BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 67

In the Matter of PACIFICORP, dba PACIFIC POWER, 2017 Integrated Resource Plan	SIERRA CLUB'S APPEAL OF ADMINISTRATIVE LAW JUDGE AUGUST 7, 2018 RULING RE: PROTECTIVE ORDER

I. INTRODUCTION

The Sierra Club respectfully submits the following petition for rehearing and reconsideration of the August 7, 2018 administrative law judge ("ALJ") ruling that allowed PacifiCorp (the "Company") to shield from the public the high-level summary results of a Commission-ordered unit-by-unit coal study of the PacifiCorp's coal fleet ("coal analysis") that were contained in a June 28, 2018 PowerPoint presentation.[1] That standardless ruling accepted at face value PacifiCorp's bare assertions that the widespread redactions in the presentation protected trade secrets, and in doing so disregarded the clear standard set forth in the Commission's general protective order—a designating party must prove a trade secret through specific, well-supported facts and well-reasoned legal justifications.

In addition, Sierra Club is concerned that allowing such an unsupported ruling to stand will incentivize PacifiCorp and other utilities to over designate information as confidential and could simultaneously eliminate the mechanism by which intervenors challenge baseless designations. Sierra Club, therefore, respectfully requests that the Commission reconsider the

[1] The petition is filed pursuant to Or. Admin. R. 860-001-0080 and 860-001-0720.

ALJ's August 7, 2018 ruling and issue an order clarifying that fact-based determinations and sound legal analysis must support every confidentiality designation.

In support of this petition, Sierra Club states as follows:

II. BACKGROUND

Sierra Club, along with the Oregon Citizen's Utility Board ("CUB"), staff and other stakeholders have long argued that the Commission, customers, and public have a right to know whether PacifiCorp is providing its customers with the least-risk, least-cost resource mix available. It is well-known that the economics of coal-burning generation in the western interconnect have changed dramatically as energy efficiency, low-cost renewables, and natural gas have eroded the cost competitiveness of much of the West's coal plants.

Against this landscape and evidence that at least some of PacifiCorp's coal plants might not be economic, the Commission ordered, on April 27, 2018, that PacifiCorp disclose the cost or benefit of retiring in 2022 each of the Company's twenty-four coal-burning units rather than continuing to operate the unit. Specifically, the Commission's April 27, 2018 order required that:

> PacifiCorp will perform 25 system optimizer (SO) runs, one for each coal unit and a base case. PacifiCorp will summarize the results providing a table of the difference in PVRR resulting from the early retirement of each unit, an itemized list of coal unit retirement costs assumptions used in each SO run, and a list of coal units that would free up transmission along the path from the proposed Wyoming wind projects if retired. **PacifiCorp is to provide this information by June 30, 2018.** If there is a dispute about modeling in the meantime, PacifiCorp, Staff and parties should first attempt to resolve it informally, but if that fails, Staff may report back to us at a public meeting before the 2019 IRP is filed. A Commissioner workshop will likely be scheduled to review this analysis once it is complete.[2]

[2] LC 67, Order 18-138 at p. 21 (Apr. 27, 2018) (emphasis added).

On June 28, 2018, PacifiCorp presented the high-level results of the Commission-ordered coal study in a nine-slide PowerPoint presentation at a meeting that was open only to select individuals[3]—those who were willing and had the resources to intervene and sign a protective order in LC 67, or those who were willing to be legally bound by a nondisclosure contract in another state. PacifiCorp hid the high-level summary results from all others, including the rate-paying public that PacifiCorp has a statutory obligation to serve. The publicly available PowerPoint revealed only the study's general methodology and its numerous purported caveats and limitations. The key redactions obscured all of the study's results, preventing the public from gleaning even the most basic information about the economic health of PacifiCorp's coal fleet. On June 29, 2018, PacifiCorp filed the PowerPoint and underlying coal analysis in docket LC 67 as a compliance filing.[4]

PacifiCorp redacted the information in the PowerPoint presentation pursuant to the Commission's general protective order, which was adopted in LC 67.[5] That order required PacifiCorp to act in good faith when designating information as protected, and gave any party the right to challenge designations by first attempting to informally resolve the dispute.[6] If those informal efforts failed, the challenging party could then submit a written challenge to the assigned ALJ.[7] The ALJ could only maintain confidential designations if the designating party proved, based on specific well-established facts, that the information was covered by ORCP

[3] The June 28, 2018 PowerPoint presentation is attached as Exhibit A, LC 67, PacifiCorp's Compliance Filing, Unit-by-Unit Coal Studies Presentation (June 29, 2018) ("Coal Analysis Presentation").
[4] Coal Analysis Presentation.
[5] LC 67, Protective Order No. 16-461 (Dec. 5, 2016) ("General Protective Order") (attached as Exhibit B).
[6] *Id.* ¶¶ 2–3, 5–10.
[7] *Id.* ¶ 8.

36(C)(7),[8] a rule of discovery that protects trade secrets when the party seeking protection establishes "good cause."[9]

In compliance with the general protective order, Sierra Club, several government agencies, and other parties informally challenged, at the June 28, 2018 meeting, PacifiCorp's decision to keep the study results secret. But, PacifiCorp representative Rick Link refused to remove the confidential designations, asserting that the Company did not want the data to be misinterpreted and used incorrectly, citing the study's imperfections and caveats. On July 3, 2018, Sierra Club attorney Gloria Smith spoke on the telephone with PacifiCorp representatives Ryan Flynn and Mr. Link, again expressing concerns raised at the closed meeting. That same day Sierra Club emailed its objections to the Company. When brief telephone conversations on July 5 and 6 failed to resolve Sierra Club's concerns, the parties agreed that Sierra Club should submit a written objection.

On July 9, 2018, Sierra Club filed a written objection to the designations in the June 28, 2018 PowerPoint.[10] On July 16, 2018, PacifiCorp filed a response that broadly asserted, without citation to any specific facts or to any specific redaction, that the challenged information constituted trade secrets under ORCP 36(C)(7).[11] On July 23, 2018, Sierra Club filed a reply that carefully explained, redaction by redaction, why PacifiCorp had failed to meet its burden of proof.[12] On July 26, 2018, PacifiCorp filed a sur-reply that again failed to address all the

[8] *Id.* ¶¶ 7, 9.
[9] Or. R. Civ. P. 36(C)(7).
[10] LC 67, Sierra Club's Written Objection to PacifiCorp's Confidential Designations (Jul. 9, 2018) ("Sierra Club Written Objection").
[11] LC 67, PacifiCorp's Response to Sierra Club's Objection to PacifiCorp's Confidential Designations (Jul. 16, 2018) ("PacifiCorp Response").
[12] LC 67, Sierra Club's Reply to PacifiCorp's Response to Sierra Club's Objections to Confidential Designations (Jul. 23, 2018) ("Sierra Club Reply").

specific redactions or to cite any specific factual basis for withholding the challenged information.[13]

On August 7, 2018, the ALJ concluded, based only on PacifiCorp's asserted "belie[fs]," that the Company had proved that the challenged information constituted trade secrets.[14] Despite the protective order's plain language, the ALJ did not consider any particular redaction, nor did the ALJ ever find that PacifiCorp would suffer significant harm if the redacted information were revealed.[15]

III. ARGUMENT

Under the Commission's general protective order, information may only be protected from disclosure if the designating party proves based on specific, well-supported facts and targeted legal arguments that the challenged information is covered by ORCP 36(C)(7)[16]—a discovery rule that authorizes protection of "trade secret[s] or other confidential research, development, or commercial information" when "good cause" is shown.[17] The designating party must specify "the factual and legal basis of how the challenged information is protected under" Oregon law.[18] "Broad allegations unsubstantiated by specific facts are not sufficient."[19] By contrast, a party challenging the propriety of confidentiality designations "need only identify the

[13] LC 67, PacifiCorp's Sur-reply to Sierra Club's Objection to PacifiCorp's Confidential Designations (Jul. 26, 2018) ("PacifiCorp Sur-reply").
[14] LC 67, Ruling (Aug. 7, 2018) ("ALJ Ruling").
[15] *Id.* at 4–5.
[16] General Protective Order No. 16-461 ¶¶ 7, 9.
[17] Or. R. Civ. P. 36(C)(7).
[18] General Protective Order No. 16-461 ¶ 9.
[19] *Id.*

information in dispute and certify that reasonable efforts to achieve informal resolution have failed."[20]

Oregon law defines trade secrets as "information, including a drawing, cost data, customer list, formula, pattern, compilation, program, device, method, technique, or process that . . . [d]erives independent economic value" by remaining secret and for which efforts are made to maintain its secrecy.[21] To prove that information constitutes a trade secret, the designating party must "demonstrat[e] that disclosure will work a clearly defined and serious injury" based on evidence of "specific examples" and "articulated reasoning."[22]

The ALJ ruling, which cited only PacifiCorp's self-serving assertions as a basis for concluding that designated information constituted trade secrets, completely disregarded the careful framework established by the Commission's general protective order. The ruling consequently provided PacifiCorp and other utilities with a strong incentive to abuse the protective order by broadly designating as confidential whatever information they choose. Because the redactions in the June 28, 2018 PowerPoint presentation lack any sound factual or legal basis, the Commission must:

1. Review each of the five contested redactions and the ALJ's determination;
2. Issue an order directing PacifiCorp to remove the contested confidential designations; and
3. Clarify that in proceedings each designation must be supported by specific, well-established facts and sound legal reasoning.

[20] *Id.* ¶ 8.
[21] Or. Rev. Stat. § 646.461(4).
[22] *Pfizer Inc. v. Oregon Dep't of Justice ex rel. Kroger*, 254 Or. App. 144, 162 (2012) (quoting *Citizens' Util. Bd. v. Pub. Util. Comm'n*, 128 Or. App. 650, 658, *rev. den.*, 320 Or. 272 (1994)).

A. The ALJ's Standardless Ruling Violated the Commission's General Protective Order.

The ALJ concluded that PacifiCorp proved that the high-level results of the coal analysis constituted trade secrets based solely on PacifiCorp's "belie[f]" that disclosing the challenged information "could place the company at a competitive disadvantage in actual or potential transactions."[23] The ALJ completely ignored the protective order's burden of proof: while a challenging party need only identify the disputed information and certify that attempts at informal resolution have failed, the designating party must specify "the factual and legal basis of how the challenged information is protected under" Oregon law.[24] "Broad allegations unsubstantiated by specific facts are not sufficient."[25]

As the ALJ acknowledged, Sierra Club "specifically addresse[d]" why the high-level results of the coal analysis were not trade secrets,[26] evaluating each of the six redactions.[27] Sierra Club's careful analysis stood in stark contrast to PacifiCorp's unsupported assertions, which failed to address each of the redactions in turn.[28] Against this backdrop, and contrary to the ALJ's flawed conclusion, the record simply provided no reasoned justification for shielding the high-level results of the coal analysis.

First, in concluding that the challenged information "derive[d] independent economic value" from remaining secret, the ALJ found "plausible" PacifiCorp's bare assertion that

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[23] ALJ Ruling at pp. 4–5.
[24] General Protective Order No. 16-461 ¶¶ 7–9.
[25] *Id.* ¶ 9.
[26] ALJ Ruling at p. 3.
[27] Sierra Club Reply at pp. 2–11.
[28] *See* PacifiCorp Sur-reply; PacifiCorp's Response. In its sur-reply, PacifiCorp broadly referenced the PVRR(d) results as well as the redactions related to Jim Bridger units 1 and 2 (assuming SCR is not installed) and a year-to-year chart for Jim Bridger 1. PacifiCorp Sur-reply at pp. 3–5, 8–10. As explained below, however, those loose discussions lacked citation to any specific facts. *See id.*

disclosing the challenged information "could disadvantage [the Company] in contract negotiations with environmental equipment suppliers," citing as evidence PacifiCorp's 2017 IRP Update and noting that "PacifiCorp is actively considering different compliance options for several coal plants," including natural gas conversion and early retirement.[29] Vendors "who would have to bid" on a project, the ALJ found, "would value *any* company estimate of the cost anticipated."[30] The ALJ's finding that a vendor would value *any* cost estimate of anticipated costs was completely untethered from the high-level PVRR(d) results shielded in the PowerPoint, and thus lacked the specificity that the Commission's general protective order demands.[31] Moreover, the ALJ's broad finding made a mockery of Oregon's trade secret law. Under the ALJ's limitless standard, a utility could shield as trade secrets even the most mundane cost estimate based on whatever rationale it chose. The ALJ's findings also completely ignored PacifiCorp's own statements indicating that the company was not actively considering retrofitting its coal-burning power plants with environmental controls: PacifiCorp had no plans to retrofit any of its coal units in the foreseeable future, it was seeking to "avoid[] emission control investments,"[32] the company was not making any "specific resource decisions" at this time, and its warning that the shielded results "provide limited insight into a least-cost, least-risk

[29] ALJ Ruling at p. 4 & n.8.
[30] *Id.* at 4 (emphasis added).
[31] *See* General Protective Order No. 16-461 ¶¶ 7, 9.
[32] *See, e.g.*, PacifiCorp's 2017 Integrated Resource Plan Update at p. 2 (May 1, 2018) ("Consistent with the findings from these studies, the 2017 IRP Update continues to assume no incremental selective catalytic reduction (SCR) emission-reduction systems will be needed to satisfy regional haze compliance obligations."); PacifiCorp Sur-reply at p. 8 ("[T]he fact that the 2017 IRP preferred portfolio does not include installation of SCRs at any coal plant does not mean that the company is not actively engaged with regulators related to the potential need for emission control equipment or the best approach to avoiding emission control investments.").

resource portfolio."[33] PacifiCorp also failed to identify any specific transactions with environmental equipment suppliers in its briefing. Because economic information about coal plants becomes stale over time, identifying specific ongoing or foreseeable future transactions is essential to proving that information derives independent economic value from remaining secret. Yet, based on the notion of purely hypothetical transactions, the ALJ found that PacifiCorp would be "disadvantaged" if the challenged information were disclosed.

Second, the ALJ found it "possible" that the "coal analysis could impact a transaction by leading a supplier to believe that a particular coal unit is more profitable to PacifiCorp than other units."[34] The ALJ provided two bases for this finding: a 2016 Commission order discussing fuel supply switching for Jim Bridger and PacifiCorp's unsupported assertion that coal suppliers might use PacifiCorp's "underlying economic assumptions and analysis (including coal cost assumptions)."[35] The ALJ's flawed reasoning conflated the detailed information contained in the coal analysis, which is not at issue here, and the high-level summary results provided in the PowerPoint presentation. But, contrary to the ALJ's apparent conclusion, nothing in the PowerPoint revealed PacifiCorp's "coal cost assumptions,"[36] as PacifiCorp itself acknowledged—"the company's forecasted coal prices themselves are not specifically identified in the PVRR(d) results."[37] Moreover, nothing in the ALJ ruling, much less in the record or in PacifiCorp's briefing, provided a reasoned basis for finding that coal suppliers would use the study's high-level results to disadvantage PacifiCorp; as before, PacifiCorp failed to identify any specific ongoing or near-term negotiations with coal suppliers. Instead, PacifiCorp merely

[33] LC 67, PacifiCorp's Compliance Filing, Unit-by-Unit Coal Studies Presentation at pp. at 2, 9 (June 29, 2018) ("Coal Analysis Presentation").
[34] ALJ Ruling at pp. 4–5.
[35] *Id.* at 4–5 & n.9.
[36] *Id.* at 4.
[37] PacifiCorp Sur-reply at p. 4.

claimed that it is "regularly engaged in regional coal supply [markets]" and that publicly disclosing the PVRR(d) results "could unfavorably influence pricing, terms, and conditions of those transactions," yet PacifiCorp never explained how or why.[38]

Under the Commission's general protective order such theoretical concerns cannot be used to prove a trade secret.[39] Yet, the ALJ ruling turned entirely on that basis—environmental equipment vendors and coal suppliers "*could*" use the challenged information to PacifiCorp's competitive disadvantage.[40] The ALJ's cursory analysis, which failed to address any specific redaction, did not support a conclusion that the challenged information "derive[d] independent economic value" from remaining secret.

The ALJ also failed to find that disclosing the challenged information would cause PacifiCorp "significant" harm, as required to prove a trade secret. A party seeking trade secret protection must "demonstrat[e] that disclosure will work a clearly defined and serious injury."[41] "Broad allegations of harm unsubstantiated by specific examples or articulated reasoning do not satisfy the good cause requirement. The harm must be significant, not a mere trifle."[42] Despite this high threshold, the ALJ simply found it "believable" PacifiCorp "could [be] disadvantaged" if the challenged information were disclosed.[43] At no point did the ALJ even suggest that PacifiCorp would suffer serious harm, nor did the ALJ identify any specific facts or well-articulated rationale that might support such a finding.[44]

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[38] PacifiCorp Sur-reply at p. 4; *see also* PacifiCorp Response at p. 7 ("Disclosure could disadvantage the company when it negotiates with other parties to purchase coal . . . .").
[39] General Protective Order No. 16-461 ¶ 9 ("Broad allegations unsubstantiated by specific facts are not sufficient.").
[40] ALJ Ruling at pp. 4–5 (emphasis added).
[41] *Pfizer Inc.*, 254 Or. App. at 162 (2012) (quoting *Citizens' Util. Bd.*, 128 Or. App. at 658).
[42] *Id.* (quoting *Citizens' Util. Bd.*, 128 Or. App. at 658).
[43] ALJ Ruling at pp. 4–5.
[44] *See id.*

The ALJ's failure to apply any standard whatsoever to PacifiCorp's unsupported assertions is most apparent when considering redaction 5 on slide 9, the first bullet. The information that PacifiCorp seeks to hide is a one-sentence summation that broadly characterizes the results of the coal analysis. Nothing in this high-level summary provides any identifying plant characteristics. There are no dollar sums, dates, plant names, or even locations. As such, there simply is no tenable basis for concluding that the information contained in the sentence could possibly influence the decision of a third party considering doing business with PacifiCorp, particularly given the "Caution!" warning immediately below the redaction, which is supported by an entire page of caveats and limitations. Yet, somehow, the ALJ concluded that this single sentence constituted trade secrets, the disclosure of which would cause significant harm to PacifiCorp.

In stark contrast to the ALJ's cursory analysis, adequately determining whether a party has proved a trade secret requires a detailed evaluation. For example, in *Pfizer Inc. v. Oregon Department of Justice*, Pfizer sought to prevent the Oregon Department of Justice ("DOJ") from revealing more than 100 confidential exhibits, claiming that exhibits constituted trade secrets because they contained sensitive marketing information.[45] Before ruling, the court reviewed each exhibit at issue and examined its "specific, underlying details."[46] Based on this meticulous exhibit-by-exhibit analysis, the court ruled that Pfizer had satisfied its burden of proof for some of the exhibits at issue.[47] Specifically, the court found that Pfizer's declarations had explained in detail the type of information at issue and the specific reasons the information qualified for trade

[45] 254 Or. App. at 146.
[46] *Id.* at 164–65.
[47] *Id.* at 164–67.

secret protection; DOJ, by contrast, had "failed to offer any factual submission in support of [its] bare assertions."[48]

The ALJ's ruling, which is completely divorced from any reasoned justification, cannot stand. PacifiCorp provided no more than "[b]road allegations unsubstantiated by specific facts"[49] to support its flimsy claims that the challenged information constituted trade secrets, yet the ALJ nonetheless allowed PacifiCorp to shield the study's high-level results from the public. The Commission, therefore, must review each contested redaction and make specific findings for each, resulting in an order directing PacifiCorp to remove the redactions from the PowerPoint.

B. The ALJ's Disregard for the Protective Order's Purposeful Standard Will Invite Companies to Over-Designate Information as Confidential.

By adopting PacifiCorp's broad and speculative assertions, the ALJ gave PacifiCorp and other utilities a free pass to shield from the public whatever information they choose. This result subverts the purpose and intent of the Commission's general protective order, which seeks to incentivize parties to act in good faith when designating information as confidential.

Before designating information as protected, a party must "reasonably determine[]" that the information falls within the scope of ORCP 36(C)(7) and is not publicly available.[50] The designating party "should make reasonable efforts to designate as Protected Information only the portions of the information covered by ORCP 36(C)(7)"[51] and "must make reasonable efforts to ensure that [the] information . . . continues to warrant protection."[52] Once challenged, the

[48] *Id.* at 162–63, 166.
[49] General Protective Order No. 16-461 ¶ 9.
[50] *Id.* ¶ 2.
[51] *Id.* ¶ 3.
[52] *Id.* ¶ 6.

designating party must prove that each of its designations is warranted based on specific facts and sound legal justifications.[53]

The ALJ's standardless ruling, which entirely disregarded this purposeful structure, gave companies a strong incentive to freely, and baselessly, designate information as confidential, confident that stakeholders and the public will lack meaningful recourse. The Commission, therefore, must issue an order that makes clear that, contrary to the ALJ's flawed reasoning, a designating party must prove based on specific well-established facts and sound legal analysis that information designated as confidential properly falls within the scope of ORCP 36(C)(7).

C. PacifiCorp Did Not Carry Its Burden of Proof.

As described, the plain language of the Commission's protective order required PacifiCorp to prove based on well-supported facts and well-reasoned legal analysis that each challenged redaction fell within the scope of ORCP 36(C)(7).[54] The designating party "must identify the factual and legal basis of how the challenged information is protected" under Oregon law.[55] "Broad allegations unsubstantiated by specific facts are not sufficient."[56]

PacifiCorp completely disregarded that standard. At no point did PacifiCorp make any effort to address each specific redaction, nor did PacifiCorp make any effort to support the challenged designations with specific facts or well-reasoned legal justifications. Rather, PacifiCorp simply asserted that in the competitive markets in which the company engages "even knowledge of preliminary economic analysis of an individual coal unit will adversely affect the

[53] *Id.* ¶¶ 7–10.
[54] *Id.* ¶¶ 7, 9 ("[T]he designating party bears the burden of showing that the challenged redaction is covered by ORCP 36(C)(7).").
[55] *Id.* ¶ 9.
[56] *Id.*

company's bargaining position" because a counterparty could "misinterpret[] the results."[57] PacifiCorp further claimed, without support, that disclosing PVRR(d) results "could adversely impact [regional wholesale power markets] if participants are led to believe that early retirements will occur" because "[t]here could be market repercussions on prices, liquidity and depth."[58] PacifiCorp failed to offer any specific facts to support these or other flimsy claims, nor did PacifiCorp provide a well-reasoned legal basis justifying each redaction. The absence of that analysis violated the protective order's plain requirements.

As Sierra Club has shown, none of the challenged redactions qualified for protection under ORCP 36(C)(7). Again, ORCP 36(C)(7) protects confidential research, development, or commercial information, as well as trade secrets—*i.e.*, "information, including a drawing, cost data, customer list, formula, pattern, compilation, program, device, method, technique, or process that . . . [d]erives independent economic value" by remaining secret and for which efforts are made to maintain its secrecy.[59] To prove that information constitutes a trade secret, the designating party must "demonstrat[e] that disclosure will work a clearly defined and serious injury" based on evidence of "specific examples" and "articulated reasoning."[60]

1. Redaction 1: Slide 5, PVRR(d) Results

Redaction 1 shields the "present value revenue requirement differential" ("PVRR(d)") results of retiring each of PacifiCorp's coal-burning units in 2022. To prove that these results constituted trade secrets, PacifiCorp had to prove based on specific, well-supported examples that these high-level results derived independent economic value from remaining secret and that disclosing the values would cause PacifiCorp serious injury.

[57] PacifiCorp Sur-reply at p. 4; *see also* PacifiCorp Response at p. 7.
[58] PacifiCorp Sur-reply at p. 7; *see also* PacifiCorp Response at p. 7.
[59] Or. Rev. Stat. § 646.461(4).
[60] *Pfizer*, 254 Or. App. at 162.

PVRR(d), however, is not the type of information that could be used against PacifiCorp to cause the company serious injury. When applied to a coal plant, PVRR(d) reveals whether the continued operation of the plant is in the best interest of customers based on a modeling analysis that looks at two different scenarios, a "base case" and a "test case." The base case considers the total cost of operating a utility system over an extended period of time, assuming business as usual. The test case changes a variable or assumption—in this case, the expected life of a coal plant—and then runs the model over the same period. A positive PVRR(d) result generally indicates that maintaining the plant is a customer benefit, while a negative PVRR(d) result indicates that customers may realize a benefit through the retirement of the plant. PVRR(d) thus, is not contract price, tax basis or business plan, nor does it reveal utility shareholder value or any specific details about a particular unit. Though PVRR(d) is helpful in long-term utility planning, the value is not used in day-to-day transactions.

PacifiCorp presented no specific evidence that would support a finding that disclosing the PVRR(d) results would cause the company serious harm or that the values derived independent economic value from remaining secret. Instead, PacifiCorp admitted in the coal analysis that the company is not basing any current decisions on these particular PVRR(d) results: "results from these studies . . . provide limited insight into a least-cost, least-risk resource portfolio," and "no specific resource decisions are being made at this time."[61] Because the Company has disclaimed the PVRR(d) results and is not using them to support specific resource decisions, the results cannot reasonably be said to provide any economic value to any other party. Rather, such economic value could only be realized given the existence of four circumstances: (1) the company supported the results; (2) the results could be expected to drive specific actions; (3) the

[61] Coal Analysis Presentation at pp. 2, 9.

results were not otherwise readily discernable; and (4) the results could be expected to provide a benefit to competitors or vendors at the expense of the company. But, PacifiCorp's own statements explicitly negate the existence of the first two circumstances.

Moreover, contrary to the Company's claims, PacifiCorp has disclosed information very similar to the PVRR(d) results. In the 2017 IRP, PacifiCorp publicly disclosed draft PVRR(d) results for two coal-burning units, Naughton 3 and Craig 1: systems costs, PacifiCorp revealed, "are reduced when Naughton 3 and Craig 1 are assumed to retire instead of converting to natural gas" in 2017 and 2025, respectively.[62] Similarly, in the 2013 IRP, PacifiCorp publicly disclosed which coal-burning power plants would be uneconomic to operate under different assumed futures for gas and carbon regulations.[63] Yet, PacifiCorp now asks the Commission to believe that disclosure of very similar PVRR(d) results would cause the Company serious injury.

Other investor-owned utilities regularly disclose results much like PVRR(d) for their coal-burning units. Earlier this year, for example, NV Energy filed an update to its "life span analysis" for the North Valmy Generating Station.[64] The analysis provided a table that estimated the costs of operating the plant over 5-, 10-, 20-, and 30-year periods. The table identified retiring the plant in 2019 and replacing it with solar energy as the least-cost option, resulting in a savings of about $232 million over a 20-year period[65]—*i.e.*, the table, in effect, provided the PVRR(d) of replacing the North Valmy Generating Station in 2019 with solar energy. Similarly in 2013, Public Service New Mexico ("PNM") filed an application to install environmental controls at San Juan Generating Station units 1 and 4 and close units 2 and 3—all of which

[62] PacifiCorp, 2017 Integrated Res. Plan Pub. Input Meeting 8 at p. 20 (Mar. 2–3, 2017).
[63] PacifiCorp, 2013 Integrated Res. Plan Vol. 2 at pp. 162–80 (Apr. 30, 2013).
[64] Lifespan Analysis Process, Sierra Pacific Power Co. d/b/a NV Energy's Triennial Integrated Res. Plan; Valmy LSAP Compliances (No. 16-07001) (Nevada Pub. Util. Comm'n Feb. 16, 2018).
[65] *Id.* at 25.

receive coal only from the San Juan mine. PNM's public filings included estimates of the economics, measured in net present value, of the units over a 20-year period for various scenarios, including a scenario in which all four units were retrofit with selective catalytic reduction ("SCR")—valued at $7,640 million, and a scenario in which all four units were shut down—valued at $7,235 million.[66] Subtracting these two numbers provided a result similar to PVRR(d): installing SCRs on all four units rather than shutting the units down would produce a net benefit to ratepayers of about $405 million. PacifiCorp's peer utilities made such public disclosures while making concrete decisions about the resources at issue. Yet, PacifiCorp, which has stated that it will not use the PVRR(d) results for such purposes, nonetheless has maintained that it would be harmed if the PVRR(d) results were publicly disclosed.

PacifiCorp failed to provide any reasoned basis for shielding redaction 1 from the public.

2. Redactions 2 and 3: Slide 5, Jim Bridger Unit 1 and 2 Without SCR

Redactions 2 and 3 provide information about the economics of not installing SCRs on units 1 and 2 in a footnote to the PVRR(d) result for PacifiCorp's four-unit Jim Bridger coal plant. According to PacifiCorp, disclosing the information "would place the company at a competitive disadvantage in negotiations with regulators and counterparties regarding the need for and alternatives to SCRs for these units."[67] The results, PacifiCorp asserted, could be used by regulators in ongoing rulemaking proceedings and in "future negotiations with state and federal agencies, partner plant owners, and other vested stakeholders."[68] Yet, PacifiCorp's own statements discredit these assertions: the Company announced that it has no plans to install the

[66] Supp. Test. of Patrick O'Connell at p. 5, Appl. of Pub. Serv. Co. of New Mexico (No. 13-00390-UT) (New Mexico Pub. Regulation Comm'n July 15, 2014).
[67] PacifiCorp Sur-reply at p. 8.
[68] *Id.* at 9 (emphasis omitted).

SCR retrofits on units 1 and 2 in the foreseeable future.[69] Moreover, the redacted results for Jim Bridger units 1 and 2 do not reveal PacifiCorp's potential cost of compliance with environmental regulations. Instead, the results represent an aggregate of multiple costs, including, for example, contractor costs and operational costs. Such aggregated information provides little meaningful information to third parties negotiating with PacifiCorp. But, it does provide PacifiCorp customers and the public with important baseline information about the economic viability of PacifiCorp's coal-burning units.

3. Redaction 4: Slide 7, Annual Increase/(Decrease) in System Cost for Jim Bridger 1

Redaction 4 is an example chart of annual system costs and benefits for Jim Bridger 1. Though this type of information has public interest value, Sierra Club perceives no real need at this time for this depth of information. Accordingly, as in the Washington proceedings, Sierra Club is not asking the Commission to review the propriety of this redaction.

4. Redaction 5: Slide 9, Conclusions and Next Steps, First Bullet

The redacted information is a one-sentence summation of the results of the coal analysis. This nonspecific summary does not contain any trade secrets because there are no identifying plant characteristics, no dollar sums, no dates, plant names, or even locations. As such, PacifiCorp cannot prove that the sentence contains any "drawing, cost data, customer list, formula, pattern, compilation, program, device, method, technique, or process that . . . [d]erives independent economic value" by remaining secret.[70] There simply is no specific information in the sentence that could influence the decision of a third party considering doing business with

[69] PacifiCorp's 2017 Integrated Resource Plan Update at p. 2 (May 1, 2018) ("Consistent with the findings from these studies, the 2017 IRP Update continues to assume no incremental selective catalytic reduction (SCR) emission-reduction systems will be needed to satisfy regional haze compliance obligations.").
[70] Or. Rev. Stat. § 646.461(4).

PacifiCorp. This is especially true given the disclaimers repeated throughout the PowerPoint, including the "Caution!" disclaimer immediately below the sentence, which is supported by an entire page of caveats and limitations.

PacifiCorp's efforts to shield this high-level summary from the public is a perfect example of how the Company has repeatedly abused the Commission's confidentiality policies. In 2015, an ALJ found that PacifiCorp had improperly designated information as confidential that had already been made publicly available.[71] The ALJ specifically directed PacifiCorp "to exercise care in future designations of confidentiality, and to limit those designations to material that qualifies as confidential material under our rules. In the future, a company's repeated failure to carefully designate confidential material may well rise to the level of violating the good faith requirement in our rules."[72] Here, despite the ALJ's clear warning in 2015, PacifiCorp again seeks to protect high-level summary information as confidential without any basis for doing so.

5. Redaction 6: Slide 9, Conclusions and Next Steps, Second Bullet, Cost Effectiveness of Jim Bridger Units 1 and 2

This redaction conveys the same type of information as shown in the general PVRR(d) results in Redaction 1; specifically, the redaction conceals the cost-effectiveness of retiring Jim Bridger units 1 and 2 in 2022. PacifiCorp never addressed this redaction with any specificity, thus the basis for withholding the designated information is unclear. As explained above, PVRR(d) results are not used in day-to-day transactions, nor does their disclosure otherwise

[71] LC 57, Ruling at p. 2 (Mar. 3, 2015); LC 57, Ruling at pp. 1–2 (Jan. 9, 2015). The challenged information included the results of economic analyses, including PVRR(d), related to PacifiCorp's Craig and Hayden power plants. LC 57, PacifiCorp's Resp. to Sierra Club's Mot. Challenging the Company's Confidential Designation at p. 5 (Sept. 5, 2014) (broadly claiming that publicly disclosing PVRR(d) would harm the company).
[72] LC 57, Ruling at p. 3 (Mar. 3, 2015).

threaten serious economic harm. As with Redaction 1, Redaction 6 does not qualify for protection as a trade secret.

Finally, though PacifiCorp failed to carry its burden of proof, Sierra Club attaches as Exhibit C the declaration of Dr. Jeremy Fisher, which Sierra Club submitted in Public Records Act litigation in Washington before a Thurston County, state superior court. Dr. Fisher's declaration underscored the specious nature of PacifiCorp's unsupported claims that publicly disclosing the challenged information would cause PacifiCorp cognizable harm. As Dr. Fisher testified, for example, investor-owned utilities across the country regularly disclose to the public information identical to PVRR(d), and they have done so while actively using the information to make resource decisions.[73] Though the Washington superior court ultimately ruled that Sierra Club's public records request was governed by a Washington Utility and Transportation Commission-specific statute, and thus was not within the scope of the Washington Public Records Act, the court nevertheless found—based on an analysis of each redaction—that the public interest strongly favored disclosure and that PacifiCorp would not suffer substantial and irreparable harm if any of the withheld information were revealed.[74]

Because PacifiCorp has failed to meet its burden of proof, the Commission must issue an order directing PacifiCorp to publicly disclose the redacted information in the June 28, 2018 PowerPoint presentation.

[73] Decl. of Jeremy Fisher in Supp. of Def. Sierra Club's Br. Opposing PacifiCorp's Mot. for Final Declaratory Relief and Permanent Injunction ¶¶ 11–27 (Aug. 24, 2018) (attached as Exhibit C).
[74] *PacifiCorp v. State Utilities and Transp. Comm'n*, No. 18-2-03640-34 (Wash. Super. Ct. Sept. 7, 2018).

D. The Commission's Rule Governing Protective Orders Governs This Request for Reconsideration.

Commission rules allow parties to seek rehearing before the Commission of "[d]ecisions by the ALJ regarding protective orders": "Decisions by the ALJ regarding protective orders may be appealed to the Commission under OAR 860-001-0720."[75] Under Oregon Administrative Rule 860-001-0720, a party may seek Commission review by filing an application within 60 days of the decision at issue.[76] Nothing in that rule, or otherwise, requires a party to first seek an ALJ's permission. Rather, Commission rules explicitly make certification optional: a party "*may* request that the ALJ certify an ALJ's written or oral ruling for the Commission's consideration."[77] By contrast, and as the next sentence provides, should a party elect to seek certification, it "*must* request certification . . . within 15 days of the date of service of the ruling or date of the oral ruling."[78] The use of "may" in the first sentence and the use of "must" in the second sentence is purposeful—the structure clearly directs that if a party *chooses* to request certification, it *must* do so within 15 days.

Here, as required by the Commission rules, Sierra Club has timely filed within 60 days a request for review of the ALJ's August 7, 2018 ruling, a decision "regarding [a] protective order" for which review is explicitly available before the Commission.[79] Sierra Club, therefore, has properly applied to the Commission for review.

Sierra Club understands that this is a unique situation. The Commission rarely orders a utility to produce and present an analytical study at the end of an IRP proceeding. The

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[75] Or. Admin. R. 860-001-0080(1).
[76] *Id.* 860-001-0720(1).
[77] *Id.* 860-001-0110(1) (emphasis added).
[78] *Id.* (emphasis added).
[79] *Id.* 860-001-0080(1) ("Decisions by the ALJ regarding protective orders may be appealed to the Commission under OAR 860-001-0720."), 860-001-0720(1) (party has 60 days to apply for reconsideration).

Commission's decision to do so here, however, supports a conclusion that the Commission, not an ALJ, must ensure that PacifiCorp has fully complied with the final order in LC 67, including whether PacifiCorp improperly shielded all of the high-level results of the coal analysis from the public. Specifically, the Commission ordered: "PacifiCorp is directed to perform the system optimizer runs for each coal unit and a base case and provide the results to the parties in LC 67 by June 30, 2018, and Staff to update the Commission prior to June of any delays or difficulties."[80] "A Commissioner workshop will be scheduled to review this analysis once it is complete."[81] No stakeholder in LC 67 ever imagined that the high-level results of this Commission-ordered study would be kept confidential and not disclosed to the public.

The Commission's obligation to review the propriety of PacifiCorp's redactions in this instance is different than the type of authority the Commission has delegated to ALJs. An ALJ may take action consistent with twelve enumerated duties, each of which allows an ALJ to control the conduct of the ongoing proceedings before it.[82] An ALJ, for example, may (1) regulate how a proceeding progresses, (2) make evidentiary rulings, (3) supervise and control discovery, (4) issue a protective order to limit disclosure of confidential information, (5) certify a question to the Commission for consideration and disposition, and (6) decide procedural matters; but it may not "grant . . . contested motions to dismiss or other contested motions that involve final determination of the proceedings."[83]

Here, the coal analysis was not produced during the course of an ongoing proceeding before the ALJ; as such, this request for reconsideration will not interfere with the ALJ's ability to control, and ensure the efficiency of, its proceedings. Rather, in light of evidence that at least

[80] LC 67, Order 18-138 at p. 13.
[81] *Id.* at 12.
[82] Or. Admin. R. 860-001-0090(1).
[83] *Id.*

some of PacifiCorp's coal plants might not be economic, the Commission ordered PacifiCorp to prepare the coal analysis at the conclusion of the 2017 IRP. The Commission explicitly retained control over that process, including the study's development[84] and its subsequent review at a Commission-led workshop.[85] In this context, the propriety of the redactions falls squarely within the Commission's purview.

Therefore, Sierra Club's timely application for rehearing is properly before the Commission.

IV. CONCLUSION

Based on the above, Sierra Club respectfully requests that the Commission issue an order directing PacifiCorp to publicly disclose the information shielded by each of the contested redactions in the June 28, 2018 PowerPoint presentation. Sierra Club further requests that the Commission clarify that, under the Commission's general protective order, information may only be designated as confidential if the designating party proves based on specific well-established and sound legal analysis that the information warrants protection under Oregon law.

Respectfully submitted this 28th day of September, 2018.

/s/ Gloria D. Smith

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Attorney for Sierra Club

[84] LC 67, Order 18-138 at p. 13 (directing PacifiCorp "to update the Commission prior to June of any delays or difficulties" in completing Commission-ordered coal analysis).
[85] *Id.* at 12 ("A Commissioner workshop will be scheduled to review this analysis once it is complete.").

Exhibit A

PACIFIC POWER
A DIVISION OF PACIFICORP

825 NE Multnomah, Suite 2000
Portland, Oregon 97232

June 29, 2018

VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY

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

Attn: Filing Center

RE: LC 67—PacifiCorp's Compliance Filing

PacifiCorp d/b/a Pacific Power provides the enclosed information in compliance with Order No. 18-138.

On April 27, 2018, the Public Utility Commission of Oregon (Commission) issued Order No. 18-138 in docket LC 67 (Order), PacifiCorp's 2017 Integrated Resource Plan (IRP). As part of the Order, the Commission directed PacifiCorp to "perform 25 system optimizer (SO) runs, one for each coal unit and a base case" and provide the results to the parties in LC 67 by June 30, 2018.[1] Consistent with that directive, PacifiCorp is filing its unit-by-unit coal analysis (Coal Analysis). PacifiCorp performed 23 system optimizer runs that included a reference case and a run for each coal unit that does not have a retirement date earlier than December 31, 2022 in the reference case; Naughton Unit 3 and Cholla Unit 4 have earlier retirement date assumptions of January 30, 2019 and December 31, 2020 in the reference case and were not included in the Coal Analysis. PacifiCorp also presented this analysis to stakeholders at a confidential session of its June 28, 2018 2019 IRP public input meeting, including parties in both docket LC 67 and docket LC 70.

Per the Order, PacifiCorp addressed the three required components of the Coal Analysis. The first two items, a table of the difference in present-value revenue requirement resulting from early retirement of each unit, and a list of coal units that would free up transmission along the path from the proposed Wyoming wind projects if retired, are addressed in the confidential presentation included in this filing. The third item, an itemized list of coal unit retirement cost assumptions used in each SO run, can be found in the confidential workpapers for each unit.

As explained in PacifiCorp's comments in LC 67,[2] PacifiCorp cautions that the results of this Coal Analysis do not provide a complete, portfolio-level view of the economics of PacifiCorp's coal portfolio. The simplistic nature of the Coal Analysis provides limited insight into a least-cost, least-risk resource portfolio but can inform further work with stakeholders in the 2019 IRP process with regard to PacifiCorp's economic modeling of its coal fleet.

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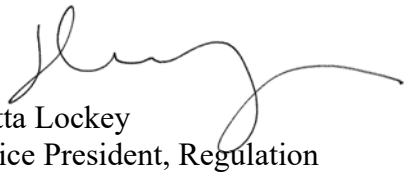
[1] *In the Matter of PacifiCorp d/b/a Pacific Power, 2017 Integrated Resource Plan,* Docket No. LC 67, Order No. 18-138 at 12 (Apr. 27, 2018).
[2] See PacifiCorp's letter filed June 25, 2018, in docket LC 67.

PacifiCorp looks forward to additional engagement with stakeholders during the 2019 IRP public input process.

Please direct any questions on this filing to Natasha Siores, Manager, Regulatory Affairs, at (503) 813-6583.

Sincerely,



Etta Lockey
Vice President, Regulation

Enclosures

PacifiCorp

Unit-by-Unit Coal Studies Presentation

2019 IRP Public Input Meeting
June 28, 2018

Unit-by-Unit Coal Studies

Confidential Workshop

2019 IRP Public Input Meeting - June 28, 2018




PACIFICORP
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OPUC Coal Study Requirement

- In its 2017 IRP acknowledgement order (Order No. 18-138), the Public Utility Commission of Oregon (OPUC) established requirements for additional coal-unit analysis, to be provided by June 30, 2018, as set forth below.
  - PacifiCorp agrees to perform 25 System Optimizer (SO) model runs, one for each coal unit and a base case.
  - PacifiCorp agrees to summarize results and provide:
    - a table of the difference in present-value revenue requirement (PVRR) resulting from the early retirement of each unit;
    - an itemized list of coal unit retirement cost assumptions used in each SO model run; and
    - a list of coal units that would free up transmission along the path from the proposed Wyoming wind projects if retired.
- These requirements are consistent with OPUC staff data request 65, which was submitted to PacifiCorp during the 2017 IRP acknowledgement proceeding.
  - This data request specified that PacifiCorp should assume a December 2022 retirement date for each early-retirement run.
  - The data request also specified that PacifiCorp should assume Reference Case Regional Haze assumptions (from the 2017 IRP) that are modified to exclude incremental selective catalytic reduction costs for Jim Bridger, Hunter, and Huntington in the base case.
  - In agreeing to perform this analysis, PacifiCorp explained that:
    - the studies will not provide a complete, portfolio-level view of the economics of the company's coal portfolio;
    - the structure of the analysis requested by staff would not capture the system-cost impact that would result from retiring more than one facility; and
    - results from these studies would therefore provide limited insight into a least-cost, least-risk resource portfolio.
- Recognizing PacifiCorp's concerns outlined above, the Utah Public Service Commission in its 2017 IRP acknowledgment order in Docket No. 17-035-16 states "we find that additional analysis will be helpful only if it supplements, rather than replaces, the type of coal plant modeling PacifiCorp utilized for its 2017 IRP."

System Optimizer

- The System Optimizer (SO) model develops resource portfolios with sufficient capacity to achieve a target planning-reserve margin (currently set at 13-percent).
- The SO model is configured to select from a broad range of resource alternatives (*i.e.*, front-office transactions or "FOTs", demand-side management, direct-load control, gas-fired generation, renewable generation, storage, etc.) that minimize present-value revenue requirement (PVRR).
- The SO model performs time-of-day, least-cost dispatch of existing and prospective resource alternatives for a defined set of system conditions (*i.e.*, resource attributes, transmission, load, market prices, environmental policies, etc.).
- The SO model does not consider in its dispatch:
  - unit-commitment logic, which captures unit-specific operational limitations;
  - operating reserve obligations (spin, non-spin, regulating);
  - granular representation of intra-day system conditions; and
  - volatility and uncertainty in key system parameters (*i.e.*, load, market prices, hydro generation, thermal-unit outages)
- The items identified above can be better assessed using the Planning and Risk model (PaR).
- PaR, configured with resource portfolios established by the SO model, is traditionally used in the IRP to evaluate the relative cost and risk among different resource portfolios under different system conditions.

Methodology

Step	Measure	Description

A	2017-2036 System PVRR (x1)	Base Case (One SO Model Run)
		• 2017 IRP Update with following modifications
		  • Removal of 161 MW Uinta Wind Project (2021-2036)
		  • 2017 IRP Reference Case Regional Haze assumptions
		  • March 2018 official forward price curve with medium CO_2 price inputs
		  • Results are calculated with and without incremental selective catalytic reduction costs for Jim Bridger 1 and 2

B	2017-2036 System PVRR (x22)	Retirement Cases (22 SO Model Runs)
		• 2017 IRP Update with following modifications
		  • Removal of 161 MW Uinta Wind Project (2021-2036)
		  • 2017 IRP Reference Case Regional Haze assumptions
		  • March 2018 official forward price curve with medium CO_2 price inputs
		  • No incremental selective catalytic reduction costs
		  • Each run assumes the retirement of a single coal unit at the end of 2022

C	2017-2036 System PVRR(d) (x22)	Present-Value Revenue Requirement Differential (PVRR(d)) • Change in system PVRR between the Base Case (A) and each of 22 Retirement Cases (B)

- High-level estimates of transmission reinforcement costs are applied as an adder to the results from step C.
- Each SO model run reflects unique coal-unit operating cost assumptions consistent with assumed retirement dates (*i.e.*, fuel cost, run-rate operating costs, decommissioning costs).
- PacifiCorp did not perform SO model runs in step B for Naughton Unit 3 and Cholla Unit 4, which are already assumed to retire before 2022.

REDACTED

PVRR(d) Results

Coal Unit	PacifiCorp Share (MW)	PacifiCorp Percentage Share	State	Reg. Haze Ref. Case Retirement Year	PVRR(d) (Benefit)/Cost of 2022 Retirement ($ million)
Colstrip 3	74	10%	MT	2046	[redacted]
Colstrip 4	74	10%	MT	2046	
Craig 1	82	19%	CO	2025	
Craig 2	83	19%	CO	2034	
Dave Johnston 1	106	100%	WY	2027	
Dave Johnston 2	106	100%	WY	2027	
Dave Johnston 3	220	100%	WY	2027	
Dave Johnston 4	330	100%	WY	2027	
Hayden 1	44	24%	CO	2030	
Hayden 2	33	13%	CO	2030	
Hunter 1	418	94%	UT	2042	
Hunter 2	269	60%	UT	2042	
Hunter 3	471	100%	UT	2042	
Huntington 1	459	100%	UT	2036	
Huntington 2	450	100%	UT	2036	
Jim Bridger 1	354	67%	WY	2037	
Jim Bridger 2	359	67%	WY	2037	
Jim Bridger 3	349	67%	WY	2037	
Jim Bridger 4	353	67%	WY	2037	
Naughton 1	156	100%	WY	2029	
Naughton 2	201	100%	WY	2029	
Wyodak	268	80%	WY	2039	

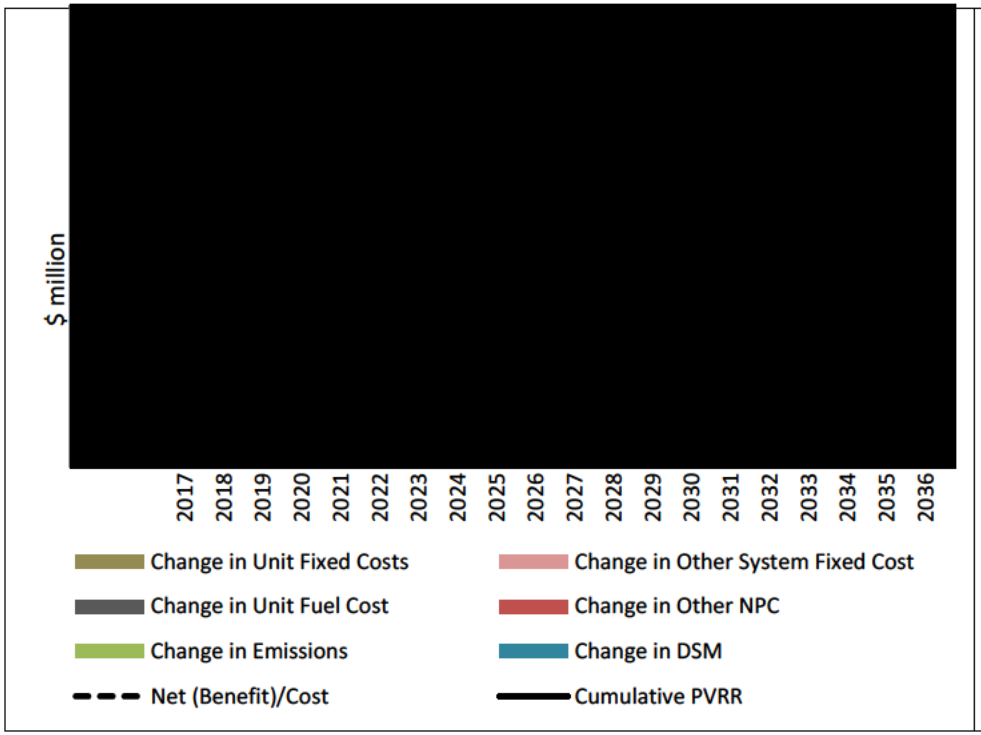
The results for Jim Bridger 1 and 2 reflect SCR costs in the base case. Excluding these costs as specified in OPUC staff data request 65 would show a [redacted] for an assumed 2022 retirement of Jim Bridger 1 and a [redacted] for an assumed 2022 retirement of Jim Bridger 2. Results for Colstrip do not reflect unquantified equipment removal costs that would be applicable to the assumed 2022 retirement date.

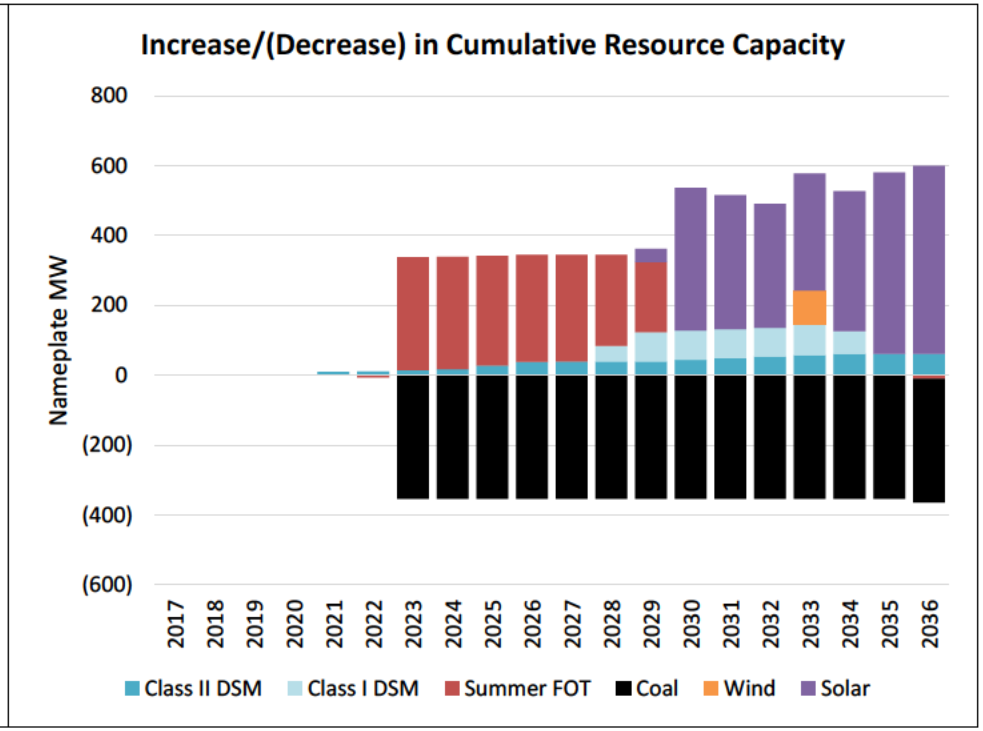
Coal Unit Retirement Assumptions

- Coal unit retirement cost assumptions are included with the confidential work papers supporting the modeling results summarized on the previous slide.
  - Run-rate cost-and-performance assumptions for each coal unit specific to each SO model run.
  - SO model results summarizing changes in the resource portfolio and annual system costs by year.
- Confidential work papers will be provided to interested stakeholders who either sign a non-disclosure agreement or under applicable confidentiality rules in jurisdictions where a docket has been opened.

REDACTED

Example of Data in Confidential Work Papers (Jim Bridger 1)





- Replacement resources (positive values in chart at top right) is initially comprised of incremental FOTs and DSM. In the 2029-2030 time frame, additional solar resources are added. Wind capacity is accelerated by one year (from 2034 to 2033) and Class 1 DSM direct-load control capacity is accelerated by seven years (from 2035 to 2028).
- System costs are presented without SCR costs in the base case.
  - Reduced system costs (negative values in the chart at top left) reflect reduced run-rate operating costs and fuel costs from Jim Bridger 1 beginning 2023 and reduced emissions costs beginning 2030 (when CO_2 prices are first assumed).
  - Increased system costs (positive values in the chart at top left) reflect increased net-power costs, increased system-fixed costs (fixed costs for new replacement resources and decommissioning costs), and increased DSM costs consistent with increased DSM in the resource portfolio.
  - The dashed black line is the net of the annual increase and decrease in costs (net of the bars in the chart), and the solid black line represents the cumulative PVRR(d) (the ending value in 2036 aligns with the results summarized in the PVRR(d) results table presented earlier).

Coal Units in Constrained Area of Wyoming

Coal Unit	PacifiCorp Share (MW)
Wyodak	268
Dave Johnston 1	106
Dave Johnston 2	106
Dave Johnston 3	220
Dave Johnston 4	330
Total	1,030

- Resource capacity in the constrained area of PacifiCorp's transmission system in eastern Wyoming exceeds transfer capability without the proposed new wind and transmission without incremental coal unit retirements.
- The proposed new wind capacity in eastern Wyoming totals 1,150 MW and the Aeolus-to-Bridger/Anticline transmission line is expected to add approximately 950 MW of incremental transfer capability—resource capacity will continue to exceed transfer capability without any incremental early retirements.
- With the retirement of any single unit listed above, resource capacity would continue to exceed transfer capability.
- Generally the retirement of one unit anywhere in the PacifiCorp system does not result in a major impact to system reliability.
- As additional units are retired, the risk of impacts to system reliability increases and more in-depth studies will be necessary to determine possible transmission mitigation, which would be completed in the transmission service request and generator interconnection request queues at the time a definitive retirement decision is made.
- These studies may show a need for additional system support with new generation that can provide rotational inertia, or other devices to provide required system support.
- It is important to note that coal units provide rotational inertia that enables frequency control and power system stability, which can influence the amount of transfer capability that can be freed up upon retirement of a generating unit.

Conclusions and Next Steps

- Relative to the Reference Case from the 2017 IRP, the SO model reports lower system costs with an assumed 2022 early retirement date for [redacted]
- Caution! The studies do not capture the impact on system costs if coal unit retirements are stacked—PVRR(d) results for each unit are not additive and system impacts are not linear.
  - Before accounting for operational impacts that are not captured by the SO model, an assumed retirement of Jim Bridger 1 ***and*** Jim Bridger 2 in 2022 [redacted] (driven by costs shifts to Jim Bridger 3 and Jim Bridger 4 and accelerated need for new generating capacity).
- The studies do not capture the operational and other system-reliability impacts associated with:
  - meeting balancing area reserve requirements;
  - meeting balancing area frequency response requirements;
  - reduced flexibility between balancing areas (*i.e.*, Jim Bridger provides energy and other reliability services in both the east and west balancing areas); and
  - reduced ability to participate in the energy-imbalance market due to a reduction in flexible generation and inability to pass the flex ramp sufficiency test.
- The studies do not capture system planning assumptions being updated for the 2019 IRP (*i.e.*, load forecasts, recent resource additions, planning-reserve margins, capacity-contribution values, conservation-potential assessment, supply-side resources, *etc.*)
- The studies do not analyze scenario-risk and stochastic-risk analysis.
- PacifiCorp will use these results to prioritize additional early retirement analysis for the 2019 IRP—no specific resource decisions are being made at this time.
  - PacifiCorp will incorporate 2019 IRP assumption updates as available and expand the analyses for evaluation using PaR.
  - PacifiCorp will develop "stacked" early retirement scenarios using the SO model and PaR and supplement these results with operational and system-reliability assessments.
  - Updates will be provided to stakeholders during the 2019 IRP public-input process as results become available.

CERTIFICATE OF SERVICE

I certify that I electronically filed a true and correct copy of PacifiCorp's **Compliance Filing** on the parties listed below via email and overnight delivery in compliance with OAR 860-001-0180.

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Dated June 29, 2018.

Jennifer Angell
Supervisor, Regulatory Operations

CERTIFICATE OF SERVICE

I certify that I filed a true and correct copy of PacifiCorp's **Compliance Filing** filed in docket LC 67 on the parties listed below via electronic mail and overnight delivery in compliance with OAR 860-001-0180.

Service List
LC 70

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Dated June 29, 2018.

Jennifer Angell
Supervisor, Regulatory Operations

Exhibit B

ORDER NO. 16 461

ENTERED DEC 05 2016

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 67

In the Matter of PACIFICORP, dba PACIFIC POWER, 2017 Integrated Resource Plan.	GENERAL PROTECTIVE ORDER

DISPOSITION: MOTION FOR PROTECTIVE ORDER GRANTED

On December 5, 2016, PacifiCorp, dba Pacific Power, filed a motion for a general protective order to govern the acquisition and use of protected information produced or used in these proceedings. PacifiCorp states that the order is needed to protect certain information that falls within the scope of ORCP 36(C)(7). Specifically, PacifiCorp states that commercially sensitive and confidential business information related to the company's long-term resource planning is protected. PacifiCorp will be holding workshops to discuss proprietary cost data and models, commercially sensitive pricing information, and market analyses and business projections. PacifiCorp states it will be exposed to competitive injury if it is forced to make unrestricted disclosure of its confidential business information.

I find that good cause exists to issue a general protective order, which is attached as Appendix A. A party may appeal this order to the Commission under OAR 860-001-0110.

ORDER

IT IS ORDERED that the general protective order, attached as Appendix A, is adopted.

Made, entered, and effective on DEC 05 2016.

Michael Grant
Chief Administrative Law Judge

GENERAL PROTECTIVE ORDER
DOCKET NO. LC 67

Scope of this Order:

1. This order governs the acquisition and use of Protected Information produced or used by any party to these proceedings.

Designation of Protected Information:

2. Any party may designate as Protected Information any information the party reasonably determines:

(a) Falls within the scope of ORCP 36(C)(7) (a trade secret or other confidential research, development, or commercial information); and
(b) Is not publically available.

3. To designate information as Protected Information, a party must place the following legend on the material:

PROTECTED INFORMATION
SUBJECT TO GENERAL PROTECTIVE ORDER

The party should make reasonable efforts to designate as Protected Information only the portions of the information covered by ORCP 36(C)(7).

4. Each page of a document containing Protected Information filed with the Commission or provided to Qualified Persons under this order must be printed on yellow paper and placed in a sealed envelope or other appropriate container. *Only the portions of a document that fall within ORCP 36(C)(7) may be placed in the envelope/container.* The envelope/container must bear the legend:

THIS ENVELOPE IS SEALED UNDER ORDER NO. _____
AND CONTAINS PROTECTED INFORMATION. THE INFORMATION MAY BE SHOWN ONLY TO QUALIFIED PERSONS AS DEFINED IN THE ORDER.

5. A party may designate as Protected Information any information previously provided by giving written notice to the Commission and other parties. Parties in possession of newly designated Protected Information must make reasonable efforts to ensure that all copies of the material containing the information bear the above legend if requested by the designating party.

6. A designating party must make reasonable efforts to ensure that information designated as Protected Information continues to warrant protection under this order. If designated information becomes publically available or no longer falls within the scope

of ORCP 36(C)(7), the designating party should make reasonable efforts to remove the protected designation and provide written notice to the Commission and other parties.

Challenge to Designation of Information as Protected:

7. A party may informally challenge any designation of Protected Information by notifying the designating party. Once notified, the designating party bears the burden of showing that the challenged information is covered by ORCP 36(C)(7). Any party may request that the ALJ hold a conference to help resolve disputes about proper designation.

8. If the dispute cannot be resolved informally, the challenging party may file a written objection with the ALJ. The objection need only identify the information in dispute and certify that reasonable efforts to achieve informal resolution have failed.

9. Within five business days of service of the objection, the designating party must either remove the protected designation or file a written response. A written response must identify the factual and legal basis of how the challenged information is protected under the Oregon Public Records Act, ORS 192.410 *et seq.*, or the Uniform Trade Secrets Act, ORS 646.461(4). Broad allegations unsubstantiated by specific facts are not sufficient. If the designating party does not timely respond to the objection, the Commission will remove the protected designation from the challenged information.

10. The challenging party may file a written reply to any response within five business days of service of an objection. The designating party may file a sur-reply within three business days of service of a response. The ALJ will make all reasonable efforts to resolve the matter within 10 business days of service of the last filing.

Access to Protected Information:

11. Only Qualified Persons may access Protected Information designated by another party under this Protective Order. Persons automatically bound by this protective order and qualified to access Protected Information are:

a. Commission employees; and
b. Assistant Attorneys General assigned to represent the Commission.

12. Persons qualified upon a party signing the Consent to be Bound section of Appendix B are:

a. Counsel for the party;
b. Any person employed directly by counsel of record; and
c. An employee of the Regulatory Division at the Citizens' Utility Board of Oregon.

A party must identify all these persons in section 2 of Appendix B when consenting to be bound by the order, and must update this list throughout the proceeding to ensure it accurately identifies Qualified Persons

13. A party bound by the protective order may seek to qualify other persons to access Protected Information by having those persons complete and sign Appendix C, and submitting that information to the Commission and all parties. Within five business days of receiving a copy of Appendix C, the designating party must either provide the requested access to Protected Information or file an objection under Paragraph 14.

Objection to Access to Protected Information:

14. All Qualified Persons have access to Protected Information unless the designating party objects as provided in this paragraph. As soon as the designating party becomes aware of reasons to restrict access to a Qualified Person, the designating party must provide the Qualified Person and his or her counsel notice stating the basis for the objection. The parties must promptly confer and attempt to resolve the dispute on an informal basis.

15. If the parties are unable to resolve the matter informally, the designating party must file a written objection with the ALJ. The requesting party may file a response to the motion within 5 business days of service of an objection. The ALJ will make all reasonable efforts to resolve the matter within 10 business days of the last filing. Pending the ALJ's decision, the specific Protected Information may not be disclosed to the person subject to the objection.

Use of Protected Information:

16. All Qualified Persons must take reasonable precautions to keep Protected Information secure. A Qualified Person may reproduce Protected Information to the extent necessary to participate in these proceedings. A Qualified Person may discuss Protected Information obtained under this order only with other Qualified Persons who have obtained the same information.

17. Without the written permission of the designating party, any Qualified Person given access to Protected Information under this order may not disclose Protected Information for any purpose other than participating in these proceedings.

18. Nothing in this protective order precludes any party from independently seeking through discovery in any other administrative or judicial proceeding information or materials produced in this proceeding under this protective order.

19. Counsel of record may retain memoranda, pleadings, testimony, discovery, or other documents containing Protected Information to the extent reasonably necessary to maintain a file of these proceedings or to comply with requirements imposed by another governmental agency or court order. The information retained may only be disclosed to

Qualified Persons under this order. Any other person retaining Protected Information must destroy or return it to the designating party within 90 days after final resolution of these proceedings unless the designating party consents in writing to retention of the Protected Information. This paragraph does not apply to the Commission or its Staff.

Duration of Protection:

20. The Commission will preserve the designation of information as protected for a period of five years from the date of the final order in these proceedings, unless extended by the Commission at the request of the designating party. The Commission will notify the designating party at least two weeks prior to the release of Protected Information.

CONSENT TO BE BOUND
DOCKET NO. LC 67

I. Consent to be Bound:

This general protective order governs the use of Protected Information in these proceedings.

_____ (Party) agrees to be bound by the terms of the general protective order and certifies that it has an interest in these proceedings that is not adequately represented by other parties to the proceedings.

Signature: _____

Printed Name: _____

Date: _____

II. Persons Qualified under Paragraph 12:

_____(Party) identifies the following person(s) qualified under paragraph 12.

PRINTED NAME	DATE

QUALIFICATION OF OTHER PERSONS
DOCKET NO. LC 67

III. Persons Seeking Qualification under Paragraph 13:

I have read the general protective order, agree to be bound by the terms of the order, and provide the following information.

Signature:		**Date:**
Printed Name:		
Physical Address:		
Email Address:		
Employer:		
Associated Party:		
Job Title:		
If not employee of party, description of practice and clients:		

Exhibit C

❑ **EXPEDITE** (if filing within 5 court days of hearing)
❑ No Hearing Set
X Hearing is set:
Date: Friday, September 7, 2018
Time: 9:00 A.M.
Judge/Calendar: Schaller

IN THE SUPERIOR COURT OF THE STATE OF WASHINGTON
FOR THURSTON COUNTY

PACIFICORP D/B/A PACIFIC POWER & LIGHT COMPANY, Plaintiff, vs. WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, a Washington state agency and SIERRA CLUB, Defendants.	No. 18-2-03640-34 DECLARATION OF JEREMY FISHER IN SUPPORT OF DEFENDANT SIERRA CLUB'S BRIEF OPPOSING PACIFICORP'S MOTION FOR FINAL DECLARATORY RELIEF AND PERMANENT INJUNCTION

I, Jeremy I. Fisher, under penalty of perjury of the laws of the State of Washington, declare as follows:

1. I submit this declaration on behalf of Sierra Club in support of Sierra Club's motion to allow disclosure of information held by the Washington Utilities and Transport Commission ("WUTC") relating to an analysis conducted by PacifiCorp (d.b.a. "Pacific Power" or

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"Company") regarding the economic condition of that Company's coal fleet (the "Coal Analysis"). The results of the Company's analysis are very much in the public interest, and long overdue. Those results would be the first time that the Company's ratepayers would be provided the opportunity to understand whether their public utility monopoly is acting competitively, and if actions, expenditures, and statements by that Company reflect economic realities.

2. I am employed as a Senior Strategy and Technical Advisor at the Sierra Club, where I work across the United States on a wide variety of electricity system planning issues. I received my undergraduate degrees in Geology and Geography from the University of Maryland, and a masters and doctorate in Geological Studies from Brown University, where I studied the impacts of climate change as quantitatively observed from satellite platforms. After conducting postdoctoral research on the impacts of Hurricane Katrina and carbon flows in the Amazon basin, I joined Synapse Energy Economics ("Synapse") as a technical consultant on energy and environmental issues.

3. From 2007 to 2017, I worked as a consultant at Synapse, where I worked on behalf of multiple public interest entities and both state and federal regulators. I provided consulting services for a wide variety of public sector and public interest clients, including the U.S. Environmental Protection Agency ("EPA"), the National Association of Regulatory Utility Commissioners, the National Association of State Utility Consumer Advocates , National Rural Electric Cooperative Association, the energy offices and public utility commissions of Alaska, Arkansas, Michigan, and Utah, the Commonwealth of Puerto Rico, Tennessee Valley Authority Office of Inspector General, the California Division of Ratepayer Advocates, the California Energy Commission, the Regulatory Assistance Project, the Western Grid Group, the Union of Concerned Scientists, Sierra Club, Earthjustice, Natural Resources Defense Council, and other organizations. I've provided testimony on energy system economics and generation resource planning in twenty-six electricity planning and general rate case dockets in seventeen jurisdictions, including California, Georgia, Idaho, Indiana, Kansas, Kentucky, Louisiana,

Nevada, New Mexico, Ohio, Oklahoma, Oregon, Puerto Rico, Utah, Washington, Wisconsin, and Wyoming.

4. I have extensive experience in evaluating and developing electric utility resource planning processes, and have engaged in dozens of resource planning dockets as a stakeholder and analyst. Working on behalf of the Puerto Rico Energy Commission, I developed both the first emergency and final Integrated Resource Planning ("IRP") rules, and ran the 2015 IRP process, including convening stakeholder meetings and drafting the IRP Order on behalf of the Commission.

5. I have provided training to state and federal agencies on resource planning practice and issues, including running two full day seminars with EPA staff from all ten regions and headquarters during the development of the Clean Power Plan. I led an intensive statewide electric utility planning process on behalf of the Michigan Public Service Commission. On behalf of various stakeholders, I've tracked and worked on PacifiCorp resource planning issues since 2011. I have provided testimony on PacifiCorp planning issues before the utility Commissions of Washington, Oregon, Utah, and Wyoming.

Presentation of Coal Analysis

6. On June 26, 2018, PacifiCorp provided a redacted version of a presentation entitled "Unit-by-Unit Coal Studies" to stakeholders in its integrated resource plan ("IRP") process. The redacted version of the presentation, distributed by email, was provided both to stakeholders in the 2019 IRP.

7. It is important to first put into context what the PVRR(d) results in the PowerPoint presentation show. A "present value revenue requirement differential" (PVRR(d), given different titles by other utilities) is a modeling analysis that looks at two different scenarios: a "base case" and a "test case." The base case looks at the total cost of operating a utility system over an extended period of time, assuming business as usual. The test case changes a variable or assumption – in this case, the expected life of a coal plant – and then runs the model over the

same period. For both cases, the "present value of revenue requirements" (PVRR) is the total utility system cost, discounted to present-day dollars and summed. The PVRR(d) is simply the difference between the PVRR of the base case and the test case. When applied to a coal plant, the PVRR(d) reveals if the continued operation of the plant is in the best interest of customers. A positive PVRR(d) result generally indicates that maintaining the plant is a customer benefit, while a negative PVRR(d) result indicates that customers may realize a benefit through the retirement of the plant. The PVRR(d) is a modeled, aggregate estimate used to evaluate customer costs or benefits. It is not a contract price, it is not a tax basis, it is not a dispatch plan, it is not a business plan, and it does not reveal utility shareholder value. While PVRR(d) is important to consumers and public utility regulators in long-term planning, it is not the type of information that influences day to-day market transactions.

8. PacifiCorp's Coal Analysis presentation contained six redactions, each of which I address in order.

a) Present value of revenue requirements difference, or "PVRR(d)" results for each individual coal plant on page 5;

b) Cost differential for PVRR(d) results at Jim Bridger 1 and 2 without selective catalytic reduction ("SCR") equipment on page 5;

c) Example cost drivers by year for Jim Bridger 1 on page 7;

d) Characterization of general results on page 9; and

e) PVRR(d) outcome for the simultaneous retirement of Jim Bridger 1 & 2 on page 9.

9. Below, I address each particular designation of trade secrets separately because each raises somewhat different factual grounds on why the redactions cannot be justified based on trade secret, public interest, or customer harm.

Redaction 1: Unit-by-Unit PVRR(d) Results, Page 5

10. Below, I identify reasons why the unit-by-unit PVRR(d) results are not trade secrets. I also address concerns raised by the Oregon Public Utility Commission Administrative Law

Judge on August 7, 2018, Mr. Seth Schwartz, Mr. Chad Teply, and Ms. Etta Lockey on behalf of PacifiCorp.

Other utilities regularly disclose similar PVRR(d) valuations of existing coal-fired power plants in similar circumstances to PacifiCorp.

11. I have personally testified in numerous utility cases where the value of a coal unit, or groups of coal units, were revealed through a similar calculation, and the utility made the economic analyses fully public. In no case has a utility claimed that its release of such information would cause ratepayer loss or damage to the utility. These coal cost disclosures occur across jurisdictions nationwide. Below, I provide a representative sample of cases in which investor-owned utilities provided full disclosure of coal plant value, i.e., the PVRR(d) of coal units for cases in Kansas, Kentucky, Wisconsin, Louisiana, New Mexico, Ohio, Nevada, and Colorado.

12. For each of these utilities, I describe the forum and an example of the value(s) disclosed. While other utilities use a different name for what PacifiCorp terms "PVRR(d)", the meaning in each of these cases is identical to PacifiCorp's PVRR(d).

13. On February 23, 2011, Kansas City Power and Light ("KCP&L") submitted an application for recovery in rates of costs of environmental compliance obligations at La Cygne Generation Station in Kansas.[1] To demonstrate the prudence of installing retrofits at the coal plant, KCP&L conducted a modeling assessment of their fleet, including various scenarios including and excluding coal plants. KCP&L provided unredacted modeling outputs to intervenors, which were then used to inform public testimony. Dr. Ezra Hausman, testifying on behalf of Sierra Club showed the results in a un-redacted figure and stated that "retiring all the coal units could be less costly than the company's preferred plan of retiring [plant] Montrose

[1] Dir. Test. of Ezra D. Hausman, Petition of Kansas Power & Light Co. (No. 11-KCPE-581-PRE) (Kansas Corp. Comm'n June 3, 2011).

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alone – as much as $400 million less on an NPVRR [net present value of revenue requirements] basis."[2] KCP&L's NPVRR metric is identical to PacifiCorp's PVRR(d).

14. On December 5, 2011, Kentucky Power Company ("KPCo") filed an application for approval of its environmental compliance plan at its Big Sandy coal units.[3] In its application, KPCo disclosed the valuation of its coal units extensively under multiple scenarios. For example, under the "base" scenario, the KPCo disclosed that "the 'Retire and Replace Big Sandy Unit 2 with a New-Build CC [combined cycle]' (Option #2) would be more costly than the 'Retrofit Big Sandy Unit 2 with DFGD [dry flue gas desulfurization]' (Option #1) over the study period in amounts ranging from +$236 million to +$274 million, depending on the recovery period assumed for the DFGD."[4] KPCo's case analyses termed "cumulative present worth," were identical to PacifiCorp's PVRR(d).

15. In addition, KPCo disclosed substantial underlying modeling data publicly, including "forecasted market prices to purchase and transport coal [and] forecasted environmental compliance costs, including the estimated costs to install emission control equipment at various units."

16. On May 7, 2012, Wisconsin Public Service Corporation's ("WPSC") filed an application for authority to construct multi-pollutant control technology at Weston Unit 3.[5] In direct testimony, WPSC's planners disclosed the valuation of the Weston 3 unit under a variety of scenarios stating, for example, that "in the Most Likely future, the EGEAS [model] results indicate a reduction in PVRR of $293 million if ReACT™ [environmental control technology] is installed on Weston Unit 3 compared to replacement at the end of 2016."[6] The planners also

[2] *Id.* at 14.
[3] Appl. of Kentucky Power Co., Appl. of Kentucky Power Co. for Approval of Its 2011 Envtl. Compliance Plan (No. 2011-00401) (Kentucky Pub. Util. Comm'n 2011).
[4] Dir. Test. of Scott Weaver at 32, Appl. of Kentucky Power Co. for Approval of Its 2011 Environmental Compliance Plan (No. 2011-00401) (Kentucky Pub. Util. Comm'n Dec. 5, 2011).
[5] Dir. Test. of Brandon R. Gerlikowski & Steven J. Daavettila, Appl. of Wisconsin Pub. Serv. Corp. (No. 6690-CE-197) (Wisconsin Pub. Serv. Comm'n May 7, 2012).
[6] *Id.* at 15.

disclosed a negative valuation, stating that "in the Very Coal Unfriendly future, the EGEAS results indicate an increase in PVRR of $16 million if ReACT™ is installed on Weston Unit 3 compared to replacement at the end of 2016." These "reductions" and "increases" in PVRR are identical to PacifiCorp's PVRR(d).

17. On August 16, 2012, Cleco Power LLC filed an application for authorization to install emissions control equipment at three coal-fired facilities.[7] In rebuttal testimony, the company's Leon Sharp disclosed the value of two coal units, Rodamacher 2 [RPS2] and Dolet Hills [DHPS], showing the "incremental costs in millions" of "install[ing] emissions controls" versus "change case[s to] cease operations at RPS-2 [and] replac[ing] with a 250 MW CCGT [combined cycle gas turbine]" ranging from $54 million to $140 million, or "ceas[ing] operations at DHPS [and] replac[ing] with a 480 MW CCGT" ranging from negative $2 million to $247 million.[8] The meaning of these "incremental" costs are identical to PacifiCorp's PVRR(d).

18. Like various PacifiCorp's coal units with "illiquid" fuel markets, Dolet Hills Power Station was served exclusively by the lignite mine-mouth, Dolet Hills mine. It is now served exclusively by the adjacent lignite Oxbow mine.

19. On December 20, 2013, Public Service New Mexico ("PNM") filed an application to install environmental controls at San Juan Generating Station ("SJGS") units 1 & 4, and close units 2 & 3. The parties' resulting testimony produced numerous fleet valuations with and without various PNM coal-fired units. On July 1, 2014, PNM's Director of Planning and Resources, Patrick O'Connell filed supplemental testimony showing "20 year NPV [net present value]" results for various scenarios, including a scenario in which all four units of SJGS are retrofit with selective catalytic reduction ("SCR") at a value of $7,640 million, a case where all

[7] Rebuttal Test. of Richard Leon Sharp, Appl. of Cleco Power, LLC (No. U-32507) (Louisiana Pub. Serv. Comm'n Mar. 10, 2014).
[8] *Id.* at 6.

four units are shut down at a value of $7,235 million, amongst many other scenarios.[9] The simple difference between the value of these two scenarios – a difference in net present value, or PVRR(d) – indicates the relative valuation of San Juan at negative $405 million.

20. PNM's San Juan Generating Station is served exclusively by the San Juan mine. In addition, at the time PNM disclosed the value of the station and its various units, the utility was in active negotiations with mining entities for the extension and contractual terms of the coal mine. PNM did not claim, as PacifiCorp does now, that such disclosures would harm the coal contract negotiation process.

21. PNM provided all of the documents and modeling underlying its valuation with no confidentiality designation or request for non-disclosure, with the exception of the terms of a proprietary coal contract. PNM provided publicly its "internally developed market, cost and financial forecasts, including … forecasted market prices to purchase and transport coal; forecasted environmental compliance costs, including the estimated costs to install emission control equipment at various units; forecasted ongoing capital investments required for each unit; [and] forecasted operations and maintenance expenses for each unit." PNM publicly disclosed all model inputs and outputs that led to the formation of its conclusions, without exception.

22. On November 23, 2016, Northern Indiana Public Service Company ("NIPSCO") filed an application for a certificate of public convenience and necessity for environmental equipment at numerous coal units. [10] With the application, the company filed public modeling results of scenarios where different sets of units were retired or remained in operation. In doing so, NIPSCO published the effective value of sets of units. For example, the company openly published the value of two scenarios with and without Schahfer units 14 and 15 at $12,055 million and $11,773 million, respectively,[11] readily indicating the value of those units at -$282

[9] Supp. Test. of Patrick O'Connell at 6, Appl. of Pub. Serv. Co. of New Mexico (No. 13-00390-UT) (New Mexico Pub. Regulation Comm'n July 1, 2014).
[10] Verified Petition, Verified Petition of Northern Indiana Pub. Serv. Co. for Approval of & a Certificate of Pub. Convenience & Necessity (No.44872) (Indiana Util. Regulatory Comm'n Nov. 23, 2016).

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million on a net present value basis. NIPSCO's "NPV of Revenue Requirements" is the same as PacifiCorp's PVRR(d) analysis results.

23. On March 2, 2017 Duke Energy Ohio filed an application for an increase in electric distribution rates, including a rider to incorporate the cost and benefits Ohio Valley Electric Corporation ("OVEC") coal plants in rates.[12] With the application, Duke Ohio filed an assessment of the valuation of the OVEC units and Duke's contract with OVEC. Prior to the submission of intervenor testimony on June 25, 2018, Duke Ohio voluntarily agreed that these values – provided in NPVRR terms – should be deemed public, and allowed for the public disclosure of the OVEC costs. Sierra Club's public testimony in the case states that "[Duke witness] Mr. [Judah] Rose reports that Duke's share of OVEC is worth zero dollars excluding sunk costs, and has a present value of negative $77 million when accounting for sunk costs."[13] The present value of the OVEC units calculated by Duke's witness is identical to PacifiCorp's PVRR(d).

24. Duke Ohio operates in the competitive PJM wholesale market, and the OVEC units seek to be competitive in that market as well. In addition, the contract for the OVEC units is currently the subject of bankruptcy litigation between another co-sponsoring utility, FirstEnergy, and OVEC. Unlike PacifiCorp here, Duke Ohio faced both a clear and immediate decision point – weather to include OVEC costs in rates – and argued that it faced an imminent harm if those costs were not included in rates.[14] Nonetheless, the utility agreed that the disclosure of the negative plant value was a matter of public interest.

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[11] *Id.* Verified Dir. Test. of Daniel L. Douglas at Ex. 5, at 21.
[12] Appl. of Duke Energy Ohio, Inc., Appl. of Duke Energy Ohio, Inc. for an Increase in Electric Distribution Rates (No. 17-32-EL-AIR) (Ohio Pub. Util. Comm'n Mar. 2, 2017).
[13] Dir. Test. of Jeremy Fisher at 7, Appl. of Duke Energy Ohio, Inc. for an Increase in Electric Distribution Rates (17-32-EL-AIR) (Ohio Pub. Util. Comm'n No. June 25, 2018).
[14] Dir. Test. of Steven Fetter in Support of Stipulation at 13, Appl. of Duke Energy Ohio, Inc. for an Increase in Electric Distribution Rates (No. 17-32-EL-AIR) (Ohio Pub. Util. Comm'n June 6, 2018).

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25. On February 16, 2018, NV Energy filed an update to its life span analysis process ("LSAP") for the North Valmy Generating Station.[15] In the LSAP, NV Energy provided a table of scenario costs calculated over 5, 10, 20, and 30 year periods, called "present worth revenue requirements" ("PWRR"). The table identified plant retirement as the least-cost pathway for Valmy 1 in 2019 and replacement with solar energy ("V1 in 19 – PV"), and the cost differential to other scenarios, including the continued operation of the North Valmy plant - $232 million over a 20-year period.[16] In NV Energy's LSAP, the utility lists "PWRR Increase vs. Least Cost," a metric identical to PacifiCorp's PVRR(d).

26. On June 6, 2018 Xcel Energy Colorado ("Xcel") filed an update to its 2016 Electric Resource Plan and a 120-day report following an all-source request for proposals.[17] In this plan, the utility provided an assessment of the cost for continuing to operate coal-fired units at Comanche 1 & 2 (the "BAU"), and compared those costs against a scenario where the coal units are retired early. In a public table, Xcel disclosed that the "Delta from BAU" for the early retirement scenario was -$298 million NPV [net present value] 2016-2038.[18] In other words, consumers were better off in an early retirement scenario by $298 million on a net present value basis. Xcel's "delta" NPV is a metric identical to PacifiCorp's PVRR(d).

27. In all of the above proceedings, an investor owned utility disclosed to the public specific coal plant economic analyses identical to the analyses PacifiCorp now claims are proprietary trade secrets. In many cases, the study results were unflattering to existing coal plants. Yet in no instance did the utility redact and then qualify the revenue requirement numbers with disclaimers and caveats as PacifiCorp has done here. On the contrary, the whole point of the above

[15] Lifespan Analysis Process, Sierra Pacific Power Co. d/b/a NV Energy's Triennial Integrated Res. Plan; Valmy LSAP Compliances (No. 16-07001) (Nevada Pub. Util. Comm'n Feb. 16, 2018).
[16] *Id.* at 25.
[17] Public Serv. 120-Day Report, In the Matter of the Appl. of Pub. Serv. Co. of Colorado for Approval of Its 2016 Electric Res. Plan (No. 16A-0396E) (Colorado Pub. Util Comm'n (June 6, 2018).
[18] *Id.*at 70.

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proceedings was to facilitate an open process on coal plant economics so that the various state utility commissions could base their final decisions on publicly available evidence.

28. Ms. Lockey's statement that "PacifiCorp has consistently designated similar coal analysis confidential, in both prior IRP proceedings and ratemaking proceedings" is incorrect.[19] PacifiCorp itself has disclosed information similar in nature to the PVRR(d) results, when it deems such disclosures advantageous. In its 2013 IRP, PacifiCorp revealed which coal-fired power plants would be uneconomic to operate under different assumed futures for gas and carbon regulations.[20] During the development of the 2017 IRP, PacifiCorp publicly provided draft PVRR(d) results on two coal-fired units, Naughton 3 and Craig 1, stating that "system costs are reduced when Naughton 3 [coal unit] and Craig 1 [coal unit] are assumed to retire instead of converting to natural gas" in 2017 and 2025, respectively.[21] The Company disclosed that under the modeled circumstances, the value of retiring Naughton 3 and Craig 1 was between $79 and $112 million. Finally, the 2017 IRP Update selectively reports the PVRR(d) impacts of installing SCR and retiring Dave Johnston Unit 3[22] and Jim Bridger 1 & 2,[23] and the retirement benefit of Naughton 3[24] and Cholla 4.[25]

PacifiCorp is making no resource decisions on the basis of the results

29. According to PacifiCorp, "results from these studies…provide limited insight into a least-cost, least-risk resource portfolio,"[26] and "no specific resource decisions are being made at this time."[27] Because the Company has disclaimed the results of the analysis and is not using the PowerPoint to support specific resource decisions, the PVRR(d) results cannot reasonably be

[19] *Lockey Decl.*¶ 19.
[20] PacifiCorp, *2013 Integrated Res. Plan Vol. 2* at 163-180 (April 30, 2013).
[21] PacifiCorp, *2017 Integrated Res. Plan Pub. Input Meeting 8* at 20(Mar. 2-3, 2017).
[22] PacifiCorp, *2017 Integrated Res. Plan Update* at 73 (May 1, 2018).
[23] *Id.* at 74.
[24] *Id.* at 78.
[25] Id. at p. 80.
[26] PacifiCorp, *Unit-by-Unit Coal Studies Presentation* at 2 (June 28, 2018).
[27] *Id.* at 9.

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said to provide economic value to any other party. Such economic value could only be rendered if the Company supported the PVRR(d) results, the results could be expected to inform specific actions, the study results were not otherwise readily discernable, and the PVRR(d) results could be expected to provide a benefit to competitors or vendors at the expense of the Company.

30. In my opinion, the PVRR(d) results are already discernable from public information, and such analogous results are likely already employed by competitors or vendors doing business with the Company.

Little or No Potential Economic Value of PVRR(d) Results

31. In my professional opinion, the findings of Oregon Public Utility Commission Administrative Law Judge, the declarations of PacifiCorp consultant Mr. Seth Schwartz, and PacifiCorp employees Ms. Etta Lockey and Mr. Chad Teply largely failed to identify specific, concrete examples of harm to PacifiCorp's customers, and failed to identify meaningful instances of actual or potential economic value to counterparties, competitors, or vendors. I could find only one credible instance in which a specific type of result could, in very narrow circumstances, be harnessed by a counterparty, and in that instance due diligence on the part of the counterparty likely would already have provided comparable information.

32. Together, the Oregon ALJ, Mr. Schwartz, Ms. Lockey, and Mr. Teply provide five examples instances which they claim PacifiCorp's findings could provide competitive advantage to a counterparty. These instances are:

a) A coal supplier or rail transportation provider might seek to "calculate the alternative cost of coal available to PacifiCorp,"[28] "maximize the cost of rail transportation which could be charged to PacifiCorp,"[29] or "unfavorably influence pricing, terms, and conditions" for goods and services.[30]

[28] *Schwartz Decl.* ¶ 7.
[29] *Id.* at ¶ 9.
[30] *Teply Decl*. ¶ 14.

b) "The market impact of releasing this confidential information could include an increase in power prices,"[31] because "power market participants could interpret the results of the Coal Analysis to expect earlier retirement dates for PacifiCorp's coal units than currently projected;"[32]

c) A contractor building equipment to meet environmental mandates could be favored in contract negotiations because "they will essentially know PacifiCorp's bottom-line negotiating position;"[33]

d) PacifiCorp's labor force might seek "better future job prospects" if they face uncertainty regarding future employment;[34] and

e) The disclosure could influence "negotiations amongst agencies, regulators and stakeholders when determining appropriate compliance timelines" for environmental compliance obligations.[35]

33. I can only identify one instance in which a counterparty or competitor could harness a specific PVRR(d) result to the detriment of PacifiCorp customers, and the detriment could only occur under a narrow set of circumstances not covered by the vast majority of the PVRR(d) results, and is likely rendered moot by reasonable counterparty due diligence. Specifically, a coal operator that has physically exclusive monopoly to provide coal (i.e. minemouth) with PacifiCorp as the operator might be able to harness positive economic results to increase coal prices. Of PacifiCorp's 22 coal units, only seven units were analyzed that potentially fall into this category (Jim Bridger 1-4, Naughton 1,2, and Wyodak). PacifiCorp failed to identify how a negative valuation at any of those units would be of incremental value to a vendor.

[31] *Lockey Decl.* ¶ 26.
[32] *Schwartz Decl.* ¶ 9.
[33] *Teply Decl.* ¶ 12.; *Lockey Decl.* ¶ 27.
[34] *Schwartz Decl.* ¶ 11.
[35] *Teply Decl.* ¶ 11.

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34. In my experience, any counterparty to PacifiCorp with the ability to impact consumer costs has enough resources and sophistication to perform basic due diligence when negotiating multi-million dollar contracts. The technology and data to replicate PacifiCorp's findings at a broad scale are generally available to sophisticated market participants. Market power prices, coal prices, the performance and output of generation units, and estimates of operational costs are all publicly available, and form the basis of fundamental due diligence. The only unique aspect of PacifiCorp's analysis is that it was performed by PacifiCorp, rather than a third party.

35. Sierra Club is a non-profit public interest group, and yet we regularly perform similar fundamental market intelligence and due diligence using public data sources.

36. On April 3, 2018 Sierra Club commissioned one such due diligence report from Energy Strategies (Attachment A), a Utah-based energy consultancy. Sierra Club asked Energy Strategies to perform an independent valuation of PacifiCorp's coal-fired units using exclusively publicly available information. Energy Strategies performed this evaluation using data collected by federal agencies, including the Energy Information Administration, Environmental Protection Agency, and Federal Energy Regulatory Commission, as well as limited data made available by PacifiCorp in prior proceedings. Sierra Club released the report publicly on June 27, 2018.[36]

37. For its own edification, Sierra Club encourages the Court to compare the results of the Energy Strategies report to those in the Coal Analysis Power Point.

38. PacifiCorp asserts numerous times that the analysis is "preliminary," "incomplete," and "limited."[37] It is my opinion that contractual counterparties would not rely on an analysis disclosed by PacifiCorp to be incomplete or erroneous.

39. PacifiCorp omitted that the results of the PVRR(d) analysis become stale over time – in some cases very quickly – and thus lose their financial and commercial value. Analyst

[36] Energy Strategies. *PacifiCorp Coal Unit Valuation Study: A Unit-by-Unit Cost Analysis of PacifiCorp's Coal-Fired Generation Fleet* (June 20, 2018).
[37] *Lockey Decl.* ¶ 24.

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projections of market price projections change rapidly, as do PacifiCorp's projections of fuel costs and budgets. Thus, PVRR(d) results are indicative, and often not absolute.

40. Mr. Schwartz's assertion that coal suppliers "will use the disclosed information to calculate the alternative cost of coal available to PacifiCorp,"[38] is without merit or basis. First, PacifiCorp and most other regional coal-fired power plants report all of their delivered costs of fuel to the Energy Information Administration in public Form 923. The "alternative costs of coal" are publicly known. Secondly, PacifiCorp's "alternative" tested in the Coal Analysis are not alternative coal supplies, but non-coal based energy. Mr. Schwartz's assessment is deeply off the mark.

41. Mr. Schwartz's opinion that "power market participants could interpret the results of the Coal Analysis to expect earlier retirement dates for PacifiCorp's coal units than currently projected," and thus exert power over PacifiCorp is also without merit. PacifiCorp's energy purchases represent a relatively small amount of energy transacted by a large number of sellers in a very fluid market.

42. According to public filings before the Federal Energy Regulatory Commission, PacifiCorp purchased power from over 200 different power producers and marketers in 2017, amounting to 14,000,000 MWh of net purchases.[39] In 2017, those 200+ entities sold more than 185,000,000 MWh of energy to numerous utilities, including PacifiCorp. Therefore, PacifiCorp represents less than eight percent (8%) of market transacted energy purchases of those sellers alone, much less other regional entities.

43. The earlier closure of a single PacifiCorp unit, or even set of units, is unlikely to substantially influence regional market prices. For example, PacifiCorp's largest single generator by energy, Hunter 3, produced 2,800,000 MWh in 2017, or about one and a half percent (1.5%) of all energy transacted by the market participants with which PacifiCorp did business.

[38] *Schwartz Decl.* ¶ 7.
[39] FERC Form 1, 2017.

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44. Mr. Teply's opinion that contractors who supply and install emission control equipment "will have an advantage in negotiating the price, terms, and conditions for their services," is misleading and irrelevant to the PVRR(d) results. In one analysis, covered under redaction (b), the Company disclosed its assumed cost differential for the installation or non-installation of Selective Catalytic Reduction (SCR) equipment at Jim Bridger units 1 and 2. I address if redaction (b) is reasonably considered trade secret below. There is no meaningful information that could be exacted by a contractor from the absolute PVRR(d) values without that differential.

45. Out of the 22 units assessed in the PVRR(d) analysis, PacifiCorp is only reviewing two units for near-term environmental compliance costs, Jim Bridger 1 and 2. Like the coal contract concern, PacifiCorp failed to identify how a negative valuation at any of those units would be of incremental value to a vendor.

46. Mr. Schwartz's assertion that "uncertainty regarding future employment [may] cause workers to move for better future job prospects,"[40] is an example of the key public interest value of this – and similar – analyses, and reasonable communication between PacifiCorp and its labor force. The results of this analysis were not withheld from regulators, who may independently seek to have PacifiCorp exit non-economic coal plants for the benefit of consumers. Or PacifiCorp may seek to exit non-economic coal plants, finding that the public interest is better served through such action. Under PacifiCorp's current mode of operation, the affected workforce and surrounding communities are provided no benefit from PacifiCorp's corporate forward planning.

47. I strongly disagree with Mr. Teply's assertion that disclosure of the "Coal Analysis could harm the public interest in communities where the company's coal plants are located."[41] Withholding information from these communities deeply hinders their opportunity to engage in

[40] *Schwartz Decl.* ¶ 7.
[41] *Teply Decl.* ¶ 16.

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reasonable transition planning. PacifiCorp's desire to control the narrative in dependent communities does not translate into a reasonable public interest. PacifiCorp may decide tomorrow that expedient closure of one or more non-economic units is in the public interest, and the affected communities would have neither warning nor recourse. For example, in December 2014, PacifiCorp announced the closure of the Deer Creek mine in Utah, abruptly laying off 182 unionized workers with less than a half-year notice.[42]

48. In contrast to PacifiCorp's intent of shielding planning from affected employees and communities, other utilities work closely with potentially impacted employees well before decisions regarding their future are finalized. For example, Northern Indiana Power Service Company ("NIPSCO") provided detailed information to potentially affected employees during the development of an integrated resource plan once draft results indicated that four generation units were non-economic relative to alternatives. On September 26, 2016, well before the release of the IRP, NIPSCO provided detailed materials to employees stating, in part, the following:

> "In a public meeting with our key stakeholders later today in Merrillville, our Integrated Resource Plan (IRP) team will provide an update on what we believe is the most viable plan to meet our customers' future electric demand while also considering expected operating costs, environmental impacts and other important related factors.Early analysis indicates that the most viable option for our customers and the company is to retire four coal-fired generation units at two stations earlier than we projected in our 2014IRP.While our analysis is pointing toward this option, our decision is not necessarily final. We will consider stakeholder input as part of the IRP process, and MISO must approve any requests for electric generation unit retirements."[43]

49. Like PacifiCorp's coal units, the units identified by NIPSCO in their 2016 IRP are in rural areas, and provide local employment. Unlike PacifiCorp, NIPSCO chose to engage its communities in transition planning well prior to finalizing decisions.

50. Finally, Mr. Teply's provides no evidence for his assertion that disclosure of results could impact "negotiations amongst agencies, regulators and stakeholders when determining

[42] Jasen Lee, *PacifiCorp to Close Deer Creek Mine in 2015*, Deseret News (Dec. 14, 2014).
[43] Northern Indiana Power Serv. Co., *IRP/Electric Generation Strategy: Employee Commc'n Materials* (Sept. 26, 2016).

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appropriate compliance timelines" for environmental regulations.[44] I am not aware of any ongoing negotiations with agencies, regulators, or stakeholders with respect to compliance deadlines on any environmental regulation, and Mr. Teply failed to state which negotiations, if any, could be impacted. Mr. Teply provided no evidence that a PVRR(d) result would result in any form of substantial or irreparable harm in negotiations with regulators.

Disclosure of the PVRR(d) results is in the public interest

51. PacifiCorp's customers, communities near the coal plants, communities impacted by the pollution from the coal plants, and clean energy developers all have substantial interests in understanding the economics of the Company's coal fleet. It would not be in the public's interest for PacifiCorp to keep this information secret until the time it decides is most advantageous to its shareholders. The IRP process is designed to provide the public with information on the various resource choices its utility is making on its behalf. PacifiCorp is manipulating this pact by picking and choosing the types of information it wants it customers to see and when.

52. Energy Strategies found that "eleven of PacifiCorp's [twenty-two] coal units, representing 2,730 megawatts (MW), are consistently higher cost than replacement energy options, and in many cases substantially so. This reality poses a fundamental question of whether some of PacifiCorp's coal units are in fact least cost resources."[45]

53. On June 27, Sierra Club released the Energy Strategies' report. Since its release, the report has generated over fifteen different news articles in Utah, Wyoming, Montana, Oregon, and the trade press.

54. As PacifiCorp's Ms. Lockey noted in her declaration, the Coal Analysis is an outcome of the 2017 IRP.[46] Specifically, parties and the Washington and Oregon commissions were deeply concerned that PacifiCorp had failed to assess the economics of its existing fleet after having

[44] *Teply Decl.* ¶ 11.
[45] Energy Strategies. *PacifiCorp Coal Unit Valuation Study: A Unit-by-Unit Cost Analysis of PacifiCorp's Coal-Fired Generation Fleet* at 17 (June 20, 2018).
[46] *Lockey Decl* ¶ 8.

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agreed to do so in public meetings in the past. According to Ms. Lockey, "PacifiCorp agreed to provide additional economic analysis," but the analysis was not voluntary. During a public meeting on December 11, 2017 the Oregon Commission ordered PacifiCorp to provide the Coal Analysis by June 30, 2018, an order which was memorialized in commission Order 18-138 on April 27, 2018.[47]

55. Numerous other parties commented to their respective state utility commissions that the Company's analysis of its existing coal units in the 2017 IRP was deficient.

56. In Washington, Sierra Club, Industrial Customers of Northwest Utilities ("industrial customers"), Northwest Energy Council ("NWEC"), and Renewable Energy Coalition ("REC") all commented that the Company's coal plants were a key concern to their members.

57. The industrial customers provided comments to the Washington Utilities and Transport Commission ("WUTC") that "from ICNU's perspective, the most consequential features of Pacific Power's 2017 IRP appear to be the Company's plan for major investments in wind, solar, and associated transmission, with a corresponding move away from investments in coal-fired generation."[48]

58. Northwest Energy Council commented that "we do not expect that assessing decreased use of the coal fleet or earlier retirement of coal units is a simple matter. But NWEC believes this is a necessity given the substantial capital expenditures at stake and the path dependence of future resource development and system management based on those choices. It will be much harder to achieve our reliability, clean energy, climate and system cost goals over time if the full range of possibilities for transitioning away from coal dependence is not considered now."[49]

[47] Order 18-138, In the Matter of PacifiCorp 2017 IRP (No. LC 67) (Oregon Pub. Util. Comm'n April 27, 2018).
[48] Comments of Indus. Customers of Northwest Util., PacifiCorp 2017 IRP (No. UE-160353) (Washington Util. and Transp. Comm'n June 16, 2017).
[49] Comments of NW Energy Coalition, PacifiCorp 2017 IRP (No. UE-160353) (Washington Util. and Transp. Comm'n June 16, 2017).

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59. Renewable Energy Coalition commented to the WUTC that "Sierra Club's expert acquired the capacity expansion model and identified modeling constraints that the Company never advised the stakeholder group about, such as inputting coal plan unit retirements rather than allowing the model to determine the most reasonable retirement years. There are toggles within the model that allow or restrict certain behaviors that must be verified. Only a non-Company review of the modeling can determine if those toggles have been used. Given the size of the investment at stake, Pacific Power's modeling needs third-party auditing."[50]

60. The WUTC issued a final order on PacifiCorp's 2017 IRP that reflected the stakeholders' comments: "**we are deeply concerned with the direct costs of continued operation of its coal-fueled resources and the magnitude of economic risk of continued investment in those units**. Pacific Power's IRP does not explicitly identify or discuss the risks faced by the utility and its ratepayers, including the costs of risks associated with the coal plants' fuel source, projected capital investments, and ongoing operational expenses, or cost shifts to Washington customers when the Company must remove coal generation expense from Oregon rates."[51]

61. In its final order, the WUTC was clear that PacifiCorp's transparency process concerning substantial expenditures in coal was flawed: "**we are disappointed to see that Pacific Power's commitments to transparency and inclusiveness with the advisory group were not met**, and encourage the Company to refocus on conducting its resource planning activities in that spirit."[52]

The small risk of customer harm from PVRR(d) disclosure is outweighed by a substantial public benefit

62. PacifiCorp is a rate regulated utility. As such, it is returned in full its costs of operation and capital, plus a rate of return on its capital investments. Any incremental costs or benefits

[50] Comments of Renewable Energy Coalition, PacifiCorp 2017 IRP (No. UE-160353) (Washington Util. and Transp. Comm'n June 16, 2017) (emphasis added).
[51] 2017 Electric IRP Acknowledgement Letter at 4, Pacific Power & Light Co. 2017 Integrated Res. Plan (No. UE-160353) (Washington Util. and Transp. Comm'n May 7, 2018) (emphasis added).
[52] *Id.* (emphasis added).

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incurred by the disclosure of the PVRR(d) results redound to PacifiCorp's customers through the process of rate review at PacifiCorp's public utility commission regulators. As such, unless PacifiCorp is found to have made an imprudent decision — i.e. a decision that it could reasonably foresee is not in the best interests of its customers — its incurred costs are likely to be passed through to ratepayers. Barring a finding of imprudence, PacifiCorp's incremental cost or cost savings in operations impact customers, and not PacifiCorp as a corporate entity.

63. As discussed above, there are very few circumstances in which a competitive advantage could be rendered over PacifiCorp by virtue of the disclosure of these results. Therefore, the opportunity for damage to PacifiCorp's customers from disclosure is very small.

64. The potential for damage to customers through PacifiCorp not acting in the public interest is very high. According to the results from the public Energy Strategies report, more than 45 percent of PacifiCorp's coal units are more expensive than all other evaluated energy options.[53] Energy Strategies findings indicate that PacifiCorp's failure to take any action on its coal units represents substantial customer harm. According to the report "The NPV savings associated with replacing the energy from these 11 coal units [with market-based energy]… range[s] from $915,000 for Naughton 1 to $166 million for Jim Bridger 4."[54]

65. The Energy Strategies report is only "meant to be indicative and directional."[55] PacifiCorp's PVRR(d) analysis carries substantially more weight with both customers and regulators. While public disclosure of the PVRR(d) results will not rectify any harm caused by PacifiCorp's failure to act on its coal units, it will help customers understand the extent to which PacifiCorp's planning results in customer harm (if any) — a question of substantial public interest.

[53] Energy Strategies. *PacifiCorp Coal Unit Valuation Study: A Unit-by-Unit Cost Analysis of PacifiCorp's Coal-Fired Generation Fleet* at 17 (June 20, 2018).
[54] *Id.* at 11.
[55] *Id.* at 5.

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Redactions 2 and 3: PVRR(d) Results at Jim Bridger 1 and 2 without SCR, page 5

66. The Company claims this information is trade secret. I have reviewed PacifiCorp's factual claims and disagree. PacifiCorp claims that the "disclosure of the company's estimates through the PVRR(d) results could disadvantage PacifiCorp in contract negotiations with third-party contractors to build and install any equipment necessary to meet environmental mandates. In addition, disclosure of the company's environmental compliance cost estimates could harm the company's negotiating position with federal and state agencies responsible for determining the necessary emissions control equipment at the individual coal units."[56]

67. The results provided in this redaction are not the contractor costs faced by the Company of compliance; rather they represent an aggregation of multiple costs, including contractor costs, operational costs, and potentially operational impact as well. At this level of aggregation, little meaningful information is available to a third party, except for ratepayers to understand impacts. The Company has provided no evidence that such a disclosure of aggregate net ratepayer costs would allow any party to change their negotiating position to the detriment of the Company, and the question is largely moot with respect to Jim Bridger.

68. PacifiCorp has been clear that it has no intent of installing SCR equipment at Jim Bridger 1 & 2. In the 2017 IRP, PacifiCorp states the following: "Supported by analysis of potential Regional Haze compliance alternatives, the 2017 IRP preferred portfolio does not include any incremental selective catalytic reduction (SCR) equipment. Avoiding installation of this equipment will save customers hundreds of millions of dollars and retain compliance-planning flexibility associated with the Clean Power Plan or other potential state and federal environmental policies."[57]

69. Similarly, PacifiCorp's most recent IRP Update states that "This [updated] analysis shows that the early retirement scenario [of Jim Bridger Units 1 and 2] without the installation of

[56] *Lockey Decl.* ¶ 27.
[57] PacifiCorp, *2017 Integrated Res. Plan Volume I* at 6 (April 4, 2017).

SCR equipment is lower cost."[58] That same IRP Update shows a "milestone" schedule for the SCR projects at Jim Bridger 1 and 2, indicating that had PacifiCorp expected to meet EPA's Regional Haze deadlines, it would have already submitted applications to utility regulators in Wyoming, Utah, and Oregon.[59] There is no indication that PacifiCorp is in negotiations with contractors to build SCR equipment at Jim Bridger.

70. Any contractor working with PacifiCorp is aware of the risk that Jim Bridger units may be found to be non-economic. First, the disallowance of SCR costs by WUTC in 2016 described above clearly labeled the plant "at risk." Second, the public Energy Strategies report Commissioned by Sierra Club clearly identified Jim Bridger as one of the least cost-effective plants in PacifiCorp's coal fleet. Any vendor engaging in multi-million dollar contracts would conduct its own due diligence to ensure that it understands any impending risks of engagement.

71. Finally, the PVRR(d) is replete with disclaimers and caveats all but eliminating the potential for a third party to base its own economic assessment of a transaction with PacifiCorp on such qualified analysis. Still, even if the Company was correct and the information is a trade secret, disclosure of this information is in the public interest as discussed in Paragraph 51, above. In addition to discussing ratepayer impacts of continued plant use, the results provide information to the public on the relative net costs of compliance with regulatory requirements.

Redaction 4: Annual System Costs for Jim Bridger 1, page 7

72. Redaction 4 covers an example chart of annual system costs and benefits for Jim Bridger 1, illustrating annual positive benefits and negative costs. It is what would generally be termed a "cash flow assessment" for Jim Bridger 1, and while the aggregate discounted sum of the costs and benefits results in a PVRR(d), the majority of the information under this redaction is not PVRR(d).

[58] PacifiCorp, *2017 Integrated Res. Plan Update* at 73 (May 1, 2018).
[59] *Id.* at 83.

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Redaction 5: General Results

73. Redaction 5 is a succinct and understandable one sentence summation of the PowerPoint's results. The sentence does not contain any trade secrets because there are no identifying plant characteristics, no dollar sums, no dates or plant names. There is simply not enough specific information for the sentence to influence the decision of any third party considering doing business with PacifiCorp. Disclosure would benefit the public because it provides a high-level, jargon-free assessment of the current economic status of Company's coal plants.

Redaction 6: PVRR(d) Results for Jim Bridger 1 & 2

74. Redaction 6 is constructed similarly, and meant to convey, the same type of information as shown in the general PVRR(d) results of Redaction 1. PacifiCorp has not established that the incremental PVRR(d) result shown in Redaction 6 is in any way different or revealing than the PVRR(d) results of Redaction 1.

EXECUTED this 24 day of August, 2018 at OAKLAND, CA.

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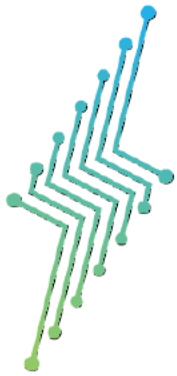
Attachment A



ENERGY
STRATEGIES

PacifiCorp Coal Unit Valuation Study

A Unit-by-Unit Cost Analysis of PacifiCorp's Coal-Fired Generation Fleet

Prepared for Sierra Club

June 20, 2018

Contents

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1. Executive Summary

The economics of coal-fired generation in the Western Interconnect have changed significantly in the past decade. Market drivers such as energy efficiency, falling costs of renewable energy, low natural gas prices, and the cost of complying with environmental regulations are eroding the cost competitiveness of much of the Western Interconnect's coal fleet. Despite this market trend, coal remains a significant fuel in the Company's portfolio. The Company has an ownership interest in 24 aging coal units that provide power to meet 59 percent of PacifiCorp's load. Data also suggests the costs of operating these units is increasing.

As the cost of renewable energy and natural gas decline, it is reasonable to consider whether the continued operation of the Company's coal units is warranted if lower cost resource options exist. At the request of the Sierra Club, Energy Strategies conducted an assessment of each of PacifiCorp's coal units against comparable replacement energy. This economic analysis was designed to compare the going-forward incremental costs of operating the coal units against three replacement resources: market purchases, wind energy, and solar photovoltaic (PV) energy. Our study employed a cashflow spreadsheet model and used publicly available data for the analysis. For each unit, the study examined a business-as-usual (BAU) case, in which it was assumed the coal unit operated to the end of its depreciable life, and a case in which the coal unit was replaced at the end of 2022. To determine a relative valuation, we compared the net present value (NPV) of the all-in cost of the coal scenario against the NPV of the replacement scenarios. We report the relative economic merit of each coal unit relative to market, wind, and solar replacement options.

Eleven of PacifiCorp's coal units, representing 2,730 megawatts (MW), are consistently higher cost than replacement resource options. Those eleven units were found to be higher cost than obtaining comparable firm energy through market purchases. Twelve coal units, representing 3,173 MW of generation, were higher cost than replacement energy from solar PV, and all but two of PacifiCorp's coal plants were higher cost than wind energy on a net present value basis.

In addition to the BAU analysis, the study also reviewed how capital expenditures to meet federal Regional Haze standards could impact the going-forward costs of seven PacifiCorp coal units. The study found that four of the seven at-risk units were already higher cost than the three replacement scenarios, even before environmental controls. With environmental controls, the cost of continuing to operate Hunter Unit 1 exceeded the cost of wholesale market purchases, and the cost of both Hunter 1 and 2 were higher when solar PV was the replacement resource.

The high-level approach used here is similar to that used in utility resource planning, which typically looks for the lowest cost to provide electricity services from the long-term perspective of a customer today – i.e. the present value of all foreseeable costs. A more detailed modeling approach would account for the dispatch of the coal units against prevailing energy prices, the timing of energy required and produced by market, solar, and wind options, and any transmission constraints that prevent these buildout options. Accordingly, the findings reported in here are not intended to be definitive

statements. Rather, they are indicative of relative economic merit and are meant to engage a meaningful discussion on the future of PacifiCorp's coal fleet.

2. Introduction

PacifiCorp's coal fleet makes up one half of the Company's firm generating capacity and almost two-thirds of its annual energy production, making the economics of the coal fleet a significant driver of customer rates. Alternatives to coal-fired electricity capable of reducing Company operating expenses and thereby customer rates are understandably of interest to a wide range of stakeholders. As the cost of alternative resources have declined, it's reasonable to reconsider the cost-effectiveness of continuing to operate the Company's coal units if lower costs alternatives exist. At the request of the Sierra Club, Energy Strategies conducted an independent assessment of PacifiCorp's coal fleet to determine the economic merit of each coal unit relative to market, wind, and solar replacement options.

The analysis conducted by Energy Strategies establishes a business-as-usual (BAU) case in which the present value of each coal unit's ongoing operating and capital expenses over its operating life is compared to the present value costs of three replacement resources. The study employed a discounted cash flow spreadsheet model populated with a database of operating costs compiled from public sources. The analysis also compared the levelized cost of energy LCOE of each coal unit and replacement resource. In addition to the BAU case, the study also included an analysis of how future expenditures on environmental controls would impact the operating costs of seven coal units relative to replacement resources. Environmental control costs included in this analysis were those necessary to comply with the Regional Haze Rule.

This study is intended to evaluate, at a high-level, the cost competitiveness of PacifiCorp's coal units relative to replacement energy options. Our analysis is comprised of a cash-flow assessment which compares the all-in incremental costs of operating PacifiCorp's coal units to replacement energy from market purchases and renewables. It is, however, limited in that it does not examine the operational impacts of the replacement energy, or the extent to which these replacement resources meet capacity or resource adequacy criteria. The findings are meant to be indicative and directional, and meant to spur an informed conversation on the relative merits of maintaining or replacing PacifiCorp's coal fleet for the benefit of ratepayers.

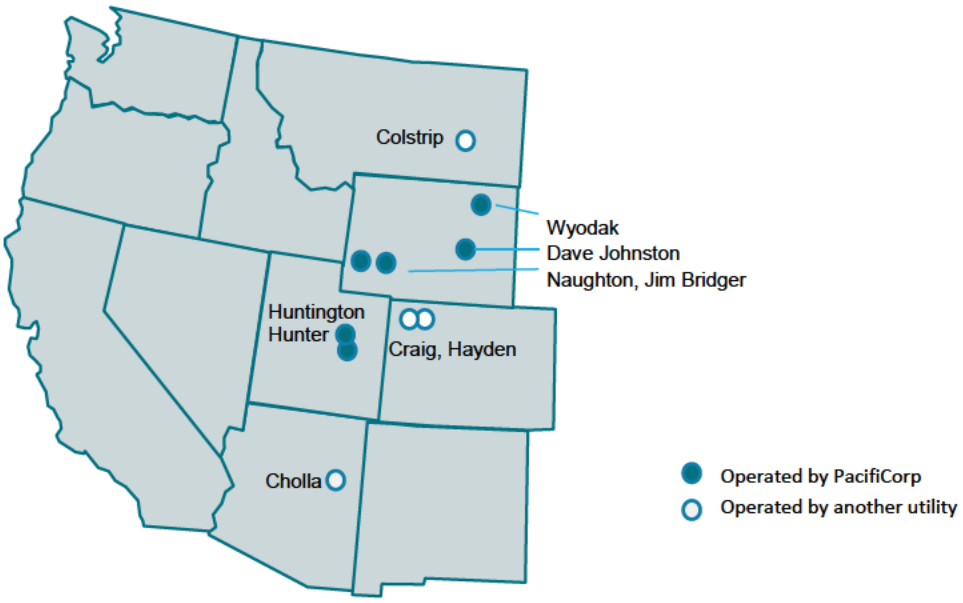
3. PacifiCorp's Coal Fleet

Market drivers such as energy efficiency, falling costs of renewable technologies, low natural gas prices, environmental regulations, and costs of maintaining aging plant infrastructure are marginalizing the cost competitiveness of much of the Western Interconnect's coal fleet. Evidence of these cost pressures can be found in the significant amount of coal-fired capacity that has been retired within the Western Interconnect in recent years. Since 2010, more than 4,582 MW of coal-fired generation in the Western U.S. interconnection have been retired. Over the same period, 27,118 MW of wind and solar have been added to the region's generation portfolio. Looking forward, an additional 7,789 MW of coal-fired

generation will likely be retired in the West by 2030. Despite these market developments, coal remains a significant fuel in PacifiCorp's power mix.

PacifiCorp currently has an ownership interest in ten coal plants in the Western U.S. comprising 24 generating units in Wyoming, Utah, Arizona, Colorado, and Montana. (See Appendix 7.2: Profile of PacifiCorp Coal Units.) Total operating capacity of these units is 5,975 MW, which accounted for over half of the Company's firm generation capacity and contributed an estimated 59 percent of PacifiCorp's total generation in 2017. Figure 1 shows the location of the ten plants.

Figure 1: Location of PacifiCorp's Coal Fleet



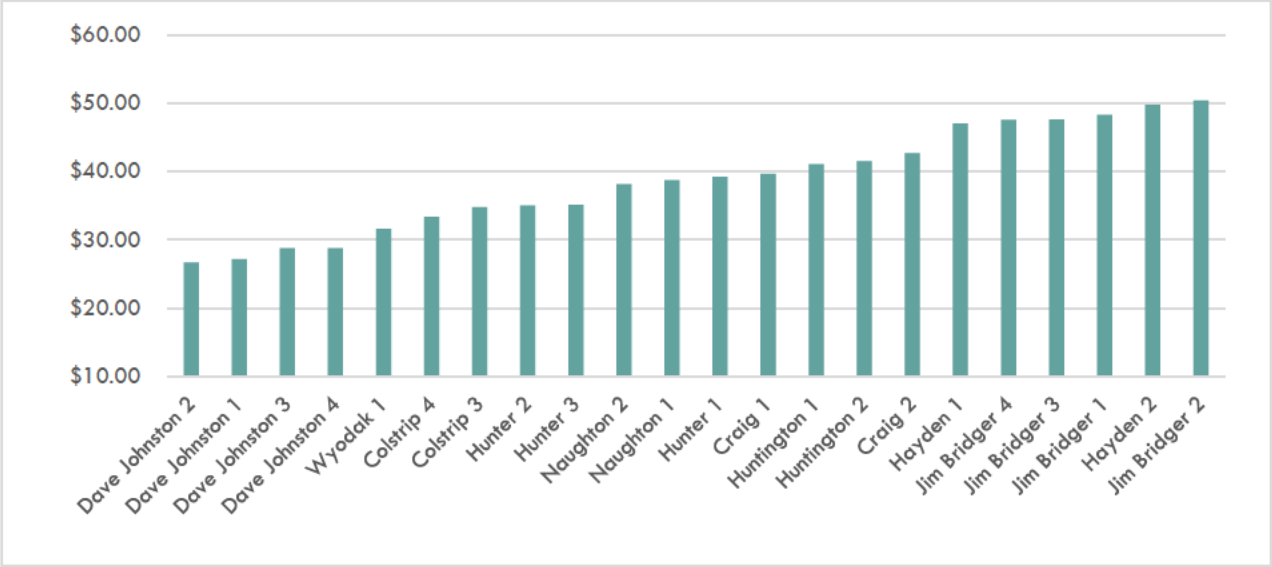
PacifiCorp's coal fleet is aging. The average age of the 22 coal units evaluated in this study is 43 years. (Two units were not studied because of near-term retirement dates.) The oldest unit in the Company's coal fleet, Dave Johnston 1, began service in 1959. The newest coal unit in which the Company has an ownership interest, but does not operate, is Colstrip 4. This unit began operations in 1986. Fifty-nine percent of PacifiCorp's coal-fired generation capacity, 3,494 MW, is more than 40 years old and 90 percent of the fleet was built between 30 to 50 years ago.

The costs of operating PacifiCorp's coal units have also increased. Between 2009 and 2016 operation and maintenance (O&M) costs of the Company's coal fleet have risen 53 percent. In 2009 the average total variable and fixed O&M costs per MWh was $19.33. By 2016 those costs had risen to $29.56 per MWh. In 2016, Units 1-4 of the Dave Johnston plant had the lowest O&M costs, ranging from $19.24 per MWh to $20.02 per MWh. Jim Bridger and Cholla were the highest cost units to operate among the Company's coal fleet, with costs ranging between $37 and $43 per MWh.

Figure 2 ranks each unit on the basis of the levelized cost of electricity (LCOE). As indicated below, the LCOE across the Company's coal fleet varies between $26.72 and $50.43 per MWh. The LCOE of Jim

Bridger Unit 2 and Hayden 2 have the highest LCOE among PacifiCorp's 22 units at $50.43 and $49.75 respectively. The lowest LCOEs are from the Dave Johnston units, ranging between $26.72 and $28.81 per MWh.

Figure 2: PacifiCorp Coal Units' Levelized Cost of Electricity, in $ per MWh



According to PacifiCorp's 2017 IRP Update, the Company is planning on retiring ten coal units with a capacity of 2,267 MW by 2030. The coal plants planned for retirement are listed in Table 1.

Table 1: Planned Coal Unit Retirements, 2019 to 2030

Plant	Unit	County, State	Year in Service	PacifiCorp Owned Capacity (MW)	Expected Year of Retirement
Cholla	4	Navajo, AZ	1981	380.0	2021
Craig	1	Moffat, CO	1980	82.5	2026
Dave Johnston	1	Converse, WY	1959	106.0	2028
	2	Converse, WY	1961	106.0	2028
	3	Converse, WY	1964	220.0	2028
	4	Converse, WY	1972	330.0	2028
Jim Bridger	1	Sweetwater, WY	1974	355.8	2029
Naughton	1	Lincoln, WY	1963	156.0	2030
	2	Lincoln, WY	1968	201.0	2030
	3	Lincoln, WY	1971	330.0	2019

4. Methodology

A discounted cashflow spreadsheet model and publicly available data was used to estimate the total going-forward fuel, operating costs, and future capital expenditures for PacifiCorp's 22 coal units on the basis of $/MWh. The $/MWh value for each cost category was then multiplied by the coal units' estimated generation in each year to calculate total expenditures on fuel, operations, and incremental capital. Total costs of generation were then discounted back to the present at a nominal discount rate of 6.91% to calculate a present value in 2019 dollars.

Annual projections of fuel and O&M expenses were based upon data reported by PacifiCorp in its Form 1 filings with the Federal Energy Regulatory Commission (FERC) and its Form 860 and Form 923 filings with the U.S. Energy Information Administration (EIA). The FERC and EIA data utilized in this study was accessed by subscription using S&P Global's Market Intelligence platform. Capital expenditures were estimated using the same methodology used by the EIA's National Energy Modeling System (NEMS). The NEMS model assumes the average annual capital additions for existing coal plants that are more than 30 years old is $27 per kW-year.

The estimated present value of each coal unit's cost was then compared to the estimated present value of the costs of three assumed resource replacement scenarios: wholesale market purchases, wind energy, and solar photovoltaic (PV) energy. Under the replacement scenarios, market purchases, solar PV and wind energy were assumed to replace each unit's projected generation over the period spanning from 2023 to the planned date of the coal unit's retirement. To enable an equivalent comparison of the present value of costs of each replacement scenario to the BAU case, the cost of each replacement power scenario also included operating and capital costs of each coal unit for the period 2019 through 2022.

As described above, the methodology utilized in this study was designed as a high-level, unit-by-unit analysis and intentionally bounded to a specific set of costs assumptions. It did not include a host of other costs including capacity replacement, and transmission-related expenses for example. Nor did it explicitly account for how the closure of a large number of coal units would affect the Company's power system or the broader changes in the economics of wholesale power markets.

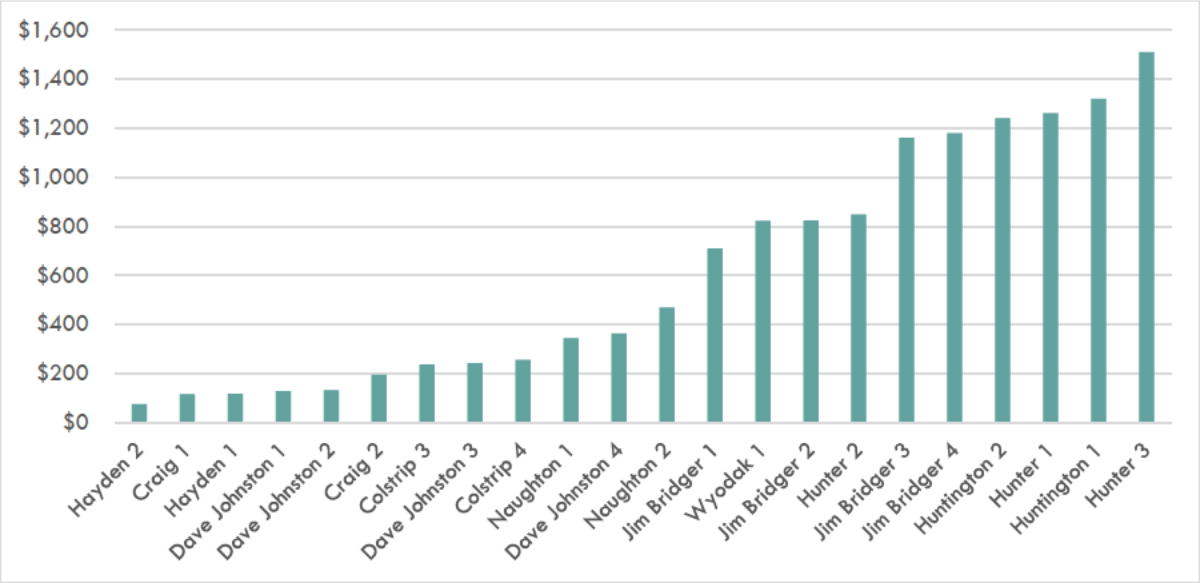
5. Comparative Cost Assessment of PacifiCorp's Coal Units

This analysis compared the cost of electricity generated for each of 22 of PacifiCorp's coal units to the cost of electricity from three alternative sources of electricity and utilized two metrics for costs comparison: LCOE in $ per MWh, and the Net Present Value (NPV) of the cost of electricity generation, measured in discounted total dollars. Cholla Unit 4 and Naughton Unit 3 were not included in this analysis due to their planned retirement dates at the end of 2019 and 2020.

Business-As-Usual (BAU) Case

The BAU case is defined as all PacifiCorp coal units continuing to operate at historic levels of production until their announced retirement dates. Over the expected life of these coal units, the estimated NPV of fuel, operating costs, and capital additions is $11.7 billion. NPV costs of individual units range from $76 million for Hayden Unit 2 to more than $1.51 billion for Hunter Unit 3. NPV correlates strongly with MW capacity and remaining operating life of the unit. Therefore, higher NPVs are generally seen for coal units in which PacifiCorp owns large amounts of capacity whose planned retirement dates are 2035 of later. The two highest NPVs are for Huntington 1, at 459 MW owned capacity, and Hunter 3, at 460 MW owned capacity. Figure 3 shows the ranking of NPVs across the 22 analyzed coal units.

Figure 3: Net Present Value, Operating and Incremental Capital Costs, in $Millions



Replacement with Market Purchases

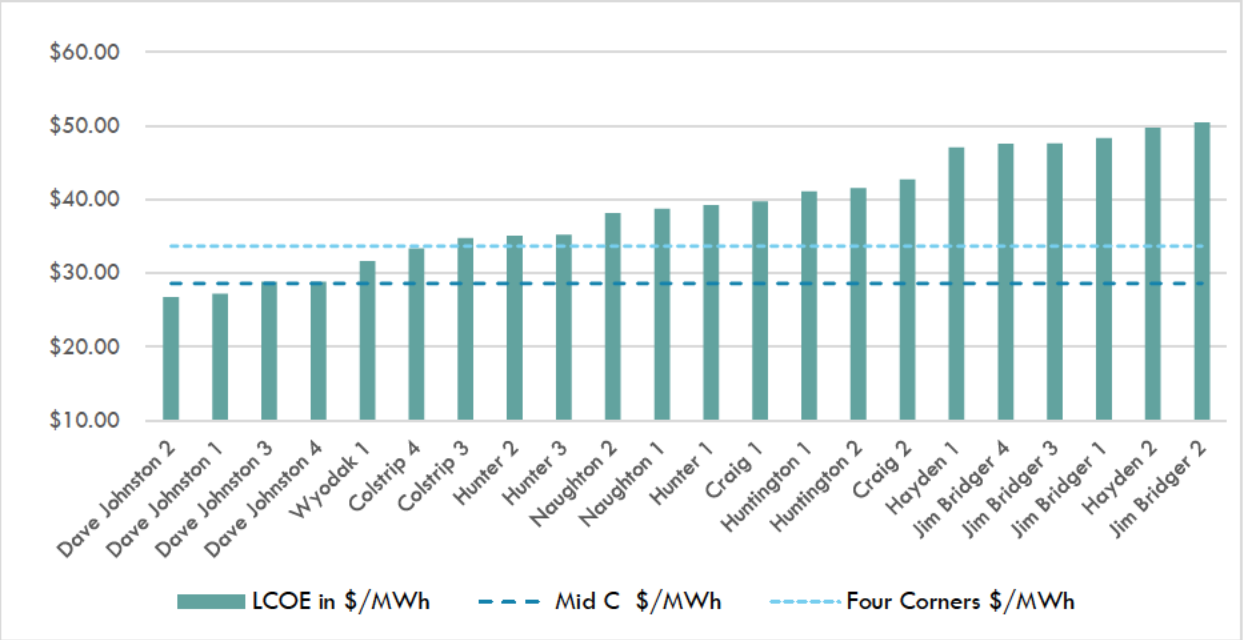
To assess the present value of going forward costs of the coal units against market purchases, the analysis estimated the costs of replacing each coal unit's generation with energy purchased from one or more market hubs identified in PacifiCorp's 2017 IRP Update. The assumed forward prices for wholesale electricity were taken from the same source.

For this analysis, we assumed market purchases to replace generation from the Colstrip and Jim Bridger coal units will be transacted at Mid-Columbia (Mid C). Market transactions at Four Corners will be used to replace power from all remaining units. In order to estimate the cost of market purchases, a simplifying assumption was made that each unit's generation is 50% on-peak and 50% off-peak.

Figure 4 compares the estimated LCOE for market purchases at Mid C and Four Corners to the LCOE of each of PacifiCorp's analyzed coal units. As illustrated by Figure 4, most of the coal units have LCOEs

higher than the LCOE of market purchases, especially market purchases at Mid C (which includes a substantial amount of hydroelectricity). For this analysis LCOE is one of two metrics used to compare the costs of PacifiCorp's coal units to the costs of replacement resources.

Figure 4: LCOE of Mid C and Four Corners Market Purchases Compared to PacifiCorp Coal Units, in $/MWh



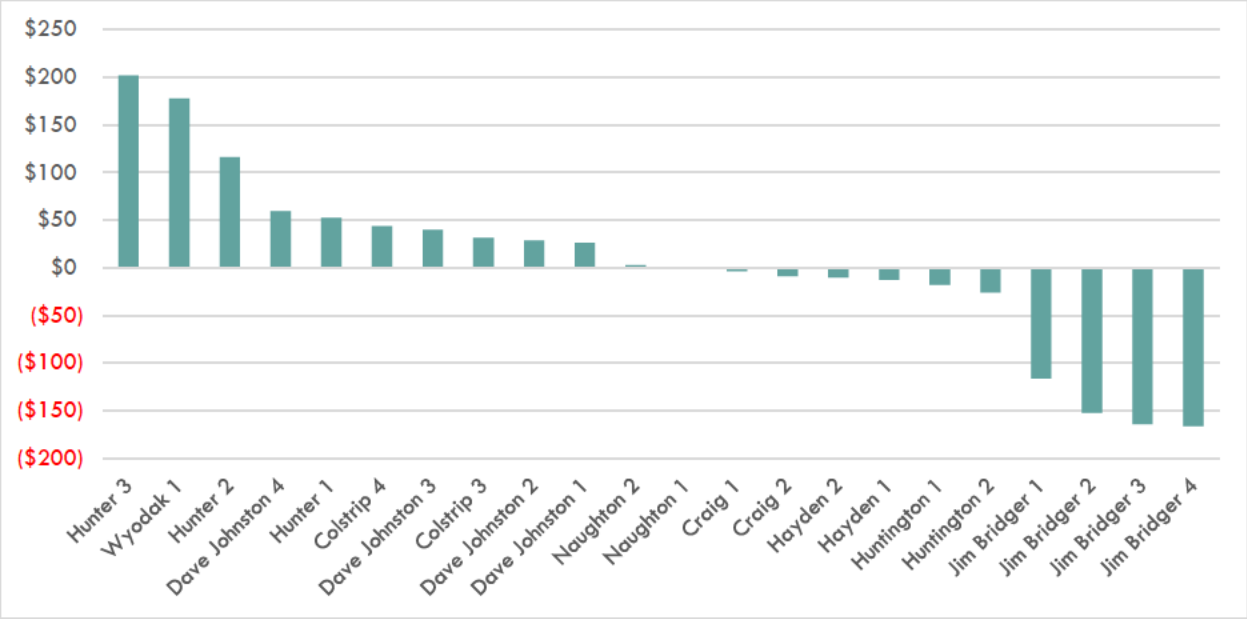
The more important metric in this analysis is NPV of costs, and more specifically, the *difference* in the NPV costs between the coal units and the potential replacement resource. This difference indicates whether the present value costs of operating the coal units are higher than the costs of the replacement resource. For example, the model results show that the NPV cost to run Jim Bridger 4 is $1,180 million over its remaining life, while the NPV cost to replace Jim Bridger 4 with market purchases is $1,014 million. In this case the NPV of the cost of the coal unit is higher than the NPV of the market purchase alternative. Therefore, if the NPV coal costs are subtracted from the NPV alternative costs, the result is negative ($166 million in this case), and this represents *savings* if Jim Bridger 4 is replaced with market purchases.

Figure 5 illustrates the difference in the estimated NPV costs of market purchases compared to each PacifiCorp coal unit. Coal units whose differences are positive represent units whose costs are less than market purchases. Those units whose differences are shown as negative in the figure are coal unit's whose NPV costs are greater than market purchases and indicate potential savings of replacing coal generated energy with less costly market purchases.

Figure 5 identifies 11 coal units whose present value costs are higher than the costs of market purchases. The units whose costs are higher include Craig 1 and 2, Jim Bridger 1 – 4, Hayden 1 – 2, Huntington 1 and 2, and Naughton 1. The difference in NPV costs for Naughton 2 is near zero, indicating this coal unit's costs are only marginally lower than market purchases. The Figure also shows the

potential savings if PacifiCorp purchased power from the wholesale market instead of continuing to operate these eleven units. The NPV savings associated with replacing the energy from these 11 coal units in this scenario range from $915,000 for Naughton 1 to $166 million for Jim Bridger 4. As a further point of reference, the NPV cost savings of replacing Huntingon 2 generation with market purchases is $26 million.

Figure 5: NPV Market Purchases Costs/(Savings) Relative to Coal, in $Millions



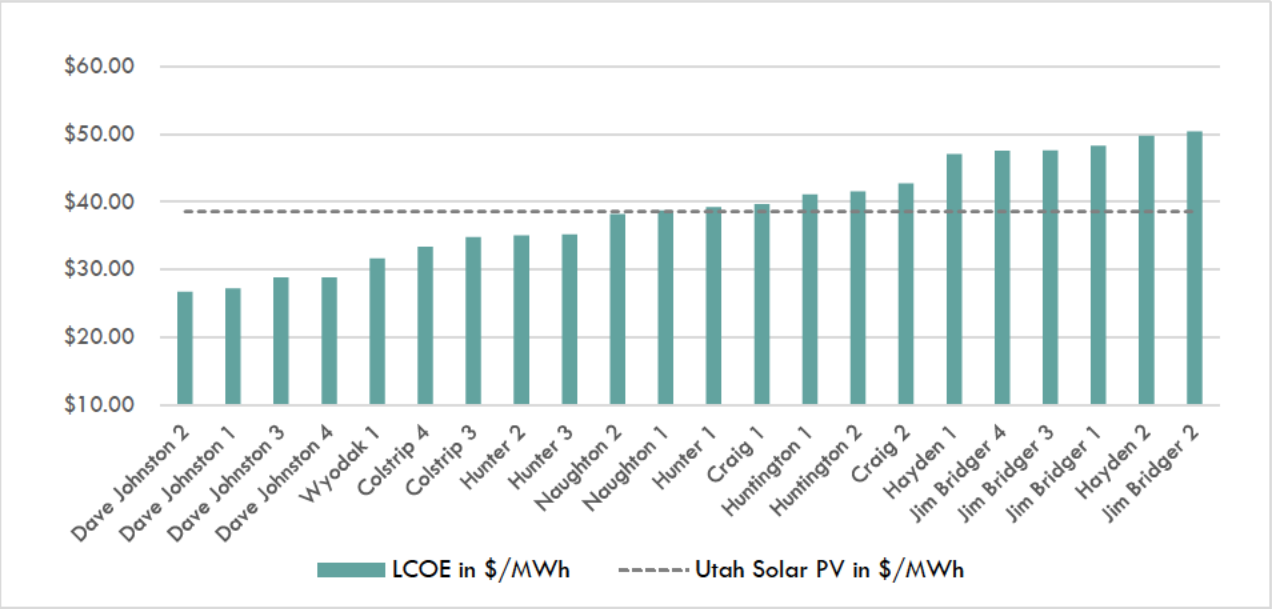
Replacement with Solar PV

The solar PV replacement resource used in this analysis was selected from the Supply-Side Resource Table reported on page 64 of PacifiCorp's 2017 IRP Update. The assumed replacement resource for this scenario was a 2021 50 MW Utah solar PV single-axis tracking resource with a capital cost of $1,392 per kW. Its total resource costs, with Investment Tax Credits (ITC), was reported in the Company's 2017 IRP Update as $33.36 per MWh, in 2017$. This analysis assumes the solar PV resource has made the necessary safe harbor investments to qualify for the ITC and comes on line in 2023. The 2017 cost reported in the IRP was escalated at the rate of inflation to derive a $38.55 LOCE for a 2023 solar PV resource.

The solar resource cost used in this analysis is considered a conservative cost estimate relative to what is currently available in the market. For example, the median price of 75 solar PV projects submitted in response to Xcel Energy's 2017 All-Resources RFP was $29.50 per MWh. Xcel's 2017 All-Source Solicitation 120-Day Report filed with the Colorado Public Utility Commission (CPUC) stated that the solar PV resources selected for inclusion in its electricity plan portfolio included "solar PV at between $23 – $27 per MWh . . . ".

Figure 6 shows the LCOE of the coal units compared to the $38.55 per MWh LCOE for the solar PV resource. Of the 22 coal units evaluated in this study, the LCOE of 11 units is higher than the LCOE of the solar PV replacement resource. As previously stated, LCOE is a simplified economic metric and used in this analysis as a data point for comparison, not a final determinate of cost effectiveness of a resource.

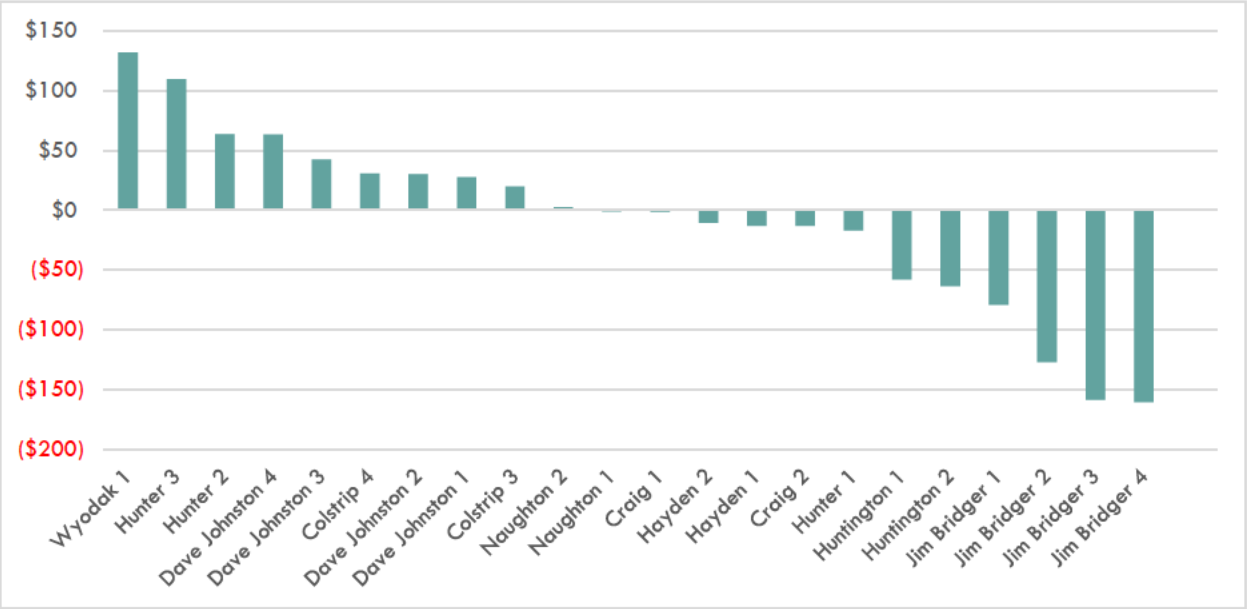
Figure 6: LCOE of Utah Solar PV Compared to PacifiCorp Coal Units, in $/MWh



When using the difference in NPV costs as a metric, 12 coal units are shown to have higher cost compared to the solar PV replacement resource. The higher cost units are Craig 1 and 2, Jim Bridger 1 – 4, Hayden 1 – 2, Huntington 1 and 2, and Naughton 1 plus Hunter 1. Figure 7 illustrates these results. The difference in NPV costs of Naughton 2 is again near zero indicating this coal units is only marginally less costly to operate on the basis of NPV cost than solar PV.

Figure 7 also shows the present value savings if the energy generation from each unit was replaced with the solar PV resource asssumed in this analysis. The present value savings in the solar PV replacement scenario range from $1.07 million to $161 million. Again, the largest savings are achieved with replacing energy from Jim Bridger 4 and the other Jim Bridger units and the smallest savings are associated with replacing energy generation from Naughton 1.

Figure 7: NPV Solar PV Costs/(Savings) Relative to Coal, in $Millions



Replacement with Wind

The baseline performance and cost assumptions for replacement wind resources also came from the Supply-Side Resource Table in PacifiCorp's 2017 IRP Update. Wyoming wind was selected as the replacement resource for all of the coal units in PacifiCorp's fleet in this scenario. The capital cost of this resource is $1,415 per kW for a project built in 2022. Its total resource costs of energy, with the Production Tax Credit (PTC), is $24.01 per MWh in 2017$. As with solar PV, this analysis assumes the wind resource comes on line in 2023 has made the necessary safe harbor investments and taken all other steps to qualify for the PTC. The 2017 cost reported in the IRP was escalated at the rate of inflation to derive a $27.56 per MWh LCOE for a 2023 Wyoming wind resource.

As with the solar PV cost assumptions, Energy Strategies believes this is a conservative cost estimate. PacifiCorp's 2017 IRP Update reported the new wind projects it proposes to acquire under its Energy Vision program would have a capital cost of $1,310 per kW and a total resource cost of energy of $17.36 per MWh when the Production Tax Credit was included. The wind projects Xcel Energy selected and included in its preferred electric plan portfolio for the 2017 All-Source Solicitation 120-Day Report included wind projects with levelized pricing of between $11 – $18 per MWh.

The LCOE of the Wyoming wind replacement power resource is significantly less than the LCOE for most of PacifiCorp's coal units. Figure 8 shows this comparison. Only two units of PacifiCorp's Dave Johnston plant have an LCOE that is lower than the wind replacement resource.

Figure 8: LCOE of Wyoming Wind Compared to PacifiCorp Coal Units, in $/MWh

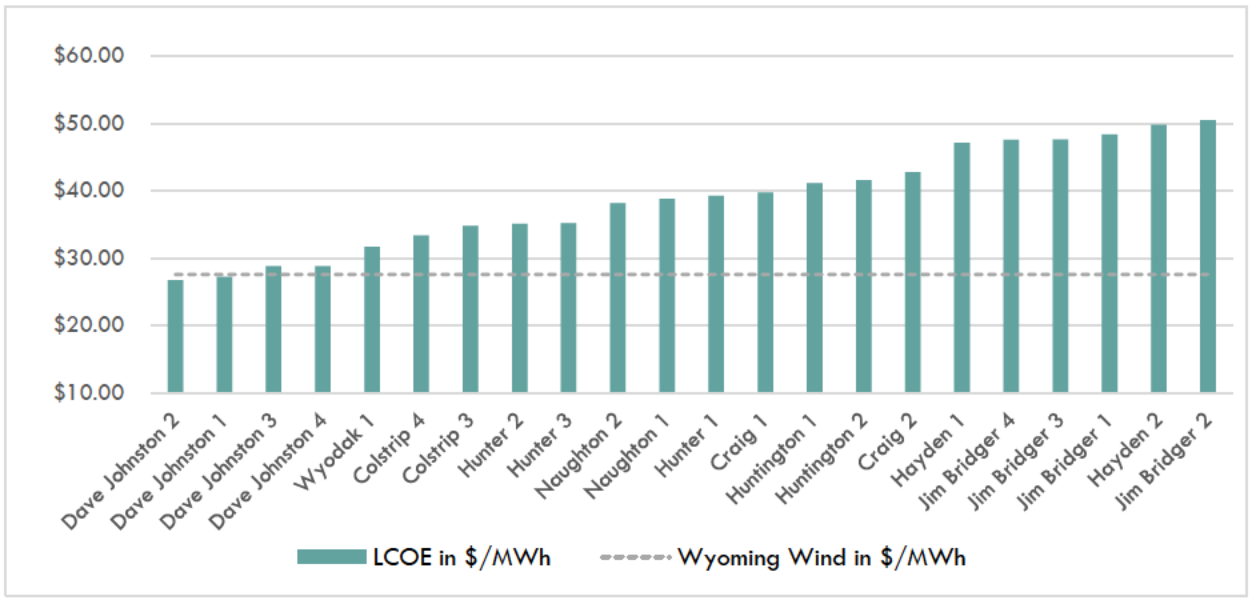
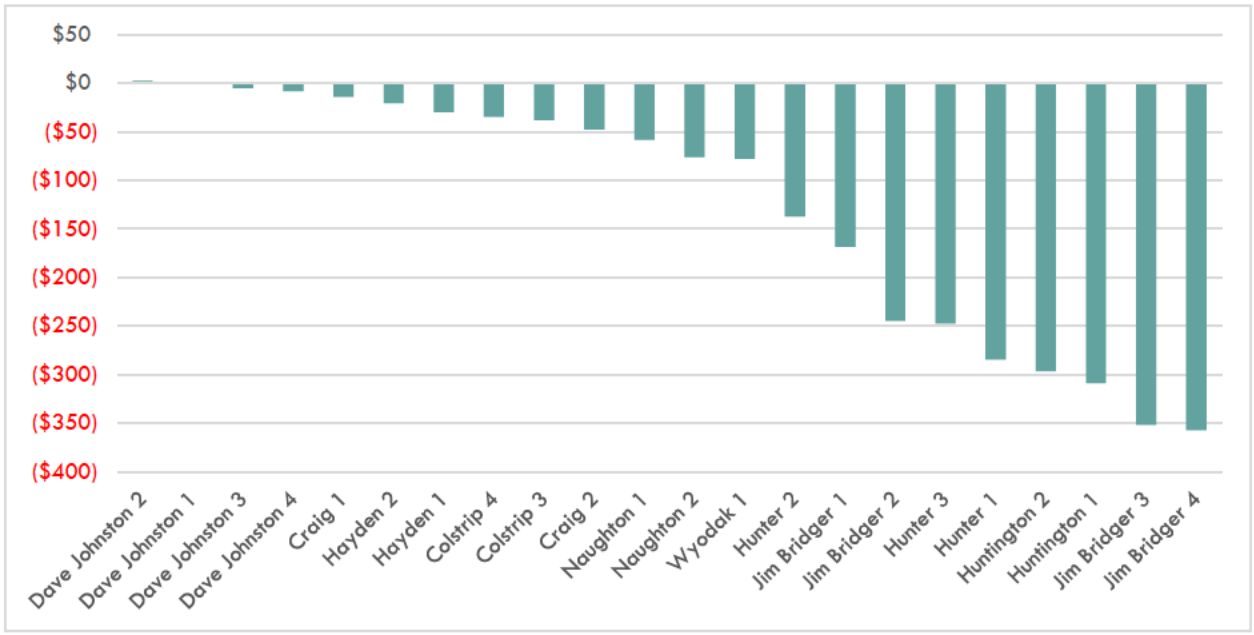


Figure 9 illustrates the difference in the estimated NPV costs of wind when compared to the NPV costs of each PacifiCorp coal unit. In this replacement scenario, there is a dramatic increase in the number of PacifiCorp coal units whose costs are higher than the replacement resource. Twenty (20) coal units' NPV costs exceed the costs of replacement energy from the wind resource. The only two coal units whose costs are lower are Dave Johnston 1 and 2. Because of the lower cost of wind the potential savings for each unit are higher than the other replacement scenarios. Savings range from $5.37 million for Dave Johnston 3 to over $350 million savings each for Jim Bridger units 3 and 4.

Figure 9: NPV Wind Costs/(Savings) Relative to Coal, in $Millions

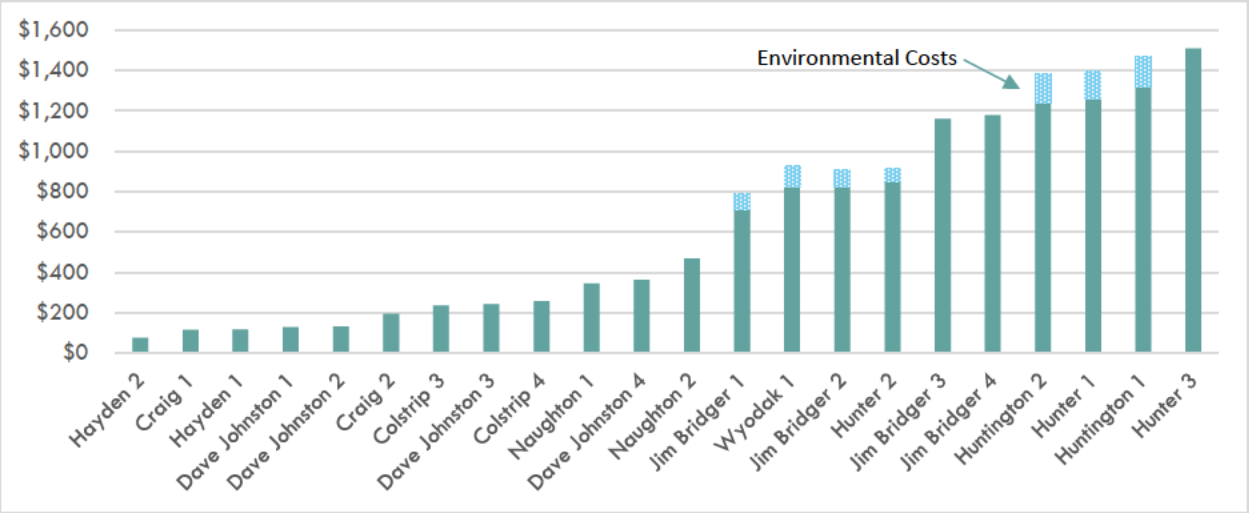


Cost Assessment Scenario with Environment Controls

In addition to the BAU case, this study also included an analysis of how expenditures on environmental controls might impact the going-forward cost of PacifiCorp's coal units relative to the BAU and replacement resources. Based on the Company's 2017 IRP, Energy Strategies identified seven coal units that potentially could incur the additional capital expense of installing Selective Catalytic Reduction (SCR) control technology to comply with federal Regional Haze standards. These units include: Hunter 1 and 2, Huntington 1 and 2, Jim Bridger 1 and 2, and Wyodak. Upfront capital and ongoing O&M cost estimates assumed for SCR in this analysis ranged from $275 to $345 million (in 2015$) and were obtained from the data set associated with the Synapse Energy Economics' Coal Asset Valuation Tool (CAVT).

Adding SCR systems increases the LCOE and present value costs. The present value costs of operating these controlled units increases by $665 million under this scenario. Figure 10 shows the NPV costs of the 22 units with the addition of environmental controls for the seven affected units.

Figure 10: Net Present Value, Operating and Capital Costs, plus SCR Environmental Controls, in $Millions



The study found that present value costs of four of the seven at-risk units evaluated in this sensitivity case were already higher than the three replacement resources, without the added cost of environmental controls. These four units were Jim Bridger 1 and 2, and Huntington 1 and 2. With the added costs of environmental controls, the cost of continuing to operate Hunter Unit 1 were higher relative to wholesale market purchases, and the cost of both Hunter 1 and 2 were higher than solar PV when it was the replacement resource. Figure 11 (market purchases) and Figure 12 (solar PV) show the differences in present value costs/savings against coal, with the Hunter units called out.

Figure 11: NPV Market Purchases Costs/(Savings) Relative to Coal, in $Millions

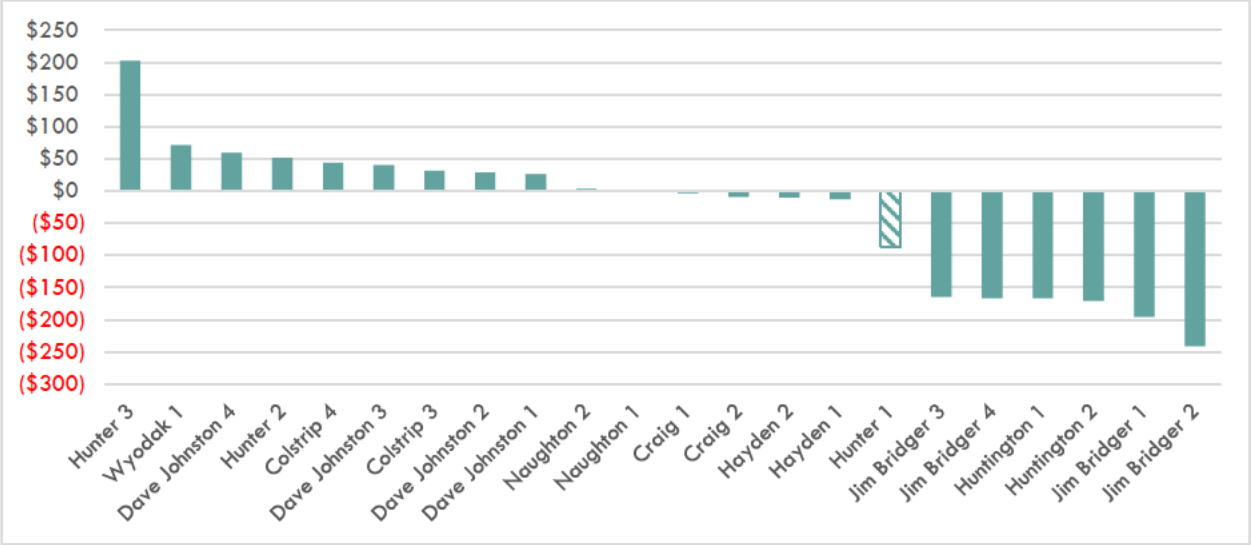
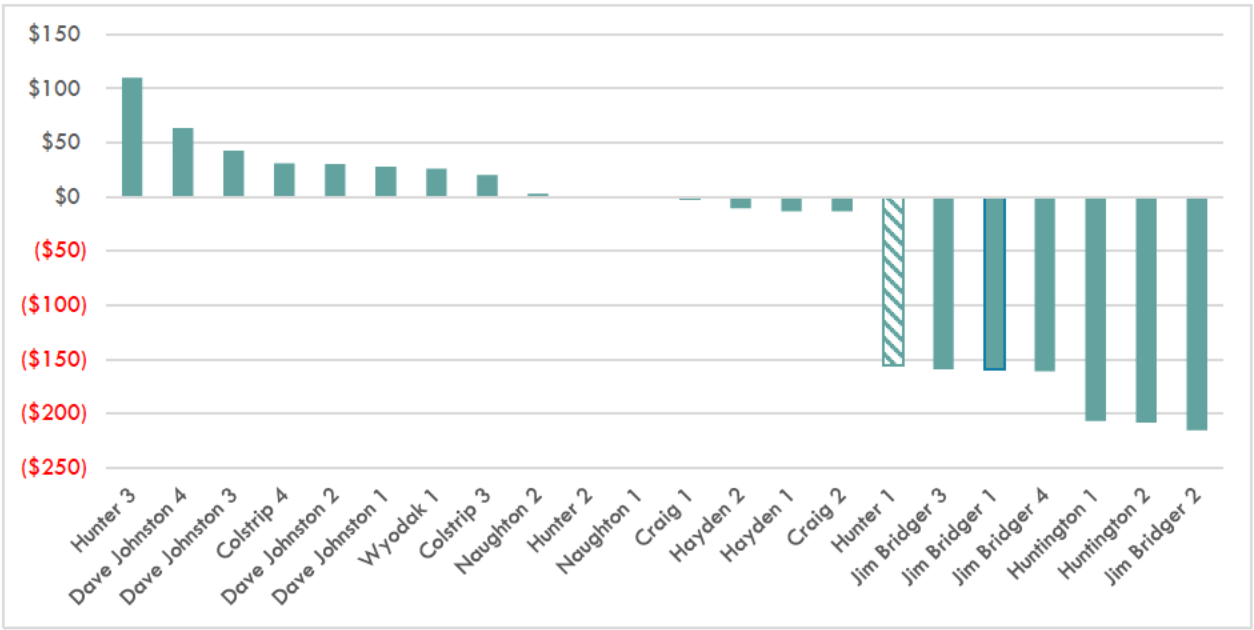


Figure 12: NPV Solar PV Costs/(Savings) Relative to Coal, in $Millions



The addition of SCR does not change the number of coal units that are higher cost relative to the wind replacement resource. The total number of coal units whose costs are higher remained at 20 units.

6. Caveats

The analysis described in this report was focused on comparing the estimated present value of the operating and capital costs of energy from individual PacifiCorp coal units to the cost for replacing that

energy using market purchases and renewable resources. The study did not evaluate other possible costs, including transmission-related expenses, operational impacts, coal contract costs or damages, and the cost of replacement capacity if required.

Transmission-related expenses could be incurred in the retirement of specific units, or incremental addition of new resources in constrained or remote locations. These costs are highly specific to individual units and their replacement resources and require a separate form of analysis. Operational impacts – i.e. avoided or incurred costs on other units based on the retirement and/or replacement of various coal units – are typically assessed through dispatch models. These impacts can result in incremental costs (i.e. less efficient dispatch) or net savings as the cost of market energy falls. Coal contract terms and potential damages for early termination are considered proprietary information of the operator. In general, PacifiCorp holds few very long-term coal contracts.

With respect to replacement capacity, the study assumed that wholesale market purchases are transacted as firm resources and thus have an implied capacity value. We did not account for the capacity value of the Company's coal units relative to wind or solar. However, to the extent that this study demonstrates that NPV costs savings are achieved, it is not beyond reason to assume these savings could be used to mitigate capacity replacement costs, if necessary.

7. Summary of Findings

Coal units are long-life assets and the economics of coal-fired generation under a regulated cost-of-service business model are complex. It is clear, nevertheless, that the ongoing costs of operating PacifiCorp's coal units to supply electricity to customers are increasing while the cost of renewable energy is falling. Using publicly available data from PacifiCorp and other vetted sources, this study found that eleven of PacifiCorp's coal units, representing 2,730 megawatts (MW), are consistently higher cost than replacement energy options, and in many cases substantially so. This reality poses a fundamental question of whether some of PacifiCorp's coal units are in fact least cost resources.

The going-forward cost of eleven coal units were consistently shown to be higher regardless of the replacement power scenario: Craig 1 and 2, Jim Bridger 1 – 4, Hayden 1 – 2, Huntington 1 and 2, and Naughton 1. With the added costs of environmental controls, the cost of continuing to operate Hunter Unit 1 were higher relative to wholesale market purchases, and the cost of both Hunter 1 and 2 were higher than solar PV when it was the replacement resource.

The study also compared the LCOE of PacifiCorp's coal units against the LCOE of the three replacement resources. LCOE across the Company's coal fleet varied between $26.72 and $50.43 per MWh. At the upper end of the spectrum, the LCOE of Jim Bridger Unit 2 and Hayden 2 have the highest LCOE among PacifiCorp's twenty-two units, while the Dave Johnston plant had the lowest LCOEs. Most of the coal units have LCOEs higher than market purchases, especially market purchases at Mid-C. The LCOE of eleven coal units was higher than the solar PV replacement resource, and the LCOE of the Wyoming wind replacement resource was less than the LCOE for all but two of the twenty-two coal units evaluated in this study.

8. Appendices

8.1. Assumptions

Assumption	Value	Description
Fuel		Fuel Cost is the cost of fuel for the plants in $/MWh produced. Fuel costs were taken from FERC and EIA documents as reported by S&P Global Market Intelligence Platform (formerly known as SNL)
Variable O&M		Variable O&M is the variable cost of Operations and Maintenance for the plants in $/MWh produced. Variable Costs were taken from FERC and EIA documents as reported by S&P Global Market Intelligence Platform (formerly known as SNL)
Fixed O&M		Fixed Cost is the fixed cost of Operations and Maintenance for the plants in $/kW-yr. Fixed Costs were taken from FERC and EIA documents as reported by S&P Global Market Intelligence Platform (formerly known as SNL)
Environmental Control Costs		Upfront capital and ongoing O&M cost estimates for SCRs for PacifiCorp's coal units were obtained from Synapse Energy Economics' Coal Asset Valuation Tool (CAVT)
Capital Additions	$27/kW-yr	Annual capital costs for each unit were based on the $27/kW-yr cost factor used by the EIA NEMS model. The factor was applied to the percent of operating capacity owned by PacifiCorp for each unit
Forward Market Prices		Study used the published Official Forward Price Curve (OFPC) used by PacifiCorp in its 2017 IRP Update, adjusted to remove the embedded CO_2 price adder
Forecast Period	27 years	NPV calculated for the period 2019 through 2046, the last year of retirement of PacifiCorp's coal units
Inflation Rate	2.27%	Represents the rate of inflation PacifiCorp uses in the 2017 IRP. Applied as an annual escalation rate for rate and cost projections in the cashflow model
Nominal Discount Rate	6.91%	Rate used in present value calculations in this study. Equals PacifiCorp's 6.91% WACC from the 2017 IRP Update. Represents the value at which total future costs were discounted back to the present, 2019

8.2. Profile of PacifiCorp Coal Units

Plant	Unit	County, State	Year in Service	PacifiCorp Owned Capacity MW	Expected Date of Retirement	Operator
Cholla	4	Navajo, AZ	1981	380.0	12/1/2020	APS
Colstrip	3	Rosebud, MT	1984	74.0	12/1/2046	PSE
	4	Rosebud, MT	1986	74.0	12/1/2046	PSE
Craig	1	Moffat, CO	1980	82.5	12/1/2025	Tri-State
	2	Moffat, CO	1979	82.5	12/1/2034	Tri-State
Dave Johnston	1	Converse, WY	1959	106.0	12/1/2027	PacifiCorp
	2	Converse, WY	1961	106.0	12/1/2027	PacifiCorp
	3	Converse, WY	1964	220.0	12/1/2027	PacifiCorp
	4	Converse, WY	1972	330.0	12/1/2027	PacifiCorp
Hayden	1	Routt, CO	1965	43.9	12/1/2030	Xcel Energy
	2	Routt, CO	1976	33.0	12/1/2030	Xcel Energy
Hunter	1	Emery, UT	1978	442.7	12/1/2042	PacifiCorp
	2	Emery, UT	1980	258.0	12/1/2042	PacifiCorp
	3	Emery, UT	1883	460.0	12/1/2042	PacifiCorp
Huntington	1	Emery, UT	1977	459.0	12/1/2036	PacifiCorp
	2	Emery, UT	1974	450.0	12/1/2036	PacifiCorp
Jim Bridger	1	Sweetwater, WY	1974	355.8	12/1/2028	PacifiCorp
	2	Sweetwater, WY	1975	353.1	12/1/2032	PacifiCorp
	3	Sweetwater, WY	1976	350.4	12/1/2037	PacifiCorp
	4	Sweetwater, WY	1979	355.1	12/1/2037	PacifiCorp
Naughton	1	Lincoln, WY	1963	156.0	12/1/2019	PacifiCorp
	2	Lincoln, WY	1968	201.0	12/1/2029	PacifiCorp
	3	Lincoln, WY	1971	330.0	12/1/2029	PacifiCorp
Wyodak	1	Campbell, WY	1978	272.0	12/1/2039	PacifiCorp

7.3. PacifiCorp Coal Units Operational Profile

Plant	Unit	Operating Capacity MW	Average Annual Generation (MWh)	Heat Rate	Average Capacity Factor (%)
Craig	1	428	4,575,560	10,635	70.58
	2	428	5,165,626	10,827	79.69
Colstrip	3	740	2,753,744	10,131	73.45
	4	740	2,245,720	10,105	59.90
Dave Johnston	1	106	693,652	11,566	74.70
	2	106	728,788	11,899	78.49
	3	220	1,239,917	11,056	64.34
	4	400	1,857,621	10,709	64.26
Hayden	1	179	1,189,363	11,252	75.85
	2	262	1,409,488	10,746	61.41
Hunter	1	471	2,501,997	10,545	60.64
	2	430	2,945,472	10,235	78.20
	3	460	3,134,673	9,932	77.79
Huntington	1	459	2,797,872	10,276	69.58
	2	450	2,601,905	10,530	66.00
Jim Bridger	1	531	2,944,255	10,370	63.30
	2	527	2,528,930	10,195	54.78
	3	523	3,058,638	10,532	66.76
	4	530	3,110,987	10,777	67.01
Naughton	1	156	1,108,821	10,487	81.14
	2	201	1,527,687	11,199	86.76
Wyodak	1	340	2,565,053	12,249	86.12

8.4. PacifiCorp Coal Units Cost Assumptions

The historical year 2017 was used for the operating data below. SNL was the source for the annual generation, heat rate, and capacity factor. The expected retirement date was based on 2017 IRP Regional Haze Case 5 except where specific units were updated in the 2017 IRP update.

Operations & Maintenance Costs					
Plant	Unit	Fixed O&M (2017$/kw-yr)	Fuel Cost (2017 $/MWh)	Variable Non-Fuel O&M (2017$MWh)	Capital Expense 2015$000
Craig	1	$37.38	$16.27	$3.35	$1,998
	2	$37.38	$16.27	$3.35	$1,998
Colstrip	3	$45.47	$19.75	$3.34	$2,228
	4	$45.47	$19.75	$3.34	$2,228
Dave Johnston	1	$27.60	$11.01	$4.08	$2,862
	2	$27.60	$11.01	$4.08	$2,862
	3	$27.60	$11.01	$4.08	$5,940
	4	$27.60	$11.01	$4.08	$8,910
Hayden	1	$36.93	$27.29	$3.89	$1,184
	2	$36.93	$27.29	$3.89	$891
Hunter	1	$30.95	$20.38	$2.59	$11,954
	2	$30.95	$19.28	$2.59	$6,966
	3	$30.95	$19.32	$2.59	$12,420
Huntington	1	$13.71	$25.61	$3.27	$12,393
	2	$13.71	$25.61	$3.27	$12,150
Jim Bridger	1	$36.99	$29.64	$0.65	$9,606
	2	$36.99	$29.64	$0.65	$9,533
	3	$36.99	$29.64	$0.65	$9,461
	4	$36.99	$29.64	$0.65	$9,588
Naughton	1	$27.77	$22.16	$3.70	$4,212
	2	$27.77	$22.16	$3.70	$5,427
Wyodak	1	$39.72	$14.76	$3.76	$7,344

Environmental capital and operating costs were obtained from the data set for the Synapse CAVT model.

Environmental Control Costs					
Plant	Unit	Type of Additional Environmental Controls	Cost in 2015$ Millions	Year Added	Regulation Trigger
Hunter	1	SCR	$273.00	2023	Regional Haze
	2	SCR	$273.00	2023	Regional Haze
Huntington	1	SCR	$274.00	2023	Regional Haze
	2	SCR	$277.00	2023	Regional Haze
Jim Bridger	1	SCR	$286.00	2022	Regional Haze
	2	SCR	$285.00	2021	Regional Haze
Wyodak	1	SCR	$345.00	2022	Regional Haze

8.5. Table of Results: Levelized Cost of Electricity

Business as Usual Case Levelized Cost of Electricity (LCOE) $ /MWH					
Plant	Unit	Coal	Market Purchases	Utah Solar PV	Wyoming Wind
Craig	1	$34.77	$28.61	$38.55	$27.56
	2	$33.37	$28.61	$38.55	$27.56
Colstrip	3	$39.71	$33.66	$38.55	$27.56
	4	$42.71	$33.66	$38.55	$27.56
Dave Johnston	1	$27.20	$33.66	$38.55	$27.56
	2	$26.72	$33.66	$38.55	$27.56
	3	$28.80	$33.66	$38.55	$27.56
	4	$28.81	$33.66	$38.55	$27.56
Hayden	1	$47.07	$33.66	$38.55	$27.56
	2	$49.75	$33.66	$38.55	$27.56
Hunter	1	$39.24	$33.66	$38.55	$27.56
	2	$35.07	$33.66	$38.55	$27.56
	3	$35.17	$33.66	$38.55	$27.56
Huntington	1	$41.10	$33.66	$38.55	$27.56
	2	$41.54	$33.66	$38.55	$27.56
Jim Bridger	1	$48.31	$28.61	$38.55	$27.56
	2	$50.43	$28.61	$38.55	$27.56
	3	$47.60	$28.61	$38.55	$27.56
	4	$47.55	$28.61	$38.55	$27.56
Naughton	1	$38.76	$33.66	$38.55	$27.56
	2	$38.17	$33.66	$38.55	$27.56
Wyodak	1	$31.64	$33.66	$38.55	$27.56

8.6. Table of Results: NPV of Costs of Coal and Three Alternatives

Business as Usual Case NPV of Coal Unit Costs and Replacement Resources $Millions					
Plant	Unit	Coal	Solar Alternative	Wind Alternative	Market Purchases Alternative
Colstrip	3	$236.5	$256.5	$198.4	$267.9
	4	$256.3	$287.3	$221.7	$300.2
Craig	1	$116.6	$115.2	$102.4	$113.1
	2	$196.0	$182.9	$148.2	$187.0
Dave Johnston	1	$128.3	$155.9	$129.2	$154.5
	2	$132.5	$162.8	$134.7	$161.3
	3	$242.4	$284.8	$237.0	$282.3
	4	$363.3	$426.8	$355.2	$423.0
Hayden	1	$118.2	$105.1	$88.3	$105.5
	2	$76.0	$65.6	$55.3	$65.8
Hunter	1	$1,262.6	$1,245.9	$977.8	$1,315.1
	2	$848.8	$912.7	$711.3	$964.8
	3	$1,510.1	$1,620.0	$1,262.7	$1,712.3
Huntington	1	$1,321.0	$1,262.9	$1,012.1	$1,303.2
	2	$1,241.1	$1,177.8	$944.5	$1,215.2
Jim Bridger	1	$710.8	$631.4	$542.1	$594.7
	2	$824.2	$697.1	$579.4	$671.7
	3	$1,161.6	$1,002.8	$809.8	$997.4
	4	$1,180.3	$1,019.6	$823.3	$1,014.1
Naughton	1	$345.8	$344.8	$287.4	$344.9
	2	$469.4	$472.2	$393.2	$472.4
Wyodak	1	$822.3	$954.7	$744.1	$1,000.2

8.7. Table of Results: Effect of Environmental Control Costs on LCOE and NPV

		Without Environmental Control Costs		With Environmental Control Costs	
Plant	Unit	LCOE $/MWh	NPV Millions$	LCOE $/MWh	NPV Millions$
Hunter	1	$39.24	$1,263	$44.94	$1,402
	2	$35.07	$849	$38.58	$913
Huntington	1	$35.17	$1,510	$35.17	$1,510
	2	$41.10	$1,321	$47.61	$1,470
Jim Bridger	1	$41.54	$1,241	$48.36	$1,386
	2	$48.31	$711	$58.14	$791
Wyodak	1	$50.43	$824	$58.68	$912

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