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Attn: Filing Center

Re: UE 307 – Errata Filing

Pursuant to Administrative Law Judge Rowe's direction at the August 29, 2016 hearing for docket UE 307, Staff hereby submits the attached errata to Staff Witness Dr. Kaufman's Rebuttal/Cross-Answering Testimony and Staff Witness John Crider's Rebuttal/Cross-Answering Testimony in docket UE 307. This filing contains the following changes identified at the August 29, 2016 hearing:

- Staff/403, Kaufman/3: change equation in column 5 to reference column 3.
- Staff/400, Kaufman/33, Figure 6: modify confidential figures in Figure 6
- Staff/400, Kaufman/33, line 5: modify confidential figure to match Figure 6
- Staff/300, Crider/6, line 21: eliminate "inter-regional"
- Staff/300, Crider/7, line 2: eliminate "inter-regional"

In addition to the changes identified by Staff witness Dr. Kaufman at the hearing, Staff witness Dr. Kaufman also corrects the following:

- Staff/400, Kaufman/33, line 5: change "decreasing" to "increasing"
- Staff/400, Kaufman/33, line 6: change "decrease" to "increase"

Finally, pursuant to conversations with PacifiCorp, this filing also contains the redaction of the year that underground mining operations are anticipated to end at Bridger Coal Company. This date was not redacted in the Company's original data responses to Staff. This affects several pages contained in Staff's Reply Testimony (Staff/200) and Rebuttal Testimony (Staff/400). Staff has also redacted the date from one of the Company's data responses, which was included as an exhibit to Staff's testimony (Staff/406, Kaufman/31).

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Included with this filing are the updated redacted pages, as appropriate. Confidential materials will be mailed to those parties that have signed the protective order in this docket.

Sincerely,

Sommer Moser
Assistant Attorney General
Business Activities Section

appear to have been subjected to any due diligence analysis.[36] PacifiCorp maintains a position that in the event it ceases purchasing coal from BCC, PacifiCorp customers are responsible for any unrecovered capital investment in the mine.[37]

Under PacifiCorp's theory of rate treatment for BCC, increased capital investment at BCC will increase customer liability for fixed mine costs and will reduce the future viability of market alternatives. PacifiCorp's decision to continue to invest in BCC without performing due diligence studies, and its decision to reduce transparency regarding market alternatives and BCC costs, indicate that it may not be operating in customers' interests.

Q. How does PacifiCorp investment in BCC relate to BCC investment in new plant, property, and equipment?

A. PacifiCorp, through its subsidiary Pacific Minerals Inc., owns a two thirds interest in BCC. To the extent that BCC needs additional capital, two thirds of this capital is raised from PacifiCorp.

Q. How much capital has BCC invested in new plant, property, and equipment?

[36] Staff requested cost benefit analysis of major BCC capital projects not yet subjected to a prudence review. PacifiCorp declined to respond. *See* Staff/214 PacifiCorp Response to OPUC DR 57. Staff also requested due diligence studies used to support investing in BCC surface operations. PacifiCorp provided the Long Term Fuel Supply Plan. However, this document was generated in response to a Commission Order and evaluates investment in [redacted], not recent and ongoing investment. *See* Staff/215 Confidential PacifiCorp Response to OPUC DR 59.
[37] *See* Staff/226 PacifiCorp Response to Staff DR 36.

2015. Staff found a highly statistically significant correlation between BCC cost per ton and tons delivered. The correlation of -0.5721 was significant at the 0.001 significance level.[51]

Staff/218 itemizes the major cost categories for BCC and explains which items vary with tonnage, which remain fixed, and which are quasi-variable.[52] The nature of these relationships is embedded within the BCC production cost model. The results of the BCC production cost model also displays evidence that there is a negative relationship between cost per ton and total tons produced.

This relationship can be seen by comparing the BCC 10-year coal plan generated in 2013 with the 10-year plan generated in 2015. The 2015 plan projects almost double the quantity of production from [redacted] to 2036 relative to the 2013 plan. The 2015 plan also projects an average annual cost per ton about 30 percent lower than the average cost projected in 2013 for the production period [redacted] to 2036.

Q. Is there evidence that other factors besides reduced production volumes are increasing costs?

[51] The Pearson's correlation coefficient can be tested for statistical significance using the Student's t-test. This test requires continuously distributed variables, a liner relationship between the two variables, an absence of outliers, and normally distributed variables. All four assumptions are valid. Staff performed a linear regression on the data and found the linear relationship to be highly statistically significant. Three observations were found to have residuals more than 2 standard deviations from the mean. These observations were removed as outliers. The remaining data were tested for normality using the Shapiro–Wilk test. The null hypothesis of normally distributed data was not rejected.

[52] *See* Staff/218 Confidential PacifiCorp Response to OPUC DR 6.

A. Yes. Annual depreciation costs have increased by [redacted] million or [redacted] percent from 2015 to 2017.[53] The 2014 TAM identified $460,000 in management overtime and bonuses.[54] The 2017 TAM identifies [redacted] in management overtime and bonuses.[55] This is an increase of [redacted] percent.[56]

Further, in 2011, BCC produced [redacted] million tons[57] at a cost of [redacted] per ton.[58] The 2011 coal production volumes are equivalent to the 2016 production volumes, however the cost per ton has increased substantially.

Q. Does PacifiCorp expect BCC coal prices to remain high?

A. Not in the near term. The most recent (2016) BCC 10-year business plan indicates that coal will average [redacted] per ton from 2018 to [redacted]. After that, PacifiCorp projects that the underground operations will be depleted and BCC price per ton will average [redacted] per ton. Staff/227 Kaufman/20 and Kaufman/24 identifies the 2016 10 year plan price forecast for BCC coal. The BCC coal cost forecast is also summarized in Figure 7 below.

In this testimony, Staff presents evidence that the 2016 10-year plan is incorrect and that BCC coal costs will remain at or above [redacted] per ton. Staff also presents evidence that PacifiCorp has not prudently evaluated market alternatives to BCC because in both the short-run and the long-run market sourced coal has a lower "present value revenue requirement" (PVRR) than

[53] *See* Staff/231 Confidential Ralston Workpaper "14 Depr Exp 10YP.xlsx".
[54] *See* Order 13-387 page 7.
[55] *See* PAC/200 Ralston/12 line 21.
[56] The increase is evidence that total BCC costs are increasing, not just per ton costs. However, PacifiCorp removes management overtime and 50 percent of incentive bonuses from the final 2017 TAM power costs. This removal is made in compliance with Order 13-387.
[57] *See* Staff/229 PacifiCorp Response to ICNU DR 12.
[58] *See* Staff/230 Confidential Cost Per Ton 2011.

PacifiCorp bases this estimate on a May 2014 forecast of coal prices. This translates into a cost of [redacted] per MMbtu.

Q. Is there evidence that PacifiCorp has recently purchased PRB coal?

A. In Docket No. UE 264, PacifiCorp witness Crain states "[t]he Company issued a solicitation for Powder River Basin coal supplies. As a result of the solicitation, the Company secured new coal supply arrangements with Western Fuels for Dry Fork mine coal for 2014 through 2016."[92] This indicates that PacifiCorp is currently purchasing and shipping coal. The PRB is considered by PacifiCorp to be a liquid market.[93]

Q. Is Jim Bridger Plant capable of burning PRB coal?

A. [redacted][94] PacifiCorp's current long term coal supply plan indicates that the Company is currently planning to switch to PRB coal in [redacted] when the BCC underground reserves are depleted. This plan involves some capital additions to allow Jim Bridger to receive and burn PRB coal. By installing these facilities early, PacifiCorp would be able to spread the capital costs over a longer period and receive PRB coal at a time when PRB coal costs substantially less than BCC coal.

Q. Please summarize the evidence that there is a viable market source of coal is available to burn at the Bridger Plant.

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[92] *See* UE 264 PAC/600 Crane/3 lines 18 through 21.
[93] *See* Staff/240 PacifiCorp Response to OPUC DR 178.
[94] *See* Staff/212 Kaufman/14 Confidential PacifiCorp Response to OPUC DR 18.

A. PacifiCorp is currently purchasing Powder River Basin coal. PacifiCorp work-papers for the 2017 TAM include PRB coal costs and transportation cost from PRB to the Jim Bridger Plant. PacifiCorp's long term coal plan demonstrates that PacifiCorp expects to burn PRB coal at Jim Bridger Plant in [redacted].

Market options are less expensive than continued participation in the BCC coal supply agreements

Q. What factors should be considered when evaluating whether market options are less expensive than continued participation in the BCC coal supply agreements?

A. The following factors are relevant to evaluating market alternatives to the BCC contract:

- Incremental capital costs of modifying Bridger Plant;
- Expected MMBtu price differential;
- Expected MMBtu volumes;
- Incremental costs of breaking contracts with BCC; and
- System benefits associated with optimally dispatching Jim Bridger Plant.

Q. What additional capital is required for the Bridger Plant to receive and burn PRB coal?

A. Staff/241, Kaufman/5 itemizes the potential investments and the expected costs. While Jim Bridger can currently burn a limited amount of PRB coal, PacifiCorp has identified potential Bridger Plant additions that may be necessary to burn the plant's full requirements with PRB coal. The potential costs include enhanced rail facilities and minor Jim Bridger unit upgrades.

Staff notes that these are potential investments and may not be necessary. The total capital cost for these items in 2016 dollars is [redacted].

Q. What is the annual incremental cost of making the proposed investments?

A. These modifications are currently planned to be made in [redacted] and recovered over the life of the plant. Because PacifiCorp intends to recover the capital, Staff proposes that the incremental cost is limited to the revenue requirement associated with the return on the investment. Staff excludes depreciation from an incremental cost because PacifiCorp would recover the capital costs from customers in both scenarios.

The pretax return PacifiCorp uses to model these investments in its long term coal plan is [redacted] percent. The associated revenue requirement is [redacted]

Q. What is the expected MMBtu price differential?

A. The 2017 TAM BCC coal cost is [redacted] per MMBtu. Delivered PRB coal is expected to cost [redacted] per MMBTu in 2017. The 2017 cost of BCC coal is 41 percent more than the 2017 delivered price of PRB coal. The expected price differential is [redacted] per MMBtu.

Q. What are the expected MMBtu volumes?

A. At the current dispatch levels, Jim Bridger is expected to dispatch [redacted] MMBtu. Black Butte is expected to supply [redacted] MMBtus. The

[95] Calculated as [redacted] * [redacted]

prudence and affiliate transaction standards in future rate proceedings."[105] PacifiCorp submitted a compliance filing with a long term fuel supply plan for Jim Bridger on December 30, 2015. This plan is provided in Staff/215. The plan submitted by PacifiCorp does not adequately evaluate market options, nor does it provide parties with sufficient data to evaluate the prudence of PacifiCorp's ongoing purchase of coal from BCC.

Before PacifiCorp filed its actual long term fuel plan, PacifiCorp filed a compliance plan in Docket No. UE 287.[106] The compliance plan provides a very general framework for evaluating fuel cost. No parties objected to PacifiCorp's compliance plan. Staff has reviewed the compliance plan and attached it as Exhibit Staff/247. Staff continues to have no specific objections to the compliance plan, however a more detailed compliance plan may have helped parties identify many of the shortcomings that appear in PacifiCorp's actual long term fuel supply plan.

Q. Please summarize the long term fuel supply plan for the Jim Bridger Plant.

A. The supply plan focuses on the anticipated [redacted] depletion of BCC's underground operations. PacifiCorp explores two alternative responses to the [redacted] depletion. Both options purchase BCC coal until [redacted]. At that time, the underground operations are forecasted to be fully depleted and BCC annual production will drop from 6-8 million tons per year to 2-3 million tons per year.

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[105] *In* Docket UE 264 Order 13-387.

[106] *In the Matter of PacifiCorp, dba Pacific Power, 2015 Transition Adjustment Mechanism*, Docket UE 287, Direct Testimony of Cindy Crane, Exhibit PAC/201 (April 2014).

The decreased production is assumed to be insufficient to meet Jim Bridger fueling requirements. In both production alternatives, PacifiCorp makes investments at the Jim Bridger Plant to make it capable of receiving and burning PRB coal. At this point, the two alternatives diverge. The base case continues purchasing coal from BCC surface operations until 2036. The base case meets the difference between BCC production and Jim Bridger consumption through PRB purchases. The market case closes BCC mine, incorporates all costs associated with the closure of BCC mine into Jim Bridger Plant fuel costs, and purchases all ongoing Jim Bridger coal requirements from PRB.

PacifiCorp finds the base case to have a lower PVRR than the Market case.

Q. Does the long term plan evaluate market alternatives to BCC?

A. The long term plan only evaluates one alternative coal market, PRB. The plan only evaluates a one point in time adoption of market coal, [redacted].

Q. Does the long term plan accurately estimate BCC coal costs?

A. No. As Staff describes above, PacifiCorp is overestimating the rate at which the Jim Bridger Plant dispatches on an ongoing basis. Due to the relationship between BCC production volume and production cost, this means that BCC coal costs are over-estimated.

Q. Does the long term plan accurately estimate PRB coal costs?

A. No. The long term plan overestimates PRB coal. The forecast used in the long term plan is dated May 2014. The SNL coal forecast dated May 2014 has a substantially lower growth rate than the long term plan forecast.

The current rail cost index is growing at a rate of 1.3 percent annually since 2010.[110]

Q. Does the long term plan evaluate the option of switching to market alternatives in the 2017 TAM?

A. No

Q. Does the long term plan evaluate any market alternatives prior to [redacted]?

A. No

Q. Does the long term plan evaluate Uinta coal?

A. No. Uinta coal is more expensive per MMBtu than PRB coal. However the Uinta basin is closer to Jim Bridger than the PRB and Uinta coal has a much higher heat content per pound, at 11,700 Btu. The higher heat content of Uinta coal means fewer tons shipped and substantial transportation savings relative to PRB. Staff was unable to establish a shipping cost per ton for Uinta coal and the Company has not provided an independent estimate of the delivered cost of Uinta coal to PRB.

Q. Does the long term plan include costs for which PacifiCorp customers are not responsible?

A. Yes. PacifiCorp assumes that BCC closes in [redacted] under the market alternative scenario. PacifiCorp also assumes that PacifiCorp customers are responsible for all closure costs and all undepreciated assets. The Affiliated Interest agreement approved by the Commission includes no language

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110 *See* Staff/250 Rail Growth Rate Calculations.

obligating PacifiCorp customers to pay these costs. Further, PacifiCorp has not established that BCC would shut down in the event of transitioning to market. As an affiliate, BCC can independently choose to market its coal to other coal customers. In fact, the Affiliated Interest agreement approved by the Commission includes third party coal sales.

Q. Is the long term plan an adequate attempt to satisfy Order No. 13-387?

A. No. The ICNU testimony in UE 264 and Staff's LCM testimony in UE 207, UE 216, and UE 227 all test the prudence of not purchasing market coal in current TAM year.[111] Order No. 13-387 explicitly identifies that a primary purpose of the long term fuel supply plan is to help parties make such prudence decisions. PacifiCorp's long term fuel plan does not test any market alternatives until [redacted], seven years after the relevant TAM year of 2017.

Q. Does the long term plan satisfy PacifiCorp's ongoing obligation to secure fuel in a least cost manner?

A. No. Notwithstanding Order No. 13-387, PacifiCorp has an ongoing obligation to secure fuel in a least cost manner. The long term plan filed by PacifiCorp is a very narrow test of one market alternative in one year. It does not represent the breadth of analysis required to identify the least cost solution to Jim Bridger's fuel requirements. In addition, the long term plan over-estimates the market price and transportation cost of coal while underestimating the cost of BCC coal.

[111] *See* Docket UE 264 ICNU/100 Deen/8-10, Docket UE 207 Staff/400 Dougherty/17, Docket UE 216 Staff/200 Dougherty/2-3, and Docket UE 227 Staff/200 Bahr/2.

A. No. Under OAR 860-027-0048, regulated utilities are required to reprice services and supplies received from affiliates at the lower of the affiliates cost or the market price. However, Staff is not proposing to reprice Bridger coal at market prices. Staff has proposed a prudence disallowance equal to the amount PacifiCorp would have saved in 2017 if it had prudently evaluated market opportunities, and made any required investments to ship and receive market coal in place of BCC coal.

Q. Is there any other information that may be relevant to the Commission's decision regarding Bridger Coal Company costs?

A. Yes. In the course of this investigation Staff discovered that PacifiCorp did not incorporate the costs associated with the potential depletion of BCC in its most recent two IRPs.[115] However, the 2013 through 2016 business plans all show BCC underground operations being depleted in [redacted]. Staff anticipates that in its next general rate case PacifiCorp will request that over $400 million be added to rate base related to four Selective Catalytic Reduction (SCR) investments at the Jim Bridger Plant. Failure to incorporate coal handling facilities, and the marginal economic viability of these investments in the last two IRPs will play a role in the prudence review of these investments.

Staff does not anticipate that any TAM disallowance related to BCC costs will affect the analysis of the Jim Bridger SCR investments in the next rate case. PacifiCorp has committed to the SCR investments, and Staff's analysis of the ongoing viability of BCC is not dependent on the prudence determination of the

[115] *See* Staff/241 Confidential Response to OPUC DR 1.

"The CAISO security constrained economic dispatch model (SCED) is used to optimize PacifiCorp's participating generation resources relative to the forecast of the combined balancing authority area (BAA) – CAISO + Nevada + PacifiCorp East (PACE) + PacifiCorp West (PACW) – load and variable energy resources for each operating hour. PacifiCorp submits a bid for each of its participating resources that are scheduled on-line for each operating day. The CAISO real-time market optimization serves load by the most economic resource, drawn from the larger pool of resources, to most efficiently match load with supply while ensuring reliability."[8]

Q. What do you conclude from these facts?

A. Staff concludes that GRID and the CAISO counterfactual are both security constrained, economic dispatch solutions to balancing load on PacifiCorp's grid, isolated from the CAISO EIM market. Both models solve for the most economic balancing of generation units within the PACE and PACW balancing areas under the constraint that EIM is not available. Therefore, the level of benefits CAISO determines as due to the EIM when compared to the counterfactual solution should be the same as benefits due to the EIM compared to the GRID solution.

Q. How does this affect the net power cost?

A. CAISO's estimate of benefits ($26.2 million in 2015) includes both inter- and intra-regional benefits. The Company has estimated benefits at $13.9 million, based on 2015 results (that is, not including results from 2016 which include

[8] Exhibit Staff/301 (Company response to CUB DR 71)

additional benefits due to the participation of NV Energy in the EIM). If the Company has estimated benefits correctly, this implies there are about $12.3 million in benefits attributable to intra-regional benefits not quantified by the Company. If these benefits are accounted for, net power cost is reduced by an additional $12.3 million.

Q. Staff stated in Opening Testimony that it understands that in essence the benefits from EIM are equal to:

EIM benefits = (revenue received from CAISO) –
(cost to generate transfer energy)

Does the Company support this understanding?

A. Yes. In response to CUB DR 69 the Company provides a succinct answer as to how the Company values the EIM benefits;

"PacifiCorp calculates actual energy imbalance market (EIM) benefits based on the revenue received for export volumes minus the dispatch cost and the cost paid for import volumes minus the avoided cost that PacifiCorp would have incurred without the imported energy."[9]

Q. How did Staff describe the calculation of benefits in Opening Testimony?

A. Staff described the Company's estimation of EIM cost to be based on the difference between the price paid by CAISO for the transfer and the aggregated bid price, or Load Aggregation Point (LAP) as defined by CAISO.

Q. How did the Company respond to this description?

[9] Exhibit Staff/302 (Company response to DR 69)

Q. In rebutting Staff's analysis, PacifiCorp focuses on the large capital investment required to receive PRB coal.[10] How relevant is the required capital investment?

A. Staff's analysis in opening testimony includes the referenced investment. However, it plays a relatively minor role because PacifiCorp must make the investments by [redacted].[11] The incremental cost of moving the investment forward ten years is small relative to the long term variable cost savings that PRB offers.[12]

Q. What relevance does PacifiCorp place on the required capital investments?

A. PacifiCorp uses the required capital investments as a reasonan to not analyze PRB market options. PacifiCorp states that due to the capital required to receive and burn PRB coal, there was no need to analyze the long term cost of PRB coal.[13]

Q. PacifiCorp characterizes your analysis as an opportunistic, one-year snap shot that relies on current data to evaluate the prudence of past decisions.[14] How do you respond?

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[10] *See* PAC/500, Ralston/2, line 19; PAC/500, Ralston/18, lines 1 and 2; PAC/500, Ralston/23, lines 16 and 17; PAC/600, Dalley/3, line 2; and PAC/600, Dalley/11, lines 17 to 20.
[11] *See* Staff/406, Kaufman/31 Response to Staff DR 237.
[12] The present value revenue requirement of a 2017 investment is actually larger than a [redacted] investment. This is because the expected cost of the 2017 investment grows at the rate of inflation, which is smaller than the present value discount factor. *See* Staff/403.
[13] *See* PAC/500, Ralston/23, lines 16 and 17; and PAC.600, Dalley/3, line 21.
[14] *See* PAC/500, Ralston/3, line 19; PAC/600, Dalley/3, line 13; PAC/600, Dalley/17 , lines 18 to 22; and PAC/600, Dalley/20, line 11.

Cost of Jim Bridger Facility Upgrades

Q. What is disputed regarding the Jim Bridger Facility Upgrades?

A. PacifiCorp claims that current facilities are not sufficient to receive and burn a substantial amount of coal. PacifiCorp claims that the size of these investments have rendered any PRB market analysis irrelevant, and as such PacifiCorp has not tested the viability of PRB coal when making major capital investment decisions such as the 2005 underground mine investment. Staff agrees that some facilities require upgrade, but Staff disputes the following items:

- 2013 estimated facility costs; and
- Depreciable life.

Staff calculates the cost of the Jim Bridger facility upgrades for both a 2017 in-service data and a base-case [redacted] in-service date. These are provided in Staff/403, Kaufman/6 and Kaufman/7.

Q. What value does PacifiCorp use for the PRB capital upgrades?

A. PacifiCorp uses a value of [redacted] million as the cost of the PRB capital upgrades when analyzing a 2013 decision. However, when analyzing a 2015 decision PacifiCorp uses a cost of $[redacted] million.[42] It is not clear why this number is revised downward in 2014 or 2015.[43] What is clear is that the rail unloading

[42] BCC total cost, in 2015 dollars. PAC's share is two thirds of this.
[43] DR 242 provides a brief discussion of the cost reduction. *See* Staff/407, Kaufman/4.

facility costs are much greater than PacifiCorp's other coal unloading facilities.[44]

Q. Did PacifiCorp's 2013 IRP discuss the need for a [redacted] investment at Jim Bridger for continued operation after [redacted]?

A. No, Dr. Kaufman was an analyst in the 2013 IRP and there was no mention of a [redacted] investment at Jim Bridger in [redacted].

Q. What facility upgrade cost does Staff propose for the purpose of calculating prudence?

A. Staff proposes using the revised estimate of $[redacted] for the 2013 decision.[45] This proposal is based on the observation that the initial estimate is much higher than the existing PacifiCorp facilities and had PacifiCorp seriously evaluated PRB coal in 2013, it would have also revised the facility cost to be more realistic.

Q. What depreciable life does Staff propose for the facilities?

A. Staff proposes a 20 year life. This is the period over which the facilities are expected to be used. Staff reviewed PacifiCorp's coal related survivor curves

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[44] The total upgrade cost includes [redacted] in upgrades to the Jim Bridger units and upgrades to the coal unloading facilities. This leaves [redacted] as the cost of the unloading facilities. Staff evaluated the cost of all PacifiCorp coal unloading facilities. Staff inflated the original cost to 2015 dollars and calculated the cost per ton of unloading capacity. The most expensive facility is the Hayden facilities. These facilities cost $6.55 per ton of capacity. PacifiCorp needs an incremental unloading capacity of 4 million tons. The added facilities should cost around $26 million at a capacity cost of $6.55 per ton. PacifiCorp's proposed expansion costs [redacted] more than equivalent existing facilities on a real basis.

[45] Staff/403, Kaufman/5 contains PacifiCorp's 2/3 share – [redacted].

less expensive than BCC coal. PacifiCorp's testimony underscores the importance of doing a long term evaluation. This is consistent with spreading capital costs over the period that the capital is used. PacifiCorp's PRB transport cost is clearly out of line with national EIA data and with its own rail contracts servicing other plants. PacifiCorp's transportation cost forecast is biased and only includes the upper tail of potential transport costs.

Q. Does Staff have any caveats about the analysis comparing 2017 coal costs?

A. Yes. Staff is simply correcting PacifiCorp's methodology presented in PAC/500. This methodology is only a one year snapshot. As such, it does not account for the fact that PacifiCorp will make the Jim Bridger facility upgrades regardless of whether it switches to PRB coal early. PacifiCorp's Long Term Plan already includes the facility upgrades, but it times them for [redacted] receipt of PRB coal rather than 2017. This means that PacifiCorp customers will pay for the facilities in both the base line scenario and the PRB scenario. As such, the "Capital Investment Amortization" component of the analysis is overstated. In order to properly evaluate capital investment amortization, the 20 year comparison performed by Staff for its opening testimony must be used.[51] Staff's 20 year model provides the present value revenue requirement savings from switching to PRB coal. PacifiCorp's Reply Testimony does not address Staff's 20 year model.

[51] Staff/200, Kaufman/66. *See also* Staff/401, Workpapers supplied with Staff Opening Testimony. The updated version of the 20 year model is provided in Staff/403.

- 2013 PacifiCorp IRP expectations for Black Butte coal costs and volumes, and Jim Bridger BTU requirements.

The BCC base case does not produce enough coal to fuel Jim Bridger from Black Butte alone after [redacted]. The BCC base case purchases unmet coal requirements from PRB after [redacted].[56]

The total fuel costs for each year are calculated by multiplying the total quantity of coal from each coal source by the forecasted cost per ton of coal from each coal source. The BCC base case receives PacifiCorp's share of all forecasted production from BCC until 2036. The market case receives BCC coal prior to 2017 and no BCC coal from 2017 on.

Q. How are the costs for facility upgrades calculated?

A. The annual revenue requirements for facility upgrades are calculated using the model developed by PacifiCorp and filed as a workpaper to PAC/500.[57] Staff uses the capital costs identified by PacifiCorp in the Long Term Plan. The revenue requirement model provides for interest, depreciation and taxes, and allows the Company to earn its approved cost of capital. For the base case, the first year of facility upgrade costs begins in [redacted] and are recovered over the remaining life of Jim Bridger.[58] For the market case, facility upgrade costs begin in 2017 and continue for the life of Jim Bridger. Facility upgrade costs

[56] The timing of BCC's coal shortage seems to float between [redacted] and [redacted]. Staff chose [redacted] based on the 2013 IRP data and the 2013 BCC business plan.

[57] The workpaper is named "2017 OR TAM - Jim Bridger Plant Capital Additions (CY2013 Hypothetical).xlsx". Staff's versions of this model are provided in Staff/403, Kaufman/5 and Kaufman/6.

[58] This is consistent with the 2013 business plan which indicates BCC coal production reduces significantly in [redacted]. Please note that PacifiCorp's testimony does not include facility upgrade costs in the base case, despite the fact that BCC production is clearly insufficient to meet generation needs.

are higher for the market case between 2017 and [redacted], but higher for the base case after [redacted].[59]

Q. How is the revenue requirement for BCC closure calculated?

A. The calculations of the revenue requirement for BCC closure are described in Staff/400, Kaufman/15-18.

Q. What are the system optimization benefits and how do you calculate them?

A. The system optimization benefits are incremental reductions in power costs, beyond simply repricing coal, that are achieved by having lower marginal coal costs and by having more flexibility in coal quantity. When Jim Bridger is dispatched in GRID at a lower marginal cost, the quantity of generation at Jim Bridger increases. This is because Jim Bridger becomes less expensive than other options. However, the fuel cost component of Staff's 20 year model holds generation at Jim Bridger fixed at the 2013 IRP forecast level. The base case also has inflexibility in coal quantity. In PacifiCorp's initial filing, Jim Bridger was forced into uneconomic dispatch in order to burn both Black Butte and BCC coal requirements.[60]

Staff calculates the system optimization benefits by dispatching Jim Bridger in GRID using the base case and market case dispatch price.[61] Staff identified

[59] *See* Staff/403, Kaufman/3.
[60] *See* Staff/406, Kaufman/27, PacifiCorp Response to Staff DR 232
[61] Staff uses the Reply Update GRID model as the base for this analysis. Staff made two additional GRID runs, the first run replaces only the Jim Bridger costing tier fuel price with the Market Case fuel price. The second GRID run replaces both the dispatch and costing tier fuel price with the Market Case fuel price. The difference between the Reply Update and Staff's first run represents the "Fuel

$6.5 million in system optimization savings for 2017.[62] Under the market case, these savings are realized between 2017 and [redacted].[63]

Q. How does the updated 20 year model compare to Staff's opening testimony 20 year model?

A. Staff's original 20 year model and Staff's updated model both find substantial cost savings occur when switching Jim Bridger to PRB coal. From the 2013 perspective, switching to PRB coal in 2017 would have saved PacifiCorp customers [redacted] in present value over the life of the Jim Bridger plant. The lower long run cost of PRB coal shows that PacifiCorp should have begun upgrading Jim Bridger in 2013 in preparation for 2017 receipt of PRB coal.

Q. In Staff/200, Staff proposes to disallow a portion of coal costs. Please update Staff's calculated disallowance.

A. Staff proposes to disallow the difference between what net power costs would be if PacifiCorp has prudently evaluated market opportunities. Staff's original calculations for the size of the disallowance need to be updated to reflect system optimization benefits and the revised coal transportation costs. To calculate the 2017 market costs, Staff uses PacifiCorp's models underlying PAC/500, Ralston/26, Figure 4.[64] Staff adjusts transportation, capital investment amortization, and regulatory asset rows consistent with 2016

Expense" column of Staff/403, Kaufman/2. The difference between the first and second run represents the "Optimization Benefit" column of Staff/403, Kaufman/2.

[62] *See* Staff/403, Kaufman/19.

[63] Beginning in [redacted], both the base case and the market case have the same system optimization benefits. This is because in both cases Jim Bridger will be fueled predominantly with PRB coal.

[64] This model suffers from the same problems as PAC/500, Ralston/20, Figure 2. Namely, the Capital Investment Amortization does not account for the fact that PacifiCorp will make the capital investment by [redacted] in base case.

[redacted]

The Company's rationale for the DA-RT adjustment is that real time transactions are more costly than GRID recognizes. According to the Company's rationale, increasing real time transactions by [redacted] percent should increase the DA-RT adjustment but in practice it has a negligible effect.

The problems with DA-RT are acutely highlighted by calculating the DA-RT adjustment under a scenario when PacifiCorp is expected to make no market transactions. Staff modified the Reply Update GRID inputs to restrict market sales to zero.[65] Under this scenario, where PacifiCorp makes no market sales, there should be no costs for system balancing. However, the DA-RT adjustment was [redacted].

Q. Why does Staff think the DA-RT adjustment does not increase the accuracy of the NPC forecast?

A. PacifiCorp creates the illusion of a link between market transaction costs and GRID performance. PacifiCorp accomplishes this by observing that it has recently under-forecasted NPC, then observing that PacifiCorp tends to make more purchases above the average monthly price and more sales below the

[65] Staff accomplished this by changing the market capacity to 0.01 MW for every period.

UE 307 / PacifiCorp
August 9, 2016
OPUC Data Request 237

OPUC Data Request 237

When was PAC first aware that BCC and Black Butte may not be able to provide all Jim Bridger coal requirements in the future?

Response to OPUC Data Request 237

The Company objects to this request as overly broad and not likely to lead to admissible evidence relevant to this proceeding. Without waiving these objections, the Company responds as follows:

The Bridger Coal Company (BCC) 10-year plan for the years 2015 through 2024, prepared in the fall of 2014, recognized that Powder River Basin (PRB) coal would be required to meet the Jim Bridger plant coal requirements, beginning as early as [redacted].

Redaction of data response 237 performed by Staff

CERTIFICATE OF SERVICE

UE 307

I certify that I have, this day, served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-001-0180, to the following parties or attorneys of parties.

Dated this 7th day of September, 2016 at Salem, Oregon

Kay Barnes

Kay Barnes
Public Utility Commission
201 High Street SE Suite 100
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