load balancing, PacifiCorp states that GRID "averages" load fluctuations and the result is "kind of moving buckets around," so that, as Staff understands PacifiCorp's position, the efficiencies from the EIM five-minute balancing model are accounted for by GRID.[255] Despite PacifiCorp's assertions about averages and buckets moving around, Staff maintains that GRID, being an hourly model, is not set up to capture the efficiencies of a five-minute balancing model and, as far as Staff can discern, it does not in fact do so.

2. PacifiCorp's NPC should be reduced to reflect additional inter-regional benefits

Staff concluded in its Opening Testimony that PacifiCorp had understated the inter-regional benefits related to its participation in the EIM for its 2017 TAM. A simplistic equation Staff used to illustrate the benefits estimation for the power that PacifiCorp *exports* to CAISO is:

Inter-regional benefits = [Revenue from power transfer] – [Cost to generate the transfer energy][256]

For power that PacifiCorp *imports* from the CAISO, the benefits equation is:

[Avoided Cost of PacifiCorp units not dispatched] – [Costs of energy imports from CAISO][257]

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[253] *See* Staff/100, Crider/11; Reg. Sess. Tr. at 48-49 (Commissioner Savage question to Dickman).

[254] PAC/400, Dickman/63; Reg. Sess. Tr. at 49.

[255] *Id.*

[256] Staff/100, Crider/13

[257] PAC/100, Dickman/28.

Department of Justice
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Staff's concern with PacifiCorp's application of the "cost" part of these equations is that the Company is not using "actual production costs" (APC).[258] Staff views the APC of the transfer energy as the marginal cost to produce an additional MWh at a given unit.[259] In turn, "marginal cost" is the variable cost of the power plus operating and maintenance costs. However, rather than relying upon the true marginal costs of the generating units, PacifiCorp uses "bid prices" for its thermal units, "replacement costs" for its hydro facilities and a value for wind facilities based upon curtailment payments, lost production tax credits and the value of the lost renewable energy credit (REC).[260] PacifiCorp also incorporates "adders" for its gas facilities.[261]

In its Opening Testimony, Staff examined available data and determined an average production cost for the Company based upon Staff's view of how an APC should be determined. Staff estimated an average aggregated production cost for the Company's generating units serving the EIM transfer.[262] However, Staff was not able to calculate the correct amount of inter-regional benefits when it filed its Opening Testimony because it did not have the Company's specific APC data and, as such, requested that the Company perform this calculation.[263] Staff proposed in its Opening Testimony that if PacifiCorp did not respond to Staff's calculation request, that the inter-regional benefits be determined as the difference between CAISO's estimate of the transfer benefit and the Company's estimate of the transfer benefit.[264] In its Rebuttal Testimony, Staff subsequently explained how PacifiCorp calculated its inter-regional benefits (which was not consistent with Staff's recommended approach) and then proposed an

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[258] Staff/100, Crider/13.

[259] *See* PAC/900, Brown/5 and Hearing Transcript at 85 (Brown).

[260] PAC/900, Brown/5-6; Hearing Transcript at 86-87 (Brown).

[261] PAC/900, Brown/7.

[262] *Id.*; Staff/105.

[263] Staff/100, Crider/17.

[264] *Id.*

Department of Justice
1162 Court Street NE
Salem, OR 97301-4096
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alternative benefits calculation methodology that produced Staff's recommended $31 million in inter-regional benefits.

Staff continues to assert that PacifiCorp's method of calculating APC is out-of-line with the Company's own statements that such costs should be based upon the marginal costs to produce one MWh at the generating unit.[265] Particularly for the renewable hydro and wind facilities, there is no marginal cost for the power – it is traditionally viewed as "zero."[266]

In its Rebuttal Testimony, Staff reviewed the highly-complex method that PacifiCorp presently uses to determine its asserted EIM inter-regional benefits.[267] The Company's method produced inter-regional benefits of $19.2 million (an amount that includes the benefits from NV Energy's participation in the EIM). Staff concluded that, in addition to the problem with PacifiCorp using prices instead of costs for APC, the Company's method was flawed in several respects. The Company's method uses tremendous volumes of data, which is then combined in a "bottom-up" fashion to determine the overall benefit level.[268] Staff concluded that the extreme amount of data used makes it difficult to audit and the bottom-up approach of combining the data tends to amplify the effect of any errors that are incurred at the individual record level.[269]

Because of Staff's concerns with the Company's inter-regional benefit calculation method described above, Staff employed its own approach to the issue.[270] In summary, Staff's approach is based upon the actual annual production cost for each generating unit multiplied by the MWhs of energy exported or avoided. Staff determined that PacifiCorp's inter-regional benefits should be approximately $31.2 million (an amount that does not include the $9.8 million benefit that PacifiCorp calculated related to NV Energy's joining the EIM).[271] In addition to

[265] PAC/900, Brown/5.

[266] Staff/100, Crider/15; Staff/300, Crider/10, 14.

[267] Staff/300, Crider/10-12.

[268] Staff/300, Crider/11-13.

[269] *Id.*

[270] Staff/100, Crider/13-15; Staff/105; Staff/300, Crider/12-14 and in Staff/305.

[271] Staff/305.

Department of Justice
1162 Court Street NE
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(503) 947-4520 / Fax: (503) 378-3784

using production costs, rather than prices, Staff's method has advantages over PacifiCorp's method in that Staff employs "top-down" approach, is transparent, and uses limited data which makes it is easy to understand.

In its Sur-rebuttal Testimony, PacifiCorp identified alleged errors with the calculation of inter-regional benefits shown in Staff/305.[272] Unfortunately, PacifiCorp witness Dickman did not submit a work paper to support and explain his testimony on this issue for the evidentiary record.[273] As such, it is difficult to track and understand exactly how Mr. Dickman arrived at his conclusions.

Staff reviewed Mr. Dickman's testimony on this issue but, due to the procedural schedule for filing testimony, Staff was not allowed a follow-up round of testimony to state its assessment of the alleged errors with Staff/305. Nonetheless, without submitting new testimony, Staff can generally state that it agrees with PacifiCorp that its estimate of $31.2 million in inter-regional benefits should be reduced somewhat to account for some of the corrections proposed by PacifiCorp. This is due to making simple changes, for example, such as using 12 months instead of 15 months for production costs and 12 months instead of 13 months for the sum of the dollars and volumes for exports and imports.[274] However, Staff cannot agree to accept PacifiCorp's proposed correct inter-regional benefit number without a better understanding of how it was calculated.[275] If the Commission desires to adopt the methodology proposed by Staff on this issue, Staff would of course work with the Company to prepare an errata document or a type of compliance filing with a revised number for the Company's inter-regional benefits.

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[272] PAC/800, Dickman/20-21.

[273] Reg. Sess. Tr. at 55 (Dickman)

[274] *See generally* PAC/800, Dickman/55-56.

[275] It is also necessary to also keep in mind that Staff's calculated number shown in Staff/305 does not include the $9.8 million additional inter-regional benefits related to NV Energy's joining the EIM in December 2015.

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3. Staff's approach to the EIM benefits issue is valid and reasonable

The issue of EIM benefits, with its extensive testimony and analysis submitted by Staff, CUB and the Company, illustrates the complexity and difficult nature of arriving at a precise, exact number for intra-regional and inter-regional benefits arising from PacifiCorp's participation in the EIM. Each party's recommendations are estimates, as are those provided by CAISO and by E3.

Staff approached this issue by examining the Company's presentation, including the statements issued by the Company outside of this proceeding (such as its spokesperson Bob Gravely), and comparing PacifiCorp's work to the estimates provided by CAISO, a neutral entity, and by E3 (which was retained by PacifiCorp). Both the CAISO estimate of the total EIM benefit of $26.2 million and E3's range of benefits of across its "low" and "medium" scenarios of $10.5 million to $46.8 million (neither of which includes the $9.8 million in additional benefits from NV Energy's recent participation in the EIM) are well-above PacifiCorp's most recent estimate of $23.7 million.

From this, Staff conducted its own analysis to arrive at its recommendations for intra-regional and inter-regional benefits that is set forth in its testimony. While PacifiCorp attempts to discredit Staff's work in certain respects, in the end, Staff, maintains that its approach to this tough issue, while certainly not precise to the last dollar, produces a reasonable and acceptable estimate of the total EIM benefits related to PacifiCorp's participation in the TAM.

In deciding this matter, Staff urges the Commission to keep in mind the following points:

(1) The Company claims that intra-regional benefits were not a part of its recommended EIM benefits because they are already included by its GRID model. However, when asked, the Company curiously maintains that GRID cannot produce an estimate of these benefits or even identify them;

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(2) Both CAISO and E3 provide an estimate for PacifiCorp's intra-regional benefits despite the Company's known reliance on GRID as support for its "they're already covered" position;

(3) Staff has shown how the CAISO Counterfactual is identical, or nearly so, to GRID's modeling. As such, Staff's reliance on the CAISO total EIM benefits to calculate PacifiCorp's absent intra-regional benefits is both necessary and appropriate;

(4) PacifiCorp relies upon multiple definitions for the "actual production cost" part of the equation which determines inter-regional benefits. The Company's definitions for hydro and wind facility production costs fail to recognize that such renewables do not incur variable costs;

(5) The Company's pro-offered calculation for inter-regional benefits, in addition to inappropriately using prices for actual production costs of its generating units, is overly-complex, non-transparent and uses a bottom-up method that tends to amplify errors as the individual record levels are added up; and

(6) Even though the calculation provided in Staff/305 may contain input errors, Staff's proposed method for determining inter-regional benefits is sound.

For these reasons, the Commission should adopt Staff's recommendations for adjustments to PacifiCorp's proposed intra-regional and inter-regional EIM benefits.

(D) The Commission should adopt Staff's QF risk factor proposal.

PacifiCorp's current approach to modeling "Qualifying Facility" (QF) contracts is to include a new QF contract in the TAM when the Company is able to attest that it reasonably expects the QF to commence operations during the test period.[276] Staff believes that the Company's method works reasonably well, but it could be improved.[277]

By including the QF in the TAM, the costs attributed to it are thereby included in rates. Staff's concern is that if the QF does not become operational in the test year as expected,

[276] PAC/400, Dickman/83-84.

[277] Staff/300, Crider/17-19.

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Salem, OR 97301-4096
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PacifiCorp's customers will be charged for costs that are not actually incurred by the Company during the test year.[278]

To remedy this situation, Staff proposed that the Company be required to calculate a "measure of risk" that accounts for the possibility that a QF with a signed power purchase agreement (agreement or contract) will not come on-line as expected. Staff's risk factor is calculated as a ratio of QFs becoming operational in the year divided by QFs with contracts at the beginning of the year. Staff further recommends that four years of data be used to provide smoothing and normalization of the results.[279] The use of Staff's historical success factor would provide an expected completion rate for QFs that had a contract, thereby helping to normalize the risk of customers paying for QFs that fail to come on line as reasonably expected during the test year.

In summary, Staff agrees that the current method of modeling QF contracts works reasonably well. However, like PacifiCorp's continuous attempts to improve its GRID model, Staff recommends its historical success factor approach as an improvement to the current method for dealing with the uncertainty surrounding QF operational dates.

(E) The Commission should reject Noble's direct access proposed adjustments.

Staff supports PacifiCorp in recommending that the Commission not adopt Nobel's two adjustments related to direct access service. Noble's two issues are referred to as (1) the freed-up REC issue and (2) the Consumer Opt-Out charge issue. PacifiCorp has explained both issues in depth at pages 55-59 of its Opening Brief.[280]

As Staff explains in its testimony, in last year's TAM proceeding (Docket UE 296), the Commission previously addressed, and rejected, both of Noble's two proposed adjustments in its Order No. 15-394.[281] Staff views Order No. 15-394 as a mandatory directive from the

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[278] Staff/300, Crider/18.

[279] Staff/300, Crider/18-19.

[280] *See also* Staff/500.

[281] Staff/500, Gibbens/2-4.

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(503) 947-4520 / Fax: (503) 378-3784

Commission which should be applied unless circumstances have changed such that the Order is no longer applicable. Staff concluded that the basic circumstances underlying the freed-up REC issue and the Consumer Opt-Out charge issue are essentially the same issues and circumstances from last year's TAM; nothing of substance has changed from last year to the present proceeding.[282] For these reasons, Staff recommends that, under the direction provided by Order No. 15-394, the Commission reject Noble's proposed adjustments.

(F) Staff accepts the Company's Forced Outage Rate modeling method for purposes of this proceeding.

Staff's Opening Testimony raised concerns regarding the method used by PacifiCorp to model forced outages for its thermal plants.[283] Prior to the 2016 TAM, PacifiCorp calculated forced outage rates for each plant, and then reduced the capacity of each plant by its respective forced outage rate in every hour of the year.[284] This method was referred to as the "deration method" or "haircut method," and was criticized in docket UM 1355 because it is not consistent with normal forced outage patterns, which have a limited duration and may or may not result in a 100 percent reduction in available capacity.[285]

In response to criticisms from the Commission, PacifiCorp modified its forced outage modeling in the 2016 TAM.[286] Currently, the Company uses a rolling 48-month average of actual forced outage events to model the timing and size of capacity reductions.[287] The Company then reduces the duration of each event to one quarter of the actual duration in order to achieve "average" annual forced outage rate, while "maintaining a more realistic capacity reduction."[288]

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[282] *Id.*

[283] Staff/200, Kaufman/14-17.

[284] Staff/200, Kaufman/14.

[285] Staff/200, Kaufman/14.

[286] PAC/100, Dickman/22-23.

[287] PAC/400, Dickman/81.

[288] Staff/200, Kaufman/15.

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Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

Staff's Opening Testimony raised concerns that the model change inflates certain power costs associated with re-starting generation—additional oil used to warm the plant, and lower heat rate of plants operating at low capacity factors[289]—and that the Company may not be calculating the forced outage rate consistently with the Commission's order in docket UM 1355.[290]

With regard to the first issue, Staff noted that the Company's new method for modeling forced outages results in "four times the expected annual number of outages."[291] To address the inclusion of additional start-up costs, Staff initially proposed calculating four distinct NPC values, each corresponding to each annual period of forced outages, and to retain the collars and caps used in previous cases.[292] This corresponded to a recommended reduction to system power costs of $1,259,923.[293] However, upon review of PacifiCorp's Reply Testimony, Staff now understands that the Company's modeling of forced outages does not include start-up generation costs.[294] Accordingly, at the hearing in this proceeding, Staff clarified that it no longer has a monetary adjustment to propose for this proceeding related to this issue; however, Staff will continue to review the Company's modeling critique, including whether start-up generation costs should be excluded from the TAM.[295]

With regard to Staff's second issue, Staff did not recommend a monetary adjustment because it concluded that the Company's calculation does not appear to introduce a systematic bias in the Company's calculation of forced outage rates.[296]

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[289] Staff/200, Kaufman/15.

[290] Staff/200, Kaufman/16.

[291] Staff/200, Kaufman/15.

[292] Staff/200, Kaufman/15-16.

[293] Staff/200, Kaufman/16.

[294] Conf. Tr. at 58-59.

[295] Conf. Tr. at 59.

[296] Staff/200, Kaufman/16.

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(G) The Company's modeling of coal plant dispatch constitutes a prohibited modeling change, is prone to error, and fails to adequately consider flexibility in its coal stockpiles.

Staff's Opening Testimony raised concerns regarding the Company's use of an iterative, manual process to model coal plant dispatch in a way that prevents dropping below contract minimums by adjusting the dispatch fuel cost.[297] First, Staff asserted that the Company's methodology constitutes a prohibited modeling change, not properly noticed to the parties in this or previous TAM proceedings.[298] Second, Staff questioned whether the more recent contracts containing minimum-take requirements themselves are prudent, but stated that a prudence review should be addressed in the Company's 2017 PCAM.[299] Finally, Staff questioned whether the modeling change is implemented in an optimal fashion, given its iterative and ad-hoc nature and lack of ability to account for coal stockpile flexibility.[300] Ultimately, Staff recommended that the Commission reject the Company's modeling change because it constitutes an improper modeling change, and accordingly reduce PacifiCorp's NPC by $16,268,297 (system-basis).[301] Staff calculated its recommended adjustment Staff further recommended that if contract minimum requirements are included in future TAM filings, the Company be required to incorporate contract flexibility and coal stockpile flexibility.[302]

PacifiCorp argues that it has been manually adjusting minimum-take provisions in GRID since docket UE 287, the Company's 2015 TAM,[303] and that for more than ten years, the functionality of GRID has required the input of incremental fuel costs.[304] Therefore, PacifiCorp

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[297] Staff/200, Kaufman/21.

[298] Staff/200, Kaufman/22-24; Staff/400, Kaufman/40-41.

[299] Staff/200, Kaufman/24; Staff/400, Kaufman/38.

[300] Staff/200, Kaufman/24-25.

[301] Staff/400, Kaufman/42.

[302] Staff/200, Kaufman/25.

[303] PAC/400, Dickman/48-49.

[304] PAC/800, Dickman/37.

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Salem, OR 97301-4096
(503) 947-4520 / Fax: (503) 378-3784

concludes that its manual adjustment in GRID is appropriate.[305] PacifiCorp also disagrees with Staff that its modeling is prone to error.[306]

PacifiCorp has presented no evidence in this proceeding to demonstrate that parties were provided notice, in accordance with the TAM guidelines or otherwise, regarding the Company's methodology for coal plant dispatch in GRID. Accordingly, Staff continues to argue that the Company's methodology constitutes a prohibited modeling change and should therefore be rejected.

Staff's Rebuttal and Cross-Answering Testimony also addressed the Company's failure to analyze any flexibility inherent in the Company's coal stockpiles as a way to mitigate impacts from minimum-take contract provisions.[307] PacifiCorp argues that minimum-take provisions are standard in "virtually all cost-effective long- and short-term coal supply agreements."[308] In light of the requirement that PacifiCorp take minimum delivery of coal or pay a penalty, Staff argues that the Company should analyze and consider flexibility inherent in stockpiles in order to mitigate the impact of minimum take contract provisions,[309] particularly in light of the Company's coal-hedging policy, which relies on volume flexibility of plant coal inventory levels.[310]

PacifiCorp in turn argues that its stockpiles do not have sufficient capacity to mitigate the impact of minimum-take provisions. However, the Company's coal-hedging policy is the only planning tool that the Company has identified as a way to address minimum-take coal requirements. Although Staff could concede that utilizing the Company's coal stockpile flexibility is problematic, the underlying issue is that the Company has several fixed volume

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305 PAC/800, Dickman/37.
306 PAC/800, Dickman/38.
307 Staff/400, Kaufman/38-40.
308 PacifiCorp Opening Brief at 28.
309 Staff/400, Kaufman/40.
310 Staff/406, Kaufman/1.

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contracts and no adequate analysis or planning to mitigate minimum take requirements remains. While Staff plans to address this issue in the Company's 2017 PCAM, Staff continues to recommend a disallowance for the Company's coal plant dispatch modeling as it constitutes an improper modeling change.

(H) Avian Protection Compliance Adjustment

PacifiCorp's 2017 forecast of net power costs includes an adjustment to reflect anticipated energy lost from the Company's Migratory Bird Compliance Plan (MBCP). The Company argues that the adjustment is appropriate for several reasons: it is in compliance with a court order from the United States District Court in Wyoming to enforce the Migratory Bird Treaty Act (MBTA);[311] the Commission approved this adjustment in the previous TAM;[312] at the time the projects were being built, USFWS "had never enforced the MBTA against a wind project";[313] and the parties were aware that the projects were sited in an avian sensitive area during the Renewable Adjustment Clause proceeding that brought the projects into rates.[314] PacifiCorp's arguments are unpersuasive for several reasons.

Although this issue was addressed in PacifiCorp's 2016 TAM and no party disputes that the Company's current actions are pursuant to a court order, Staff's testimony has introduced new evidence into the record of this proceeding related to what PacifiCorp knew or should have known at the time that siting decisions were being made for the Glenrock and Seven Mile Hill projects. Specifically, Staff's testimony demonstrated that PacifiCorp knew, at the time the decision was made to move forward with the siting of both projects, that its decision was "contrary to *relevant* agency guidance regarding avoiding and minimizing avian take by wind facilities in effect during the period."[315]

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[311] PAC/400, Dickman/78.

[312] PAC/400, Dickman/79.

[313] PAC/400, Dickman/80.

[314] PacifiCorp's Opening Brief at 54-55.

[315] Staff/205, Kaufman/15-16 and 18 (PacifiCorp Stipulated Plea Agreement) (emphasis added).

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Prudence is based upon what the utility knew or should have known at the time the decision was made to site the projects.[316] By PacifiCorp's own admission, it was aware of relevant USFWS guidance and that enforcement of the MBTA was within the discretion of USFWS.[317] Although it is within the Company's business discretion whether to adhere to relevant federal guidance when siting wind projects and hedge that USFWS will never seek MBTA enforcement against a wind project that disregards its guidance,[318] ratepayers should not be disadvantaged by the Company's gamble on enforcement. Therefore, the Company's arguments that the guidelines were interim and that it was not aware of USFWS enforcement against a wind project are not persuasive in finding the Company's actions prudent.[319]

PacifiCorp also justifies its adjustment by arguing that when the Company sought to include these projects in rates, the fact that the projects were in an avian sensitive area was disclosed to the parties.[320] PacifiCorp further argues that the projects are prudent even with the curtailment given their high capacity factors.[321] However, contrary to PacifiCorp's suggestion otherwise,[322] there is no evidence in the Commission's Order in Docket UE 200 that either the parties to the proceeding or the Commission were aware that the Company intentionally sited the projects in a way that was contrary to relevant USFWS guidance. There is also no evidence that PacifiCorp evaluated the cost of siting the projects contrary to relevant USFWS guidance. As a

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[316] *See e.g.* Order No. 12-493 at 26.

[317] PAC/400, Dickman/79-80.

[318] *See* Staff/205. The Joint Statement of Facts attached to the Plea Agreement notes that "USFWS Office of Law Enforcement focuses its resources on investigating and prosecuting *those who take migratory birds without identifying and implementing reasonable and effective measures to avoid take*, exercising enforcement and prosecutorial discretion regarding individuals and companies that make good-faith efforts to avoid the take of migratory birds." Staff/205, Kaufman/14.

[319] PAC/400, Dickman/80.

[320] PacifiCorp Opening Brief at 54-55.

[321] PAC/400, Dickman/80.

[322] PAC/800, Dickman/39 ("The permit applications were referenced in the parties' testimony and briefs in docket UE 200, and were even mentioned by the Commission in its final order. The risk associated with avian issues, however, was not sufficient for the Commission to find that the projects were imprudent at the time.").

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direct result of the Company's disregard for USFWS' guidance, the Company is now forced to curtail its operations at both Glenrock and Seven Mile Hill to the detriment of ratepayers. The incremental lifetime cost of disregarding USFWS guidelines, in present value, is $10.5 million.[323]

There is also no evidence that the Company evaluated or considered siting options that were compliant, or compared the cost of compliant facilities with non-compliant facilities.[324] When the Commission approved the inclusion of these projects in rates, it did so based on the capacity factor without the avian curtailment adjustments.[325] Staff's recommendation in this case merely seeks to hold ratepayers harmless from the Company's imprudent decision to disregard federal guidance and to restore to ratepayers the full benefits of the assets approved by the Commission in UE 200.

PacifiCorp also argues that Staff's testimony suggests the Company is seeking recovery of the fines resulting from PacifiCorp's plea agreement with United States Department of Fish and Wildlife (USDFW).[326] However, Staff's testimony is clear that its recommendation is based upon the Company's modeling in GRID for the 2017 TAM, and does not include a portion of the fines paid by PacifiCorp.[327] Accordingly, Staff recommends that the Commission reduce PacifiCorp's 2017 forecast of net power costs by $249,114 (system-basis) because PacifiCorp knew, at the time that the decisions involving the planning and siting of the two projects, that it was disregarding relevant federal guidance against the advice of federal agencies.[328]

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[323] Staff/400, Kaufman/46.

[324] Staff/400, Kaufman/46; Staff/406, Kaufman/30.

[325] *In re PacifiCorp*, OPUC Docket No. UE 200, Order No. 08-548 at 21, 22 (Nov. 14, 2008).

[326] PAC/800, Dickman/39.

[327] *See* Staff/200, Kaufman/19, citing to Staff/222, Kaufman (PacifiCorp's Confidential Response to OPUC DR 22).

[328] Staff/200, Kaufman/17-19.

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IV. CONCLUSION

For the reasons stated above, Staff recommends that the Commission resolve Staff's outstanding issues in this case as follows:

(A) Find that PacifiCorp has not prudently analyzed coal costs for Jim Bridger plant on a long-term basis, and is therefore subject to a prudence disallowance;

(B) Reject the Company's Day-Ahead Real-Time transaction adjustment;

(C) Decrease PacifiCorp's proposed NPC by $12.3 million related to intra-regional EIM benefits and $31.2 million related to inter-regional EIM benefits;

(D) Apply Staff's "historical success factor" to the forecast of QF capacity included in the Company's proposed NPC;

(E) Reject Noble Solutions' proposed adjustments;

(F) Reject the Company's coal dispatch modeling method; and

(G) Reject the Company's avian curtailment adjustment.

DATED this 26th day of September, 2016.

Respectfully submitted,

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CERTIFICATE OF SERVICE

UE 307

I certify that I have, this date, served Staff's Response Brief confidential pages in docket UE 307 upon the parties listed below via first class mail.

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