

## UE 246 – CERTIFICATE OF SERVICE

I hereby certify that, on this 13<sup>th</sup> day of August, 2012, I served the foregoing **REBUTTAL TESTIMONY OF THE CITIZENS' UTILITY BOARD OF OREGON** in docket UE 246 upon each party listed in the UE 246 PUC Service List by email and, where paper service is not waived, by U.S. mail, postage prepaid, and upon the Commission by email and by sending one original and five copies by U.S. mail, postage prepaid, to the Commission's Salem offices.

(W denotes waiver of paper service)

(C denotes service of Confidential material authorized)

**W PACIFIC POWER**

**C SARAH WALLACE**  
825 NE MULTNOMAH ST STE 1800  
PORTLAND OR 97232  
[sarah.wallace@pacificorp.com](mailto:sarah.wallace@pacificorp.com)

**W WILLIAM GANONG**

**C 514 WALNUT AVENUE**  
KLAMATH FALLS OR 97601  
[wganong@aol.com](mailto:wganong@aol.com)

**W BOEHM KURTZ & LOWRY**

**C KURT J BOEHM**  
36 E SEVENTH ST - STE 1510  
CINCINNATI OH 45202  
[kboehm@bkllawfirm.com](mailto:kboehm@bkllawfirm.com)

**W BOEHM, KURTZ & LOWRY**

**C JODY KYLER**  
36 E SEVENTH ST - STE 1510  
CINCINNATI OH 45202  
[jkyler@bkllawfirm.com](mailto:jkyler@bkllawfirm.com)

**W DAVISON VAN CLEVE**

**C IRION A SANGER**  
333 SW TAYLOR - STE 400  
PORTLAND OR 97204  
[ias@dvclaw.com](mailto:ias@dvclaw.com)

**W DAVISON VAN CLEVE PC**

**C MELINDA J DAVISON**  
333 SW TAYLOR - STE 400  
PORTLAND OR 97204  
[mjd@dvclaw.com](mailto:mjd@dvclaw.com); [mail@dvclaw.com](mailto:mail@dvclaw.com)

**W ENERGY STRATEGIES LLC**

**C KEVIN HIGGINS**  
215 STATE ST - STE 200  
SALT LAKE CITY UT 84111-2322  
[khiggins@energystat.com](mailto:khiggins@energystat.com)

**W ESLER STEPHENS & BUCKLEY**

**C JOHN W STEPHENS**  
888 SW FIFTH AVE STE 700  
PORTLAND OR 97204-2021  
[stephens@eslerstephens.com](mailto:stephens@eslerstephens.com);  
[mec@eslerstephens.com](mailto:mec@eslerstephens.com)

**W KLAMATH WATER AND POWER**

**C AGENCY**  
HOLLIE CANNON  
735 COMMERCIAL ST STE 4000  
KLAMATH FALLS OR 97601  
[hollie.cannon@kwapa.org](mailto:hollie.cannon@kwapa.org)

**W NW ENERGY COALITION**

**C WENDY GERLITZ**  
1205 SE FLAVEL  
PORTLAND OR 97202  
[wendy@nwenergy.org](mailto:wendy@nwenergy.org)

**W PACIFIC POWER**  
**C R. BRYCE DALLEY**  
825 NE MULTNOMAH ST., STE 2000  
PORTLAND OR 97232  
[bryce.dalley@pacificorp.com](mailto:bryce.dalley@pacificorp.com)

**W PACIFICORP, DBA PACIFIC POWER**  
OREGON DOCKETS  
825 NE MULTNOMAH ST, STE 2000  
PORTLAND OR 97232  
[oregondockets@pacificorp.com](mailto:oregondockets@pacificorp.com)

**W PORTLAND GENERAL ELECTRIC**  
**RANDY DAHLGREN**  
121 SW SALMON ST - 1WTC0702  
PORTLAND OR 97204  
[pge.opuc.filings@pgn.com](mailto:pge.opuc.filings@pgn.com)

**W PORTLAND GENERAL ELECTRIC**  
**DOUGLAS C TINGEY**  
121 SW SALMON 1WTC13  
PORTLAND OR 97204  
[doug.tingey@pgn.com](mailto:doug.tingey@pgn.com)

**W OREGON PUC**  
**C DEBORAH GARCIA**  
PO BOX 2148  
SALEM OR 97308-2148  
[deborah.garcia@state.or.us](mailto:deborah.garcia@state.or.us)

**W DEPARTMENT OF JUSTICE**  
**C MICHAEL T WEIRICH**  
1162 COURT ST NE  
SALEM OR 97301-4096  
[michael.weirich@doj.state.or.us](mailto:michael.weirich@doj.state.or.us)

**W REGULATORY & COGENERATION SERVICES INC**  
**C DONALD W SCHOENBECK**  
900 WASHINGTON ST STE 780  
VANCOUVER WA 98660-3455  
[dws@r-c-s-inc.com](mailto:dws@r-c-s-inc.com)

**W RENEWABLE NORTHWEST PROJECT**  
**C MEGAN WALSETH DECKER**  
421 SW 6TH AVE #1125  
PORTLAND OR 97204-1629  
[megan@rnp.org](mailto:megan@rnp.org)

**W RENEWABLE NORTHWEST PROJECT**  
**C JIMMY LINDSAY**  
421 SW 6TH AVE #1125  
PORTLAND OR 97204-1629  
[jimmy@rnp.org](mailto:jimmy@rnp.org)

**W ROBERTSON-BRYAN, INC.**  
**STUART ROBERTSON**  
85 SECOND ST., 2ND FLR  
SAN FRANCISCO CA 94105  
[jeff.speir@sierraclub.org](mailto:jeff.speir@sierraclub.org)

**W SIERRA CLUB**  
**TRAVIS RITCHIE**  
85 SECOND STREET, 2ND FL  
SAN FRANCISCO CA 94105  
[travis.ritchie@sierraclub.org](mailto:travis.ritchie@sierraclub.org)

**W SIERRA CLUB LAW PROGRAM**  
**C GLORIA D SMITH**  
85 SECOND STREET  
SAN FRANCISCO CA 94105  
[gloria.smith@sierraclub.org](mailto:gloria.smith@sierraclub.org)

**W SYNAPSE ENERGY**  
**C JEREMY FISHER**  
485 MASSACHUSETTS AVE., STE 2  
CAMBRIDGE MA 02139  
[jfisher@synapse-energy.com](mailto:jfisher@synapse-energy.com)

**W PUC STAFF - DOJ**  
**C JOHANNA RIEMENSCHNEIDER**  
1162 COURT ST NE  
SALEM OR 97301-4796  
[johanna.riemenschneider@doj.state.or.us](mailto:johanna.riemenschneider@doj.state.or.us)

**W PARKS LAW OFFICES, LLC**  
KEVIN E PARKS  
310 SW 4TH AVE., STE. 806  
PORTLAND OR 97204  
[kevin@parks-law-offices.com](mailto:kevin@parks-law-offices.com)

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Sommer Templet". The signature is fluid and cursive, with the first name "Sommer" being more prominent than the last name "Templet".

Sommer Templet, OSB #105260  
Staff Attorney  
Citizens' Utility Board of Oregon  
610 SW Broadway, Ste. 400  
Portland, OR 97205  
(503) 227-1984  
[sommer@oregoncub.org](mailto:sommer@oregoncub.org)

**BEFORE THE PUBLIC UTILITY COMMISSION**

**OF OREGON**

**UE 246**

**In the Matter of**

**PACIFICORP, dba PACIFIC POWER's  
Request for a General Rate Revision.**

---

)  
)  
)  
)  
)  
)

**REBUTTAL TESTIMONY**

**OF THE**

**CITIZENS' UTILITY BOARD OF OREGON**

**August 13, 2012**



# REBUTTAL TESTIMONY OF THE CITIZENS' UTILITY BOARD OF OREGON

CUB submits its Rebuttal Testimony in this docket to address three issues that are not covered by the Partial Stipulation filed July 12, 2012. These remaining issues are: 1) PacifiCorp's investments in environmental controls at its coal generation plants; 2) PacifiCorp's proposal to establish a Power Cost Adjustment Mechanism (PCAM); and 3) PacifiCorp's proposed tariff rider for its investment in the Mona to Oquirrh transmission line. It is CUB's position that PacifiCorp's clean air investments in its coal plants were not prudent because PacifiCorp failed to take a least cost approach to those investments, including consideration of whether there were alternatives to those investments that could provide lower costs to customers. PacifiCorp's PCAM proposal should also be rejected, as it is not consistent with the allocation of risk between customers and utilities that has historically been taken in Oregon. Additionally, the Mona-Oquirrh line is not currently

used and useful and is not expected to be used and useful at the time the requested rates will go into effect in this case, so it should not be added to rates at this time.

## **II. PacifiCorp's Coal Investments**

### **A. PacifiCorp's Reply Testimony Mischaracterizes CUB's Approach to Clean Air Investments**

Before CUB discusses PacifiCorp's clean air investments, we need to clarify CUB's approach, because it was mischaracterized by PacifiCorp in PacifiCorp's Reply Testimony.

According to PacifiCorp:

CUB and Sierra Club are attempting to use the existing regulatory framework in Oregon to promote a particular policy goal—reduction/elimination of coal-fueled generation prior to the end of current ratemaking depreciation lives. But Oregon's existing regulatory framework does not support continued reanalysis and abandonment of projects that are in process. The appropriate forum to pursue CUB and Sierra Club's policy goal is the legislature, not this Commission. At the very least, a change to Oregon's used and useful statute, ORS 757.355, is necessary to avoid creating a disincentive for a utility to act in the customers' long-term interests by converting coal-fired plants to natural gas where economic.<sup>1</sup>

CUB finds it ironic that PacifiCorp is itself proposing legislative-style changes in the same paragraph in which it accuses CUB of misusing this docket to propose legislative-style changes. CUB also has to point out that PacifiCorp is misrepresenting CUB's approach to this docket.

CUB is not proposing anything in this docket that is not consistent with the existing regulatory framework in Oregon. CUB's goal, as always, is to ensure that utility rates charged to Oregon customers reflect least-cost/least-risk planning and decision-

---

<sup>1</sup> UE 233/PAC/1400/Woollums/27.

1 making, and is not the “elimination” of all coal-fired generation, Specifically, CUB  
2 believes that before further investing in coal plants, companies are required to consider  
3 alternatives to those investments on a least cost/least risk basis. Because coal is a leading  
4 contributor to climate change and has a regulatory target on its back, there are real  
5 financial risks to customers associated with the future operation of coal plants. Phasing  
6 out coal plants when a phase-out is economic and in the financial interests of customers  
7 has the added benefit of reducing future risks that are inherent in the operation of coal  
8 plants. Taking an action that reduces both costs and risks should be a regulatory no-  
9 brainer. To reiterate, CUB’s only goal here is to ensure that utilities like PacifiCorp,  
10 Idaho Power, and PGE are required by the Commission to analyze using a least cost/least  
11 risk framework whether phasing out a coal plant is lower cost than continuing to invest in  
12 it.

13 It is PacifiCorp that has failed to act consistently with the framework and not  
14 CUB. A company’s major investments in demand-side or supply-side resources are  
15 supposed to be vetted in an IRP before those investments are made. But PacifiCorp has  
16 now invested more than \$1 billion in its coal fleet without bringing those investments to  
17 the IRP process.<sup>2</sup> Instead, the Company has claimed that clean air compliance costs are  
18 not an IRP issue.<sup>3</sup> CUB strongly disagrees with PacifiCorp’s position and continues to  
19 argue that the existing regulatory framework in Oregon requires that significant  
20 investments in generating resources be examined in an IRP before those investments can  
21 be made.

---

<sup>2</sup> Testimony of Cathy S. Woollums, Senior Vice President and Chief Environmental Counsel, MidAmerican Energy Holdings Company, Committee on Environment and Public Works, United States Senate, June 15, 2011.

<sup>3</sup> LC 52 CUB Comments, page 5.

1 PacifiCorp also states that “Oregon’s existing regulatory framework does not  
2 support continued reanalysis and abandonment of projects that are in process.”<sup>4</sup> CUB  
3 believes that utilities have a responsibility to reevaluate their decision-making as  
4 conditions change in order to ensure that resource decisions are consistent with a least-  
5 cost/least-risk approach. This is why IRPs require updates.<sup>5</sup> It is also why IRPs have to  
6 be filed every two years<sup>6</sup> and is one of the reasons the IRPs “acknowledge” utility  
7 resources rather than pre-approving them. There is clearly an expectation that utilities are  
8 continuing to reexamine these decisions to ensure that they are following a least cost/least  
9 risk path.

10 As to whether a change in Oregon’s used and useful law is necessary or not, CUB  
11 notes that in this very docket, parties have stipulated to accelerated depreciation for the  
12 Carbon plant, allowing it to close without encountering issues with the used and useful  
13 standard.<sup>7,8</sup> This is not unusual. Parties in UE 239 have also agreed to accelerated  
14 depreciation for Idaho Power for its share of Boardman.<sup>9</sup> The Commission approved a  
15 stipulation allowing PGE accelerated depreciation of Boardman in UE 215.<sup>10</sup> Oregon has  
16 a track record of flexible regulation, as evidenced by the decommissioning of  
17 PacifiCorp’s Condit Dam and Klamath River dam system, to support least-cost decisions,  
18 including decisions that reduced the useful life of assets.<sup>11</sup> Of course, this would be easier

---

<sup>4</sup> UE 233/PAC/1400/Woollums/27.

<sup>5</sup> OAR 860-027-0400(8),(9) and (10).

<sup>6</sup> OAR 860-027-0400(3).

<sup>7</sup> In Comments of PacifiCorp Docket ID No. EPA- R08-OAR-2012-0026 Page 7 of 23, July 12, 2012, PacifiCorp stated that it had not made a final determination concerning the closure of Carbon.

<sup>8</sup> UE 246 Partial Stipulation at p. 4.

<sup>9</sup> OPUC Order No. 12-235.

<sup>10</sup> OPUC Order No. 11-004; *see also* OPUC Order No. 11-242.

<sup>11</sup> For Condit, see UE 246, workpaper 8.12 Misc. Asset Sales and Removals; for Klamath, see docket UE 219.



1 if each resource decision was first vetted in an IRP, because that would increase the time  
2 available to apply tools such as accelerated depreciation.

3 The fundamental problem here is that PacifiCorp is investing billions of dollars in  
4 upgrades to its coal fleet without a comprehensive least cost/lease risk analysis for each  
5 plant. However, before we dive into PacifiCorp's Rebuttal testimony, we must first  
6 respond to the Staff's Opening testimony on this issue.

7 **B. Staff's Conclusions About Coal Plants Are Not Based on a Proper Analysis**

8 Staff reached the unsupported conclusion that PacifiCorp was prudent in its  
9 investment decision, but that its process had infirmities. CUB calls Staff's conclusion  
10 "unsupported" because we find little evidence and analysis behind it. The conclusion was  
11 based only upon an extrapolation that was itself made without a realization and  
12 understanding of some of the fundamental details.

13 ***i. Staff Failed to Recognize the Importance of the Correct Alternative Closure Date***

14 PacifiCorp's Naughton 1 Study assumed that the alternative to clean air  
15 investment was immediate closure in 2009, which was years before any compliance  
16 deadline for that plant. PacifiCorp's original analysis thus found that there was a BEGIN  
17 CONFIDENTIAL \$ ██████████ END CONFIDENTIAL benefit to make the Clean Air  
18 investment.<sup>12</sup> As CUB will discuss later, correcting the erroneous immediate closure date  
19 in PacifiCorp's study changes the results of the analysis. Staff failed to spot the erroneous  
20 date or to understand its effect upon the results of the study.

21 CUB knows this because CUB asked Staff in CUB Data Request No. 7 whether  
22 Staff had considered the erroneous date and its effect upon Staff's extrapolation. Staff

---

<sup>12</sup> UE 246/PAC/1500/Teply/18.

1 answered that it had not, but that Staff would now identify that error as an infirmity in the  
2 PacifiCorp analysis:

3 In its testimony Staff did not consider the impact of the assumed idling  
4 date on the PVR(d) analyses. Staff has issued DR No. 340 to PacifiCorp  
5 requesting the reasoning behind the assumed idling dates. The Company's  
6 response to the data request was that the intent was to understand the  
7 economics of the coal plant units at the time of decision making. While  
8 Staff can agree this reasoning was logical, in the context of decision  
9 making Staff doesn't consider it reasonable because of the impact on the  
10 PVR(d) results. As a result, Staff would conclude the assumed idling  
11 dates, rather than State permit compliance dates, is a decision process  
12 infirmity.<sup>13</sup>

13 ***ii. Staff's Conclusion Was Based Upon "Updated Studies" That Do Not Even Exist***

14 Staff's conclusion was partially based on studies that do not exist:

15 I conclude PacifiCorp was reasonable in re-evaluating its environmental  
16 compliance investment decisions as significant milestones were reached.  
17 This conclusion is based on its updates to the PVR(d) analyses in the  
18 Company's annual business planning and integrated resource planning,  
19 which have included proxy costs for CCR and 316b requirements  
20 (PAC/500, Teply/16-19), the effect of possible CO2 regulatory cost, and  
21 variation in fuel and electricity cost. These PVR(d) updates continue to  
22 show benefit to customers for making all the known environmental  
23 compliance investments and continuing to operate each coal plant unit.<sup>14</sup>

24 Staff concluded that PacifiCorp was reasonable in re-evaluating its investment  
25 decisions based on "its updates to the PVR(d) analyses in the Company's annual  
26 business planning and integrated resource planning" which "show benefit to customers  
27 for making all the known environmental compliance investments and continuing to  
28 operate each coal plant unit."<sup>15</sup> The problem is that the Company did not update its  
29 analysis in the Company's annual business planning.<sup>16</sup> After initially refusing to even  
30 consider clean air costs in its IRP, the Company begrudgingly did so last fall and again

---

<sup>13</sup> CUB Exhibit 201: CUB DR 7 to Staff.

<sup>14</sup> UE 233/Staff/400/Colville/13.

<sup>15</sup> *Ibid.*

<sup>16</sup> CUB Exhibit 202: CUB DR 6 to Staff.

1 this spring, but the costs at issue in this case were considered sunk in those updates. The  
2 costs that are under consideration in this case were never updated.

3 In response to CUB's Data Request 8a, Staff acknowledged that the analysis it  
4 cited did not exist:

5 After filing its testimony Staff learned it had misinterpreted Company  
6 testimony and drawn an incorrect conclusion that PVRR(d) analyses were  
7 updated annually in the Company business planning process (refer to the  
8 Company's response to Staff DR No. 336 which refers to the response to  
9 Sierra Club data request 3.1). The PVRR(d) analysis updates Staff  
10 reviewed were the Supplemental Coal Replacement Study filed as a  
11 supplement to the Company's 2011 IRP, the Coal Replacement Study  
12 Screening Analysis that was provided in support of the Company's 2011  
13 IRP Update, and the Coal Replacement Study Update filed with the  
14 Company's 2011 IRP Update.<sup>17</sup>

15 This raises three major concerns with Staff's analysis. First, Staff mistakenly  
16 thought there were additional updates to the PVRR analysis. Those updates, however, do  
17 not exist, so Staff could not have reviewed them. Second, Staff's conclusion is based  
18 upon the fact that these nonexistent updates "continue to show benefit to customers"—if  
19 the studies are nonexistent, they cannot support that conclusion. And third, the analyses  
20 that Staff actually did review did not, and do not, support Staff's conclusion of these  
21 additional analyses.

22 1. The IRP Supplements, Screening Analysis, and Coal Replacement Study all were  
23 done within the last year and all assume the costs at issue in this rate case are  
24 sunk.<sup>18</sup> The studies were not an attempt to examine the cost-effectiveness of the  
25 investments that are of a concern in this case.

26 2. While the IRP Update this March did not include the costs at issue in this rate  
27 case, it did find that continued investment in Jim Bridger 3 failed 3 out of 6

---

<sup>17</sup> *Ibid.*

<sup>18</sup> UE 246/CUB/100/Jenks-Feighner/4, line 21.

1 scenarios that were studied, including the two scenarios with low gas costs.<sup>19</sup>  
2 Continuation of Bridger 3 as a coal unit is now largely dependent upon the last  
3 natural gas price forecast that PacifiCorp will run later this year before it has to  
4 make its decision on what to do with the plant. If the costs at issue in this docket  
5 were still considered avoidable (i.e., if the spring IRP update was really an update  
6 to the analysis that is at issue in this docket), then inclusion of those additional  
7 costs from this docket would likely make Bridger 3 fail the least cost/least risk  
8 analysis and prudence analysis.

9 ***iii. Staff Draws Conclusions About Contracts It Did Not Review***

10 Staff testifies to the reasonableness of the contracts PacifiCorp signed:

11 **Q. DID THE COMPANY REASONABLY IMPLEMENT ITS**  
12 **BUSINESS DECISIONS TO PROCEED WITH THE**  
13 **ENVIRONMENTAL COMPLIANCE INVESTMENTS?**

14 A. Yes. PacifiCorp initiated competitive bidding processes for various  
15 long lead time major components as well as engineering, procurement, and  
16 construction (EPC) services. PacifiCorp executed these contracts during  
17 the January 2008 to May 2011 time period, depending on the project.  
18 PacifiCorp's effort to balance cost/risk in its implementation of the  
19 environmental compliance investments was primarily through lump-sum,  
20 turnkey, EPC contracts, with performance guarantees, resulting from  
21 competitive bidding processes.<sup>20</sup>

22 Staff testified that the Company's implementation was reasonable, and that  
23 cost/risk was primarily balanced through the EPC contracts, but the responses to CUB's  
24 Data Request No. 2 shows that Staff had not actually reviewed those contracts.

---

<sup>19</sup> UE 246/CUB/100/Jenks-Feighner/28.

<sup>20</sup> UE 246/Staff/400/Colville/4.

1        CUB Data Request No. 2

2        On page 5, lines 1-5, Staff discusses the contracts that PacifiCorp signed  
3        between 2008 and 2011 for the projects at issue in this docket.

4        a. Did Staff review the contracts?

5        b. Staff discusses the efforts of the contract to balance costs and risks, but  
6        fails to address whether the Company can cancel the contract if the  
7        pollution control requirements of the State differ from the analysis the  
8        contract is based on. Did PacifiCorp's contract include any provision  
9        dealing with the risk that the pollution control requirements of the State  
10       could differ from the analysis the contract is based on?<sup>21</sup>

11       Data Response No. 2

12       2. a. No. Staff did not review the contracts.

13       b. Staff does not know whether the contracts had cancelation provisions  
14       specifically related to a change in pollution control requirements.

15       Staff is testifying about things as if it has read and reviewed them when in fact it has not.

16       The importance of this contract information to this docket must not be  
17       underestimated. Cancellation provisions are immensely important to companies that are  
18       seeking to manage costs and risks, both across their business and within an individual  
19       contract. A company seeking to make a clean air investment—before final regulatory  
20       rules are in place—should be able to cancel contracts if regulations or other conditions  
21       change without incurring undue costs.

22       *iv.       Staff Cannot Explain Its Extrapolation*

23       As previously noted, Staff reached the unsupported conclusion that PacifiCorp  
24       was prudent in its clean air investment decisions, but that its process had infirmities:

---

<sup>21</sup> CUB Exhibit 203: CUB DR 2 to Staff

1 I reach this conclusion by extrapolating from updated PVRR(d) analyses  
2 that do account for CO2 emission regulation and that do include  
3 sensitivity cases for variations in fuel, electricity and CO2 regulatory cost  
4 analysis. Based on these updated analyses, I can extrapolate what the  
5 results would have been had these more robust analyses been done at the  
6 time of the business decisions at issue.<sup>22</sup>

7 Staff's conclusion was based upon extrapolation from studies that did not exist  
8 and from studies that did not include the costs at issue in this docket. Because of this,  
9 CUB asked Staff to explain the extrapolation:

- 10 a. Please provide all workpapers associated with this extrapolation.
- 11 b. For each unit investment that Staff finds to be prudent, please provide  
12 each updated PVRR(d) that was used as the basis of Staff's extrapolation.
- 13 c. For each unit, please explain how Staff got from each PVRR(d) analysis  
14 to the extrapolated results.
- 15 d. For each unit, please describe the alternative to environmental control  
16 investment that was used in Staff's extrapolation (For example, what unit  
17 closure date did Staff use, what did Staff have replacing the unit, what  
18 costs did Staff consider as sunk and unavoidable). In each case, does Staff  
19 believe that the inputs used by Staff reflect the least cost retirement  
20 scenario for the unit?
- 21 e. Staff's extrapolation was conducted after January 2010 and PGE's  
22 "advancement in thinking." Did Staff's extrapolation consider alternatives  
23 to the Company's proposed useful life for each unit?<sup>23</sup>

24 The answer CUB received did not explain how the Staff extrapolated from studies that  
25 did not include the costs at issue in this docket.

- 26 a. As used in Staff's testimony, "extrapolating" means to infer by  
27 extending or projecting known information. Staff infers that if the  
28 sensitivity analysis conducted in the updated PVRR(d) analysis had been  
29 conducted at the time of the business decisions at issue, that the results  
30 would not have changed the final decisions. In other words, based on the  
31 updated PVRR(d) analyses Staff now knows that the positive PVRR(d)  
32 results are not sensitive to variations in these factors. This use of the word  
33 "extrapolate" is in contrast to the mathematical meaning "To estimate (a  
34 value of a variable outside a known range) from values within a known

---

<sup>22</sup> UE 233/Staff/400/Colville/16, lines 8-13.

<sup>23</sup> CUB Exhibit 204: CUB DR 9 to Staff.

1 range by assuming that the estimated value follows logically from the  
2 known values.” As a result, there are no workpapers.

3 b. See response to a.

4 c. See response to a.

5 d. See response to a.

6 e. See response to a.<sup>24</sup>

7 Staff also did not answer the question of which updates were used in this  
8 extrapolation or how Staff got from that update to the conclusion of the extrapolation.  
9 CUB expects more rigorous analysis and explanation from Staff when the prudence of  
10 hundreds of millions of dollars could be at stake.

11 ***v. Staff’s Claim That PacifiCorp Could Not Consider the BART Flexibility Because***  
12 ***PGE Did Not Consider It Until 2010 Is False***

13 CUB strongly disagrees with Staff’s conclusion that no one could have  
14 anticipated that changing the useful life of a plant would reduce required pollution  
15 control before PGE considered this concept in 2010:

16 A. The Company’s BART analyses considered the remaining useful life  
17 as fixed, in the traditional manner related to remaining depreciable life  
18 or remaining physical life, rather than as a variable as was done in the  
19 BART analyses for the Boardman Coal Plant in 2010. As the basis for  
20 describing the remaining useful life as fixed, I considered that the  
21 BART<sup>25</sup> determination guidelines for Step 4 state that, “for purposes of  
22 these guidelines, the remaining useful life is the difference between:  
23 (1) The date that controls will be put in place, or you are conducting  
24 the BART analysis; and (2) The date the facility permanently stops  
25 operations. Where this affects the BART determination, this date  
26 should be assured by a federally- or State-enforceable restriction  
27 preventing further operation.” The BART guidelines go on to discuss  
28 the case where an operator may intend to shut down a source by a  
29 given date but retains flexibility to continue operating beyond that date  
30 if conditions dictate. There is no indication in the guidelines that the  
31 date is considered to be variable. However, there also is no restriction

---

<sup>24</sup> CUB Exhibit 204: CUB DR 9 to Staff.

<sup>25</sup> CUB Exhibit 205: CUB DR 11 to Staff.

1           on considering it to be variable. I conclude that prior to the  
2           advancement in thinking brought about by the 2010 Boardman Coal  
3           Plant BART analyses, considering the remaining useful life as fixed  
4           was a reasonable action.<sup>26</sup>

5       Clearly PGE was able to anticipate that changing the useful life of a plant would  
6       reduce required pollution control.

7           In CUB Data Request No. 11, CUB asked Staff to provide:

8           [a]ny and all evidence that Staff used to support the conclusion that  
9           considering the remaining useful life as fixed was considered reasonable  
10          prior to 2010.

11          The answer we got was:

12          “Staff/400, Colville/19-21 presents Staff’s evidence that remaining useful  
13          life is “traditionally” considered fixed.”<sup>27</sup>

14          Staff’s reply was a non-answer. Staff’s answer to CUB Data Request No. 11  
15       merely cited to Staff’s own testimony and not to the evidence upon which that testimony  
16       was based. The source of Staff’s conclusion seems to come from review of federal BART  
17       guidelines and concludes that:

18               There is no indication in the guidelines that the date is considered to be  
19               variable. However, there also is no restriction on considering it to be  
20               variable.<sup>28</sup>

21       Those two sentences do not provide the evidence to conclude that prior to PGE’s  
22       “advancement in thinking” in 2010, that it was reasonable to consider the useful life as  
23       fixed. PacifiCorp is investing billions of dollars in its coal plants without considering  
24       whether a lower-cost alternative exists through changing the useful life of the plant, one  
25       of the five factors states are required to consider in their BART analysis.<sup>29</sup>

---

<sup>26</sup> UE 246/Staff/400/Colville/20.

<sup>27</sup> CUB Exhibit 205: CUB DR 11 to Staff.

<sup>28</sup> UE 233/Staff/400 Colville/20.

<sup>29</sup> UE 246/Staff/400/Colville/19.



PacifiCorp was clearly not engaged in an attempt to examine least-cost alternatives to the clean air investment. If the Company had been, it would not have been hard to determine the relationship between the operating life of the plant and the pollution controls.

Historically, CUB has not been involved in clean air issues. Until the Boardman issue arose, CUB had little interaction with Oregon DEQ. CUB does not now, and certainly did not then, claim to be experts in environmental controls related to the Clean Air Act, but, as discussed below, CUB was able to figure out in 2008 that a utility could reduce its compliance costs by committing to shutting a coal plant early. If CUB could figure that out, any prudent utility should have been able to do the same.

The historical facts show that the ability to adjust the expected life of the plant to gain different pollution control requirements is not new and was not invented by PGE in 2010. Staff is therefore incorrect to suggest that PacifiCorp could not have been aware of it before 2010.

**a. Federal Rules 2004**

The federal rules associated with BART clearly establish the relationship between the life of the plant and the pollution controls:

70 Fed. Reg. 39127 (July 6, 2005)

*Final rule.* We have retained the approach in the proposed guidelines, including the provision for flexibility for sources to continue operating, with BART in place, should conditions change. We believe that the CAA mandates consideration of the remaining useful life as a separate factor, and that it is appropriate to consider in the analysis the effects of remaining useful life on costs. We believe that, because the source would not be allowed to operate after the 5-year point without such controls, the option for providing flexibility would not create a loophole for sources. Moreover, any source operating after this point without BART controls in place would be subject to enforcement actions for violating the BART limit. For any source that does not agree to shut down before the 5-year

1 point, the State should identify a specific BART emission limit that would  
2 apply after this point in time.<sup>30</sup>

3 **b. DEQ Fiscal Advisory Committee, DEQ Fiscal Advisory Committee (Oct. 13-14, 2008)**

4 Bob Jenks, CUB's Executive Director, was appointed to the "DEQ Fiscal Advisory  
5 Committee for DEQ Rule Proposal for PGE Boardman and 2008 Regional Haze Plan."

6 This was the first time that CUB was presented with the opportunity to discuss BART  
7 with environmental officials. After the 5-factor test was described and the cost-  
8 effectiveness limits were discussed, Mr. Jenks asked the DEQ officials whether changing  
9 the operating life of the plant would change the pollution controls, since a shortened  
10 period of operation would reduce the volume of pollution that could be produced and  
11 would need to be reduced, therefore changing the cost-effectiveness of the otherwise-  
12 required pollution controls. While at first there was a little confusion among DEQ Staff  
13 as to the appropriate answer, after consideration, Mr. Jenks was told that reducing the  
14 operating life would reduce the necessary pollution controls.

15 **c. IRP Guideline 8 (08-339) Adopted on June 30, 2008**

16 On June 30, 2008, the PUC adopted IRP Guideline 8, which requires utilities to use  
17 the IRP process to consider the regulatory compliance costs for nitrogen oxides, sulfur  
18 oxides, and mercury emissions, and conduct sensitivity analysis on a range of regulatory  
19 actions regarding these pollutants:

20 The utility should construct a base-case scenario to reflect what it  
21 considers to be the most likely regulatory compliance future for carbon  
22 dioxide (CO<sub>2</sub>), nitrogen oxides, sulfur oxides, and mercury emissions...

23 The utility should also modify projected lifetimes as necessary to be  
24 consistent with the compliance scenario under analysis. In addition, the  
25 utility should include, if material, sensitivity analysis on a range of

---

<sup>30</sup> 40 CFR § 51, App Y Section IV(D)(4)(k) (7-1-2008 Edition).

1 reasonably possible regulatory futures for nitrogen oxides, sulfur oxides,  
2 and mercury to further inform the preferred portfolio selection.<sup>31</sup>

3 If PacifiCorp had brought the clean air investments to the IRP, as anticipated by this  
4 Guideline, CUB and other stakeholders who were engaging with PGE on this issue would  
5 have had the opportunity to engage PacifiCorp, and the Company would have known that  
6 some stakeholders believed there was flexibility concerning the operating life of the  
7 plant.

8 **d. PGE Decisions Point Proposal, December 17, 2008**

9 On December 17, 2008, PGE submitted Comments to DEQ that contained the  
10 following statement:

11 As noted above, the Clean Air Act requires consideration of the remaining  
12 useful life of the plant. EPA's rules recognize that if the remaining useful  
13 life is limited by permit condition then the cost-effectiveness needs to be  
14 determined based on amortizing the capital cost over the reduced  
15 equipment life. The cost-effectiveness of the semi-dry scrubbers based on  
16 a useful life of 6.5 years (i.e., the number of years after July 1, 2014 that  
17 the control would be operated if the Foster-Wheeler boiler ceased  
18 operation in 2020) is approximately \$5,200 per ton of SO<sub>2</sub> controlled (see  
19 attached spreadsheet for details of cost-effectiveness evaluation). This  
20 cost-effectiveness far exceeds the range of SO<sub>2</sub> cost-effectiveness  
21 evaluated by EPA in establishing the presumptive BART limits. In EPA's  
22 assessment they looked at costs ranging from \$400/ton to \$2,000/ton. The  
23 cost-effectiveness of the semi-dry scrubbers if operated only 6.5 years  
24 would be almost triple the high end of the range of what EPA considered  
25 cost-effective. Therefore, with only a 6.5-year operational life it is  
26 appropriate to consider BART to require no additional SO<sub>2</sub> controls so  
27 long as the Foster-Wheeler boiler is required to cease operation by the end  
28 of 2020.<sup>32</sup>

29 This is one of the clearest descriptions CUB has seen on how reducing the useful life by  
30 permit condition affects the cost-effectiveness. In addition, PGE adds details that support  
31 its claims that this option exists under the Clean Air Act:

---

<sup>31</sup> OPUC Order No. 08-339, Appendix C.

<sup>32</sup> CUB Exhibit 206: PGE Decisions Points Comments, pages 6-7.

PGE also requests that DEQ add an alternative SO<sub>2</sub> BART determination to the proposed regulations. Section 169A(g) of the Clean Air Act specifies that BART determinations must take into account the remaining useful life of the BART eligible emission unit. See, also 40 CFR § 51.308(e)(1)(ii)(A). EPA stated that this factor should be accounted for in assessing the cost impacts of a particular control technology. 70 Fed. Reg. 39127 (July 6, 2005). In its November 2007 BART determination PGE noted that the possible premature cessation of operations of the coal-fired boiler may be appropriate for consideration in determining BART. Consistent with 40 CFR § 51, App Y Section IV(D)(4)(k) (“How do I take into account a project’s ‘remaining useful life’ in calculating control costs”), PGE recognized the possibility that it might be necessary to include a regulatory scenario that anticipated the early closure of the Foster-Wheeler boiler. Based on the continued uncertainties about fuel cost/availability, replacement power, carbon regulation, control technologies and combustion technologies, PGE believes that including an alternative to the proposed BART determination is appropriate. EPA specifically anticipated sources needing flexibility and seeking alternatives, and addressed this possibility in Section IV(D)(4)(k)(3) of 40 CFR § 51, App Y. In evaluating the cost-effectiveness of the proposed SO<sub>2</sub> controls, PGE assumed that the controls would be in place and operational for twenty years. As a result, the annualized capital cost was amortized over the full twenty-year life of the control device. We believe that it is consistent with the Clean Air Act and EPA’s regulations to include an alternate BART determination for SO<sub>2</sub> that reflects a shorter facility life than the twenty-year life assumed in the current evaluation.<sup>33</sup>

**e. CUB Letter to DEQ, January 30, 2009**

CUB submitted a letter to DEQ in January 2009 expressing support for the decision-point proposal and identifying how CUB expected, and still expects, utilities to analyze coal investments:

In addition, CUB expects that PGE will reevaluate its prudence analysis as we go forward. Even if PGE’s prudence analysis today demonstrates that investing in BART under the proposed rule is prudent based on the current expected life of Boardman, this prudence analysis could change as more is learned about how Oregon and the United States will regulate carbon. We would expect PGE to analyze whether this entire clean air investment is reasonable before it begins spending money and asking customers to pay higher rates. Assuming that PGE decides not to close Boardman, but to go ahead with the BART investments today, we expect that they will update their prudence analysis by 2012 when they have to commit to the next

---

<sup>33</sup> CUB Exhibit 206: PGE Decisions Point Comments, page 5-6.

phase of the project. Finally, we expect PGE to reevaluate their prudence analysis again before the final stage of the project in 2017.

By evaluating and reevaluating whether closing Boardman is the best solution to both air quality and climate change, PGE can reduce (though not eliminate) the risk that we spend hundreds of millions of dollars on investments in a power plant that Oregon later determines should be closed.

The plan that was proposed by PGE in December would allow for the prudence analysis that is necessary to avoid these unintended consequences. While CUB is unable to comment on whether the level of pollution under PGE's plan is consistent with the Clean Air Act, we do believe that their plan is consistent with good utility planning which is important to minimize customer rates and utility risk.<sup>34</sup>

**f. IRP Workshop on Decision Points, April 10, 2009**

PGE held an IRP workshop on April 10, 2009, to discuss Boardman. The Company had proposed to DEQ that PGE be given three options for Boardman— closing it in 2020, closing it in 2029, or continuing to run the plant until 2040. Those results show that reducing the useful life of the plant in order to reduce the pollution control has a clear benefit to customers:<sup>35</sup>

CO2 Level for 2012 Policy start							CO2 Level for 2013 Policy start						
\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65		\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65	
2040	2020	2020	2020	2020	2020	2020	2040	2020	2020	2020	2020	2020	2020
2040	2040	2020	2020	2020	2020	2020	2040	2040	2020	2020	2020	2020	2020
2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020	2020
2040	2040	2040	2040	2040	2040	2029	2040	2040	2040	2040	2040	2040	2029

This chart shows that in nearly all the scenarios, closing the plant in 2020, with its more limited pollution control, was better for customers than investing in the plant and running it until 2029, or investing even more and running it until 2040.

<sup>34</sup> CUB Exhibit 208: DEQ Letter

<sup>35</sup> CUB Exhibit 208: page 12 of PGE's PowerPoint from decision point workshop.

1    **g.    DEQ Decision With Invitation to Reapply, June 19, 2009**

2            DEQ rejected PGE's Decision Points proposal, but made clear in its order that  
3    PGE could reapply with a specific early closure date in mind and that the early closure  
4    date would reduce the required pollution control investment for the plant:

5            On December 17, 2008, DEQ received comments from PGE requesting  
6            that two "decision points" be added to the proposed rules, which would  
7            allow PGE to consider in 2012 and 2015 whether or not to close the  
8            Boardman plant by 2020 or 2029, rather than install the controls that DEQ  
9            had proposed. After careful consideration, DEQ decided not to include  
10          PGE's proposal in the final recommendation to the commission, but  
11          instead added provisions in the Regional Haze Plan that allow PGE to  
12          request a rule change if a decision is made in the future to close the plant.  
13          This will allow operation of the plant for a limited time without installing  
14          one or more of the controls proposed by DEQ, and thus help ensure that  
15          investments made at Boardman are cost-effective for rate payers. DEQ  
16          will make every effort to expedite this request.<sup>36</sup>

17   **h.    CUB/NWEC/RNP Media Effort, September 2009**

18          CUB read the DEQ decision as an invitation to PGE to reapply with a specific  
19    closure date. Based on the earlier modeling that showed that 2020 was the least cost  
20    closure date, CUB proposed that PGE continue to model 2020 in the IRP. During the  
21    September 2009 IRP workshop, CUB requested that PGE study a 2020 closure. PGE,  
22    with Staff's agreement, refused to model the 2020 closure. This led CUB, NWEC, and  
23    RNP to send a letter to PGE, with a copy to the local media. On September 27, 2009, the  
24    Oregonian printed an article titled *Activists want PGE to rethink Boardman*. CUB thinks  
25    the media coverage contributed to PGE agreeing to conduct the requested study.

---

<sup>36</sup> LC 48, CUB Comments (May 19, 2010), Attachment 1, page 2.

1    **i.    PGE’s 2020 Analysis**

2           By January 2010, PGE finished the 2020 closure analysis and announced publicly  
3   that it now believed a 2020 phase out was in the best interests of customers and consistent  
4   with Regional Haze Rules.<sup>37</sup>

5    **j.    PGE Submits “BART II” Proposal to DEQ, Files IRP Addendum With OPUC to Incorporate**  
6       **2020 Plan**

7           PGE followed up with its support for the Boardman 2020 closure by filing a new  
8   BART II proposal with DEQ that phased out the plant by 2020. It also filed an addendum  
9   updating its IRP with the 2020 plant phase-out with the PUC.<sup>38</sup>

10          The Oregon DEQ approved this plan on December 20, 2010, with some  
11   modifications that it felt were necessary to meet BART, including increasing the  
12   requirement for Dry Sorbent Injection (DSI).<sup>39</sup> The PUC then found in its review that the  
13   additional DSI requirement increased the cost of the phase-out by \$10 million NPV.<sup>40</sup> In  
14   its order, the Commission then found that the 2020 phase-out (called BART III) was the  
15   best combination of cost and risk:

---

<sup>37</sup> CUB Exhibit 209: Boardman Timeline

<sup>38</sup> *Ibid.*

<sup>39</sup> Federal Register /Vol. 76, No. 128 /Tuesday, July 5, 2011 /Rules and Regulations 38999.

<sup>40</sup> OPUC Order No. 10-457, page 16-17.

Of these options, PGE's proposed BART III option offers the best combination of cost and risk for ratepayers. We consider PGE's BART III to be the superior option because (1) it is a low-cost option for ratepayers; (2) it mitigates the risk of future carbon regulation by closing the plant at the end of 2020; (3) it mitigates the risk of acquiring replacement resources by providing the time needed to evaluate and implement a reasonable replacement strategy; and (4) it provides the flexibility needed to test the effectiveness of DSI technology and to adapt the plant's operation to control both SO<sub>2</sub> and particulate matter (PM) emissions prior to the plant's closure.<sup>41</sup>

**k. EPA Decision**

Finally in 2011, the EPA approved the phase out and was clear in its approval that changing the closure date as a method to reduce the cost of compliance was acceptable and actually led to greater pollution reduction.

EPA believes that the BART controls required for PGE Boardman will result in a significant reduction in haze that impacts Class I areas through 2020. Then, ceasing to burn coal at the facility will result in additional and significant reductions in SO<sub>2</sub> and NO<sub>x</sub> emissions from Boardman at that time, as well as substantial reductions in carbon dioxide emissions. Further, ceasing to burn coal by no later than December 31, 2020, will result in cumulative visibility improvements in all 14 impacted Class I areas...

As ODEQ explained, closure of the plant is not, by itself, considered BART. Rather, the closure date establishes the remaining useful life of the plant which is used to determine the cost-effectiveness of the various control technologies. See Regional Haze SIP submittal, Appendix D at D-125. See also Appendix Y to Part 51—Guidelines for BART Determinations Under the Regional Haze Rule (BART Guidelines), Section D. step 4.k.1. (70 FR 39156 (July 6, 2005)). A decision to cease burning coal by 2020 shortens the expected useful life of the coal-burning Foster- Wheeler boiler by 20 years when compared to its expected useful life of 2040. ODEQ documented its method for incorporating remaining useful plant life in determining cost-effectiveness of control technologies. See Regional Haze SIP submittal, Appendix D at D-125 and D-131. The BART Guidelines specifically provide that the remaining useful life of a source may affect the annualized costs of retrofit controls and explains that "where the remaining useful life is less than the time period for amortizing costs, you should use this shorter time period in your cost calculations." 70 FR 39169. Thus, ODEQ appropriately applied the BART Guidelines when it considered the remaining useful life of the

---

<sup>41</sup> *Ibid*, page 15.



1 Foster-Wheeler boiler when evaluating the cost-effectiveness of the  
2 control technologies. In addition, EPA notes that ODEQ's conclusion  
3 regarding cost-effectiveness for SO<sub>2</sub> controls, specifically Semi-dry Flue  
4 Gas Desulfurization (SDFGD) versus Dry Sorbent Injection (DSI)  
5 technologies, varied appropriately depending on the plant closure date.<sup>42</sup>

6 In response to comments filed with EPA that expressed concern that PGE might  
7 operate the plant past the closure date, the EPA found that placing the closure date into  
8 the rule provided sufficient protection:

9 A violation of a federally enforceable state rule or permit is subject to  
10 liability as provided in section 113 of the CAA, 42 USC 7413, and would  
11 be addressed as appropriate under applicable state or federal law.  
12 Additional language to restate the existing authority is not necessary.<sup>43</sup>

13 **I. This Discussion Was Public**

14 Staff's claim that, "prior to the advancement in thinking" in 2010, it was not known  
15 that required BART controls changed if the retirement date of a plant was changed until  
16 PGE somehow magically invented the concept, is wrong. The historical facts simply do  
17 not support Staff's conclusion. As detailed above, there was a great deal of public  
18 discussion concerning the ability to reduce pollution control costs by early closure of a  
19 plant, beginning in 2008.

20 PacifiCorp should have known this discussion was happening, and Staff should  
21 have as well. Not only was the discussion being conducted in front of public regulatory  
22 bodies (DEQ and the OPUC) in Oregon, which is where both PacifiCorp and Staff are  
23 headquartered, the discussions were being written about in the state paper of record (*The*  
24 *Oregonian*). A search of the *The Oregonian*'s archives shows 96 hits for articles that  
25 contain "PGE Boardman" in 2008, 2009, and 2010. Based on a review of the summaries

---

<sup>42</sup> Federal Register /Vol. 76, No. 128 /Tuesday, July 5, 2011 /Rules and Regulations, page 38999.

<sup>43</sup> *Ibid*, page 39003.

1 of these articles, at least 46 of them directly pertain to Boardman, BART, and phasing out  
2 the plant.

3 In addition, Idaho Power is part owner of Boardman with PGE and Jim Bridger 3  
4 with PacifiCorp. Idaho Power certainly was, or at least should have been, aware of the  
5 discussions concerning its interest in Boardman, as it was simultaneously involved in  
6 discussions with PacifiCorp about the approach to be taken on BART for Jim Bridger 3.  
7 It is equally unbelievable that Idaho Power would not have discussed these events with  
8 PacifiCorp.

9 In summary, CUB finds it entirely unbelievable that, as Staff suggests, PacifiCorp  
10 could have been unaware of the Boardman early closure discussions occurring in the  
11 media, at the PUC, and at DEQ until 2010. Even PacifiCorp did not make that claim, and  
12 if it had, CUB would have been sure to assert that willful ignorance is not an excuse for  
13 failure to exercise prudent judgment.

14 ***vi. PacifiCorp Refuses to Consider Least Cost Planning With Regard to Its Coal Fleet***

15 As we have demonstrated by detailing the historical facts, PacifiCorp knew or  
16 should have known about PGE's consideration of alternative shut down dates in 2008.  
17 PacifiCorp also should have known about the DEQ decision in 2009 that invited PGE to  
18 reapply. PacifiCorp should also have known about PGE's IRP study, which demonstrated  
19 early closure to be the least cost/least risk approach to future clean air investment.  
20 PacifiCorp should also have understood the DEQ order approving a 2020 phase-out of  
21 Boardman. And PacifiCorp should have been aware that the Oregon SIP, which includes  
22 the Boardman phase-out, was accepted by the EPA—something that is not true of the  
23 Wyoming and Utah SIPs that include PacifiCorp coal units. And yet PacifiCorp still

refuses, with all this historical evidence laid before it, to consider or even examine whether the early closure/phase-out approach would be the least cost/least risk for its coal units.

***vii. PacifiCorp Falsely Argues That a Modified Schedule Is Not Allowed***

PacifiCorp claims that a default of a 20-year life must be used in every clean air investment analysis presented to the EPA. But the EPA document that was cited by PacifiCorp states as follows:

4. Remaining Useful Life of the Source. The remaining useful life of the source is usually considered as a quantitative factor in estimating the cost of compliance. With the exception of Apache Generating Station Unit 1, ADEQ used the default 20-year amortization period in the EPA Cost Control Manual as the remaining useful life of the facilities in its RH SIP. Without commitments for an early shut down of an EGU, it is not appropriate to consider a shorter amortization period in a BART analysis.<sup>44</sup>

The document sets forth that EPA requires that the remaining useful life of the unit be considered as a quantitative factor in estimating the cost of compliance. It then sets forth an example of what another company did to comply with this rule. The example says the other company did its analysis one way (the 20-year default) with most of its plants and another way with its Apache plant. The rule then tells us that without a commitment for an early shutdown, a company may not present timelines shorter than the 20-year default to the EPA when seeking acknowledgment. There is nothing in this rule that dictates that PacifiCorp must use the 20-year default in all of its analyses. PacifiCorp could calculate the least cost/least risk date for closure, commit to closing the plant by that date, and then present that plan to the EPA for approval. This is what PGE did, and the EPA approved the Oregon DEQ SIP. The historical facts evidence that placing the closure date in the

---

<sup>44</sup> <http://www.gpo.gov/fdsys/pkg/FR-2012-07-20/pdf/2012-17659.pdf>. We note that the link in Ms. Woollum's testimony did not work, but this document is consistent with the title of her source.

1 State Rule that approves the BART controls is a commitment that EPA accepts, because a  
2 violation of a federally enforceable state rule or permit would be enforceable.

3 ***viii. Oklahoma Has Also Allowed for Early Shutdown Under BART***

4 Public Service Company of Oklahoma was facing an investment of more than  
5 \$500 million for RHR upgrades at two of its coal units.<sup>45</sup> That company then negotiated  
6 an agreement with EPA, the State of Oklahoma, and the Sierra Club that reduced the cost  
7 of compliance by closing one plant in 2015 and phased the other out by 2025-26.<sup>46</sup> This  
8 adds to the growing body of historical facts that indicate EPA has a great deal of  
9 flexibility as to the actual closure date.

10 ***ix. PacifiCorp Refuses to Consider or Explore an Alternative Approach for Bridger 3***  
11 ***and Hunter 1 and 2***

12 CUB is not aware of another instance where a utility has simply refused to  
13 consider a promising least-cost strategy. The PacifiCorp March IRP Update shows that  
14 the Bridger 3 and the Hunter 1 plants are hanging on for dear life as coal-fired units. In 3  
15 of 6 scenarios studied, both units were found to be uneconomic for remaining clean air  
16 investments.<sup>47</sup> Those existing investments were already considered to be sunk.

17 If forward-looking clean air investments push these two units so close to the line,  
18 the economic benefits of running them as coal units for a few more years should model  
19 significantly better under a least cost/least risk analysis than either the clean air  
20 investments or converting the units to run on gas. Even though such a least cost/least risk

---

<sup>45</sup> Case No. PUD 201100077, Before the Oklahoma Corporation Commission, Response to Issue and Questions On Behalf of Sierra Club On the Topic of Environmental Related Issues, July 11, 2011.

<sup>46</sup> CUB Exhibit 208: Oklahoma Articles

<sup>47</sup> UE 246/CUB/100/Jenks-Feighner/28.

analysis is very promising for these two units, the Company continues to refuse to even consider it.

**C. PacifiCorp Seems to Be Relying on the “Objective” Prudence Standard to Avoid Considering a Potential Least Cost Approach**

PacifiCorp takes the position in its testimony concerning the prudence standard that the scenarios the Company chose to consider or not consider are irrelevant. According to PacifiCorp, the only thing that is relevant is what the objective prudent action should have been when the Company took action to make the clean air investments that are at issue in this docket.

***i. PacifiCorp’s Refusal to Consider Modeling Coal Plant Phase Outs Creates a Lack of Objective Evidence***

Adjusting the modeling PacifiCorp did in 2008 and 2009 to update power prices or to move the closure date of the plant to 2014 can easily determine whether those changes would materially affect the objectiveness of PacifiCorp’s actions. Modeling the BART flexibility is harder because there is no baseline from which to work, since PacifiCorp did not do the underlying least cost/least risk analysis. But, as we will show in later sections, the benefits of a phase-out are of such significance that we can identify it as a prudent course.

The cost-effectiveness of BART is determined on the basis of the cost-per-ton of pollution removed. Changing the closure date means there is less time for pollution to be removed, so much of the capital investment is no longer necessary. However, within those cost-per-ton cost-effectiveness limits, other controls, such as dry sorbent injection, might be cost effective. For example, when approving Boardman, the OPUC found that

1 the dry sorbent injection that was required as part of the Boardman closure added \$10  
2 million to the cost.<sup>48</sup>

3 CUB sees the same flexibility, and perhaps even more flexibility, in the case of  
4 MATS. At both this summer's NASUCA Conference and NARUC Conference, EPA  
5 made presentations that described a great deal of flexibility with the type of controls that  
6 would be required under MATS. PacifiCorp of course argues that all of its currently  
7 planned investments are necessary to meet MATS compliance, but the Company has not  
8 performed any technical analysis to determine the range of options to meet BART and  
9 MATS and has not subjected those options to least cost/least risk modeling.

10 *ii. Determining What "Objectively" Would Have Happened Had the Company*

11 *Conducted Least Cost/Least Risk Analyses With Appropriate BART and MATS*

12 *Technical Studies*

13 Without the Company having performed the appropriate least cost/least risk  
14 BART and MATS analyses, it could be very hard to know what the cost of the alternative  
15 investment choices would have been. It could, therefore, be difficult to prove that the  
16 Company would have "objectively" chosen one of these alternatives. CUB, however,  
17 does not have to prove this. Rather, the Company has to meet the burden of proof to show  
18 that what it did instead was objectively prudent. The Company seems to be hoping that  
19 the Commission will shift the burden under the "objective prudence standard" to the  
20 intervenors. This would not be appropriate under Oregon law or Commission precedent,  
21 but we will leave that to our attorneys to argue on CUB's behalf. There is a fundamental  
22 problem in applying the objectively reasonable standard to a situation where the objective  
23 right answer is not obvious. There is an assumption on the Company's part that there is

---

<sup>48</sup> OPUC Order No. 10-457 at 16-17.

1 one objective right answer that can be determined in this proceeding. Utility regulation is  
2 rarely that simple, and in this case there is a significant amount of murkiness. Much of  
3 that murkiness stems, however, from PacifiCorp's failure to consider and analyze  
4 alternatives that have least cost potential.

5 The questions at hand here are not simply objective, like "who weighs more,  
6 person A or person B?" The questions here are much more complex, along the lines of  
7 "who would weigh more if 4 years ago person A had become a vegetarian?" Without  
8 some analysis of what, and how much, person A ate in terms of dairy, sugar, fat, etc., it is  
9 difficult to say what the objective result would be.

10 ***iii. What CUB Believes The Least Cost/Least Risk Analysis Could Have Shown If***  
11 ***PacifiCorp Had Conducted It***

12 It is not difficult to understand the impact of avoiding capital investments by  
13 changing the closure date. PacifiCorp's economic modeling contains a chart for each  
14 plant that demonstrates the benefit of making the clean air investment. In the next section  
15 we will adjust PacifiCorp's modeling and demonstrate that the option of avoiding the  
16 investment by phasing out the plants would have been, in some cases, the least cost  
17 approach. In all cases this is clearly a model that should have been explored, as avoiding  
18 significant capital expenditures creates benefits in the modeling.

19 In each of these cases there are costs associated with the phase-out that will likely  
20 reduce the benefits. PGE is projected to spend an additional \$10 million on dry sorbent  
21 injection.<sup>49</sup> The economic benefits of a phase-out are significant and allow room for some  
22 additional costs.

---

<sup>49</sup> OPUC Order No. 10-457 at 16-17.

1 ***iv. CUB's 25% Disallowance Recommendation***

2 PacifiCorp belittles CUB's recommendation that the Commission penalize the  
3 Company by disallowing 25% of the investment at issue in this case by repeatedly  
4 quoting CUB as saying it was necessary to "send a message" to the Company. Our  
5 proposal was a serious one to deal with a serious situation—a utility not acting prudently.  
6 The Commission also has the option for more traditional prudence disallowance.

7 **a. The Company's Approach Will Increase Rates and Lead to Stranded Costs**

8 As we will demonstrate in the next section, if PacifiCorp had done better analysis  
9 before it invested in these facilities—if the Company had made an effort to search out the  
10 least-cost approach and had brought these power supply investments to an IRP and  
11 considered alternative investment paths—it would have known that there were other  
12 options that had the potential to be least-cost. But PacifiCorp cannot pursue less costly  
13 alternative investments if it does not even consider them. In the case of some of these  
14 plants, if the Company had been paying attention to changes in the price of natural gas  
15 and electricity, it would have discovered that it could have phased out the plant and  
16 avoided the current investment.

17 CUB believes that the evidence provided by CUB and the Sierra Club in this  
18 docket shows the fact that PacifiCorp's chosen approach is leading to higher rates for  
19 customers. A 25% disallowance would offset some of those higher costs for ratepayers.  
20 As an alternative to the 25% disallowance, CUB will show that traditional prudence  
21 analysis allows the Commission to disallow the clean air investments made at Naughton  
22 1 and 2, and Jim Bridger 3.



1   **b.   Prudence Disallowance of Piecemeal Incremental Investment Is Messy**

2           A second reason for our proposal is to provide the Commission with alternatives.  
3   The PUC has the authority to fully disallow incremental investments where the Company  
4   has failed to meet its burden to show that the investment is prudent. Even with the  
5   “objective” prudence standard, the Company fails to meet the burden with the  
6   investments in this case unless the Company is allowed to shift the burden of proof.

7           Disallowing an incremental investment that is made into an existing plant that is  
8   operating prudently creates a messy regulatory system. What happens to the remaining  
9   useful investment? What happens to the plant for ratemaking purposes? If the plant is  
10   assumed to no longer serve Oregon loads, what is the alternative? How is the Company  
11   expected to manage those alternatives?

12   **c.   CUB Recommends a Reasonable Exercise of Commission Discretion**

13           CUB recognizes that its recommended 25% disallowance is unusual, but believes  
14   that after finding that a company has not met its burden to demonstrate prudence, the  
15   Commission has broad powers. In other words, once the Commission has concluded that  
16   a utility has failed to demonstrate prudence, the Commission has broad powers to ensure  
17   that customers actually receive “adequate service at fair and reasonable rates.”<sup>50</sup>

18           It is important to note that CUB also believes that the Commission would be well  
19   within its power to simply recognize that the Company has failed to meet its burden of  
20   proof to show that the investments are prudent, and then to deny entry of the clean air  
21   investments into rate base. The test year is 2013, and no one is arguing that the plant  
22   would not be allowed to operate in 2013 without these investments. Based on the record  
23   of this case and the test year, it is not necessary to answer the hard questions about what

---

<sup>50</sup> ORS 756.040.

1 that means for future ratemaking treatment of the plants. The hard questions could be left  
2 for future ratemaking proceedings where there should be more analysis and a better  
3 record.

4 Because of these concerns, CUB developed the alternate proposal to simply  
5 request a partial disallowance. If the Commission has the power to fully disallow cost  
6 recovery for these clean air investments, then clearly it has the power to partially disallow  
7 them. Furthermore, a partial disallowance in a prudence case, tied to the lack of the  
8 Company meeting its burden of proof, has several advantages:

9 *1. It sends a message.*

10 It tells the Company that it must operate its coal plants under a least cost  
11 framework. PacifiCorp still refuses to consider any options that include a phase-out of the  
12 plant, even if such an option is the least-cost option. If ever there was a utility that needed  
13 to be sent a message, it is PacifiCorp.

14 *2. It recognizes that determining the least cost objective answer, when the Company has not pursued the*  
15 *least cost approach, is difficult.*

16 Rather than determining what the Company should have done objectively, the  
17 Commission can base its decision on the fact that the Company failed to demonstrate that  
18 it had met the objective standard. If the Company pursues least-cost analysis in the future,  
19 it may be able to come back and show that its decision was consistent with that least cost  
20 approach.

21 While the 25% disallowance requested is likely to not be enough to fairly  
22 compensate customers for the Company's past imprudence, CUB still holds out hope that  
23 this amount is enough to encourage PacifiCorp to act prudently and in the best interest of  
24 its customers in the future. The primary disadvantage with the 25% disallowance is not

1 that it is unfair in any way to PacifiCorp; it is that it may be seen as unfair to customers.  
2 As our following analysis will show, it is likely that PacifiCorp's approach is going to  
3 cost customers hundreds of millions of dollars. The interest of customers in this docket is  
4 not just fair rates, but also getting the Company to act prudently on a going forward basis.  
5 The future additional costs to customers could be even greater if PacifiCorp fails to adopt  
6 a least cost approach going forward. A full disallowance would tell the Company that  
7 Oregon wants it to stop making investments in all of its coal plants—to take its coal  
8 plants and go home. That was not CUB's position with PGE, and it is not CUB's position  
9 with PacifiCorp. CUB just wants all of the utilities to engage in the least cost/least risk  
10 planning required under current Oregon law.

11 **D. CUB's Review of the Company's Analysis of Each Unit**

12 PacifiCorp's Reply Testimony defended the Company's PVRP analysis for each  
13 of these investments. CUB continues to believe that the Company's modeling was faulty  
14 because of the following:

15 *1. PacifiCorp assumed that the alternative to clean air investment was immediate closure. This inflated*  
16 *the benefits of clean air investments.*

17 The Company seems to agree with CUB that the alternative to clean air investment  
18 should not have been immediate closure, because it adjusts its closure date to 2014, not  
19 the end of 2015.<sup>51</sup> But that date change alone is enough to make Naughton 1 uneconomic  
20 (see below).

21 *2. PacifiCorp rushed forward with its decision to invest in clean air controls and did not revisit its*  
22 *analysis.*

---

<sup>51</sup> UE 246/PAC/1500/Teply/11.

1 In our earlier testimony, CUB argued that PacifiCorp should have waited longer  
2 before making these investments. Without an approved federal SIP (which still does not  
3 exist), the Company does not fully know the requirements under the RHR and cannot  
4 fully evaluate it. The Company argues that because of the costs to which it was  
5 potentially exposed, it was prudent for the Company to make early investments, even  
6 though it still had to comply with other state regulations.<sup>52</sup>

7 Even if the above argument has merit, moving forward did not prevent the  
8 Company from taking advantage of the changes in the natural gas and power prices. If the  
9 Company would have continued to evaluate and update the costs of the clean air  
10 investments, it would have found that the investments were becoming less cost-effective  
11 due to the reduced costs associated with the alternative power supply that was available at  
12 the time.

13 BEGIN CONFIDENTIAL

14 [REDACTED]  
15 [REDACTED]  
16 [REDACTED]  
17 [REDACTED]  
18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED]  
21 [REDACTED]  
22 [REDACTED]  
23 [REDACTED]

---

<sup>52</sup> UE 246/PAC/1500/Teply/8.

1 [REDACTED]  
2 [REDACTED]  
3 [REDACTED]  
4 [REDACTED]  
5 [REDACTED]  
6 [REDACTED]  
7 [REDACTED]  
8 [REDACTED]  
9 [REDACTED]  
10 [REDACTED]

11 END CONFIDENTIAL

12 Updating the analysis would have shown that Naughton 1, Naughton 2, and Jim  
13 Bridger 3 were not economic.

14 3. *PacifiCorp failed to consider phase-outs of the plants in a manner that would reduce the capital*  
15 *investments associated with Regional Haze Rules.*

16 CUB talked about this option a great deal above in our evaluation of the OPUC  
17 Staff's testimony and will not therefore revisit that discussion here beyond noting that  
18 PacifiCorp continues to refuse to consider such phase-outs, regardless of whether they  
19 will reduce costs to customers. But consideration of this option clearly would have  
20 affected decision-making in the case of the two Naughton units and Jim Bridger 3.

21 *i. Naughton 1*

22 In its Reply Testimony, PacifiCorp acknowledges that the immediate closure of  
23 this unit in 2009 was not the alternative to the clean air investment, and identifies  
24 1/1/2014 as the appropriate alternate date. But rather than show the effect that

1 substitution of this date has on its analysis, PacifiCorp combines the closure date change  
2 with the updating of its forward price curve (to 3/31/2009 rather than 12/31/2008, under  
3 the theory that the contract was not signed until May 2009, so this forward price curve  
4 would have been available).<sup>53</sup> CUB knows of no party that recommended updating the  
5 forward price curve in the study to the March 2009 date. There is obviously some time  
6 lag between doing a study, deciding on a path, requesting bids, and negotiating a contract.  
7 CUB is doubtful that a contract would be signed in May if the analysis was done after the  
8 March 2009 forward price curve. The error that CUB saw in the date of the price curve  
9 was that the Company did not have to sign the contract in May of 2009. Because the SIP  
10 was not yet final, the Company should have waited until it knew more about the costs  
11 that would be required. Running two changes to the model at once blurs the results and  
12 makes it difficult to tell which change is affecting the result.

13 **a. 1/1/14 In-Service Date**

14 PacifiCorp's updating of the forward price curve from December 2008 to March  
15 2009 was not done in response to any criticism. Instead, it seems to have been engineered  
16 to cover up the impact of adjusting the in service date for the environmental controls to  
17 1/1/2014. While there has been a general downward trend in gas and power prices since  
18 the recession hit in 2008, there has still been some volatility. By moving the curve, the  
19 Company was capturing a short-term increase in forecasted prices, which did not  
20 represent the general direction of the market. To understand the impact of assuming an  
21 alternate closure date of 1/1/2014, CUB ran PacifiCorp's model and limited changes to  
22 the closure date.

---

<sup>53</sup> PAC/1500/Teply/18.

1 The result of CUB's model run is found in CUB Confidential Electronic Exhibit  
2 211. CUB changed the in service date of the project to 1/1/2014. CUB removed the  
3 benefits of the project that occur before 1/1/2014. CUB took the clean air costs that were  
4 incurred before 1/1/2014 and moved them into 2014. CUB ran the model and the results  
5 showed the clean air investments in Naughton 1 were uneconomic with a NPV of BEGIN  
6 CONFIDENTIAL -\$[REDACTED]. PacifiCorp should have realized that this investment  
7 was not cost effective when it ran its original model.

8 **b. 2020 Closure**

9 CUB also wanted to see the effect of phasing out the plant by 2020. To do this we  
10 kept the in service date at 1/1/2014, removed the clean air investment costs, and removed  
11 the generation after 2020. This showed a positive NPV of \$[REDACTED].<sup>54</sup> This does not  
12 include costs associated with alternative compliance such as dry sorbent injection,  
13 because we do not have a basis for determining those costs. We note, however, that with  
14 PGE that additional cost was approximately \$10 million.<sup>55</sup>

15 This is clearly more cost effective than the Company's original filing, which  
16 projected a NPV of \$[REDACTED], or its Reply Testimony, which projected a NPV of  
17 \$[REDACTED]. END CONFIDENTIAL

18 **c. Updating Along the Way**

19 Under the terms of the contract, PacifiCorp could have canceled the contract at  
20 anytime. If PacifiCorp was continuing to update its costs, it would have realized that

---

<sup>54</sup> Rather than include each change in the model as a new electronic exhibit that includes the full model, beyond Exhibit 211, CUB will simply describe what we did to change the analysis so others can duplicate it. In all cases, CUB began with PacifiCorp's PVRR runs as contained in PacifiCorp's responses to OPUC Staff Data Request 220. In this case, CUB went to the Inputs page and changed the in-service date to 2014, removed the clean air costs, and removed the project inputs after the year 2020. We confirmed on the Outage tab that this stopped generation after 2020. The second table down on the results column provides the NPVRR.

<sup>55</sup> OPUC Order 10-457 at 16-17.

1 Naughton 1 was becoming less economic as the natural gas and power markets reacted to  
2 the increasing production of non-traditional gas supplies.

3 Because CUB wanted to ensure that we were updating with a forward price curve  
4 that was accessible to the Company, CUB used the curve from the Hunter analysis and  
5 reran the Naughton 1 analysis. This used a forward price curve from 9/30/2009.<sup>56</sup> The  
6 results of this model run show a NPV of BEGIN CONFIDENTIAL -\$[REDACTED]. This  
7 means that if the Company had been updating its analysis, it would have realized in the  
8 fall of 2009 that the project was no longer economic.

9 As we stated above, the contract for the upgrade allowed the Company to cancel  
10 at anytime and included a monthly schedule of the maximum cost of cancelling the  
11 contract. Confidential CUB Exhibit 212 shows this schedule. The forward price curve we  
12 used was from 9/30/2009. The cost of terminating the contract the following month  
13 would have been \$[REDACTED]. Because this is less than the negative \$[REDACTED]  
14 value of the project, the Company should have exercised its termination rights. END  
15 CONFIDENTIAL

16 **d. This Investment Is Clearly Imprudent**

17 This analysis demonstrates that this investment was imprudent. If the Company  
18 had done better modeling, considered a phase-out, or updated its costs along the way, the  
19 results would have been far better for customers.

20 As an alternative to our recommendation of a 25% penalty for not operating under  
21 a least cost/least risk analysis, the Commission could consider denying recover of all of  
22 the costs associated with Naughton 1 pollution control. Because this case uses a 2013 test  
23 year, there is no need for the Commission to go any further than denying recovery of

---

<sup>56</sup> OPUC 220-2.



1 these costs. However, the Company will argue that if the Commission denies cost  
2 recovery, then for the purposes of Oregon customers, the plant cannot operate after  
3 1/1/2014, when it would be required to be in compliance with BART. CUB has accepted  
4 the 1/1/2014 date for the purposes of modeling what the Company would have expected  
5 in 2009 only. CUB is not ready to accept 1/1/2014 as the current compliance deadline, as  
6 the record on that is not clear.

7 In addition, as CUB has demonstrated, the outcome that models the best results  
8 for customers is the 2020 phase-out. CUB recommends that the Commission consider the  
9 2020 phase-out model to be the prudent alternative. This would mean that the plant  
10 would stay in rates without the imprudent costs until the end of 2020, when the entire  
11 plant would then be removed from rates.<sup>57</sup>

12 *ii. Naughton 2*

13 CUB did a similar analysis for Naughton 2.

14 **a. 1/1/14 In-Service Date**

15 CUB updated the PacifiCorp PVRR to isolate the impact of not using immediate  
16 closure as the alternative to the investment, while still assuming that the compliance date  
17 is 1/1/2014. This reduced the NPVRR from the Company's original filing of BEGIN  
18 CONFIDENTIAL \$ [REDACTED] to \$ [REDACTED].<sup>58</sup> While still positive, this suggests that  
19 the case for the investment was pretty small to begin with.

---

<sup>57</sup> CUB is willing to look at accelerated depreciation so the Company does not lose its early prudent investment in the plant.

<sup>58</sup> To do this CUB went to the Inputs Tab of OPUC DR 220-4 and changed the in service date to 1/1/14. We then removed the benefits of the project before 1/1/14 and took the clean air costs that were incurred before 1/1/2014 and moved them to 2014.

**b. 2020 Phase-Out**

CUB modeled phasing out the plant by the end of 2020. This showed a positive NPVRR of \$[REDACTED].<sup>59</sup>

**c. Updating Along the Way**

CUB looked at the effect of updating the NPVRR along the way, again using the forward price curve from the Hunter modeling. In this case we found that the September 2009 forward price curve would turn the plant's operation into a NPVRR of -\$[REDACTED].<sup>60</sup> If the Company was updating its analysis, it would have found that as market conditions changed, the investment was uneconomic. Terminating the Naughton 2 contract in October 2009 would have resulted in a maximum cost of \$[REDACTED], thus making it economic to cancel the project.<sup>61</sup> END CONFIDENTIAL

**d. This Investment Is Clearly Imprudent**

If the Company had considered the 2020 option, it would have realized that it was the most cost effective plan for the plant. If the Company had updated its analysis, it would have realized that the investment had become uneconomic while there was still time to economically cancel the project.

As an alternative to CUB's 25% disallowance recommendation, the Commission could find this investment imprudent and deny the Company cost recovery. While the 2013 test year at issue here does not require the Commission to go beyond this step, CUB again recommends that the Commission find that a 2020 phase-out would have been the prudent path and that ratemaking treatment in Oregon must follow this assumed prudent path.

---

<sup>59</sup> We started with the 1/1/2014 model, removed the clean air costs and then the generation after 2020.

<sup>60</sup> We started with the 1/1/2014 model and substituted the Hunter power costs under the tab Outage.

<sup>61</sup> CUB Confidential Exhibit 212: Naughton 2 cancelation schedule

1 **iii. Bridger Unit 3**

2 Bridger 3 is relevant to both this case and to Idaho Power's UE 233 docket.  
3 PacifiCorp's original modeling found that making a clean air investment in Bridger 3 had  
4 a NPVRR of more than BEGIN CONFIDENTIAL \$[REDACTED]. But today we know that  
5 the plant hangs on the edge, waiting for updated gas costs. In last March's IRP Update, 3  
6 out of 6 scenarios modeled would lead to a conversion of Bridger to natural gas,  
7 including the low gas price scenario. PacifiCorp said it would update the gas costs before  
8 a final decision to proceed with the Bridger 3 SCR investment. Bridger 3's life as a coal  
9 plant is really dependent on that final forecast of gas costs.<sup>62</sup>

10 It should be noted that the costs at issue in this case were not part of the more  
11 recent analysis, since it was forward looking. If the costs that have already been spent—  
12 the costs that are at issue in this docket—were included in the more recent analysis, it  
13 would likely have demonstrated that the full clean air investment is not economic. If the  
14 Company had been updating its analysis along the way, it might have known this earlier  
15 and been able to cut its losses.

16 **a. 1/1/14 In-Service Date**

17 CUB first changed the model to remove the assumption that the alternative was an  
18 immediate closure of the plant. This had the effect of reducing the NPVRR to \$[REDACTED]  
19 [REDACTED].<sup>63</sup>

---

<sup>62</sup> UE 246/CUB/100/Jenks-Feighner/28-29.

<sup>63</sup> CUB changed the in service date to 1/1/2014, removed any benefits associated with the clean air projects before 2014, and moved the clean air costs that were incurred before 2014 into 2014. PacifiCorp modeled Bridger the same way in its Reply Testimony and had a result of BEGIN CONFIDENTIAL (\$[REDACTED]) END CONFIDENTIAL

**b. 2020 to 2025 Phase Out**

CUB modeled the effects of phasing out the plant by 2020. This had a NPVRR of \$[REDACTED].<sup>64</sup> Because the closure date for one of the units in Oklahoma was 2025, CUB also modeled 2022 (\$[REDACTED] NPVRR) and 2025 (\$[REDACTED] NPVRR).

**c. Updating Along the Way**

CUB modeled the effects of updating the analysis in the fall of 2009 using the Hunter price forecast. This produced a NPVRR of \$[REDACTED].<sup>65</sup> This shows that by the fall of 2009, a phase out in 2022 or 2025 would have been preferable. END

CONFIDENTIAL

The Bridger 3 contract does not have the same cancelation schedule that exists with the Naughton plants. However, it does include the right for PacifiCorp to cancel without cause and to pay only the costs the contractor has incurred to date. The contract states as follows:

BEGIN CONFIDENTIAL

[REDACTED]

66

In addition, we know from the schedule associated with the contract that Bridger Unit 3 was the last unit that was having the scrubber upgrade installed. The materials

<sup>64</sup> CUB started with the in service date of 2014, removed all clean air investment cost, and removed all production and benefits of the plant after 2020, 2022 or 2025.

<sup>65</sup> CUB started with the in-service date of 2014, and substituted the gas costs from Hunter.

<sup>66</sup> CUB Confidential Exhibit 213: Excerpts from Bridger contract

1 were not to be delivered to the plant until [REDACTED]

2 [REDACTED].<sup>67</sup> END CONFIDENTIAL

3 By the fall of 2009, the Company should have realized that this project needed to  
4 be reexamined.

5 **d. This Investment Was Not Prudent**

6 The Company should have reevaluated this project and considered a phase out  
7 between 2020 and 2025 since this would likely be the least cost option for customers. As  
8 an alternative to CUB's 25% disallowance recommendation, the Commission could find  
9 this investment imprudent and deny the Company recovery of it. While the 2013 test year  
10 at issue here does not require the Commission to go beyond this step, CUB recommends  
11 that the Commission find that a 2022 phase-out would have been the prudent path and  
12 that ratemaking treatment in Oregon must follow this assumed prudent path.

13 **iv. Other Plants**

14 While CUB's modeling of other plants did not demonstrate imprudence,<sup>68</sup> it did  
15 support our concerns about PacifiCorp's approach, its unwillingness to look for a least  
16 cost/least risk solution, and its failure to update its analysis as conditions changed. The  
17 fact that CUB is not introducing modeling results that demonstrate imprudence for each  
18 of PacifiCorp's other units does not suggest that CUB believes the approach taken by the  
19 Company in analyzing whether to make the clean air investments in each of its units was  
20 prudent or reasonable.

---

<sup>67</sup> *Ibid.*

<sup>68</sup> In the case of Dave Johnston Unit 4, the benefit of clean air investment over 2020 phase out was less than  
BEGIN CONFIDENTIAL \$[REDACTED]. END CONFIDENTIAL

### 1    **III. PacifiCorp's Proposed PCAM**

2            PacifiCorp argues that wind integration costs are one of the drivers of its need for  
3    the PCAM. CUB argued in its Response (Direct) Testimony (CUB 100) that the structure  
4    of PacifiCorp's proposed PCAM is inappropriately favorable to the Company and does  
5    not provide it with a proper incentive to minimize its net power costs (NPC).

6    PacifiCorp's Reply Testimony (PAC 1700 and PAC 1800) argues that CUB's concerns  
7    are unfounded and that the Company should be entitled to a dollar-for-dollar recovery of  
8    NPC each year.

#### 9    **A. RPS Requirement**

10          Senate Bill 838 established Oregon's Renewable Portfolio Standard (RPS) in  
11    2007. As written into law, ORS 469A.120(1) provides that:

12          all prudently incurred costs associated with compliance with a renewable  
13          portfolio standard are recoverable in the rates of an electric company,  
14          including interconnection costs, costs associated with using physical or  
15          financial assets to integrate, firm or shape renewable energy sources on a  
16          firm annual basis to meet retail electricity needs, above-market costs and  
17          other costs associated with transmission and delivery of qualifying  
18          electricity to retail electricity consumers.

19    CUB has no argument that PacifiCorp has the right to recover all of these costs, including  
20    firming, shaping, and integration costs for wind generation, in its rates. The statute is,  
21    however, narrower in its specification of costs that are deemed eligible for dollar-for-  
22    dollar cost recovery using an automatic adjustment clause than PacifiCorp would have  
23    the Commission believe.

1       The Public Utility Commission shall establish an automatic adjustment  
2       clause as defined in ORS 757.210 or another method that allows timely  
3       recovery of costs prudently incurred by an electric company *to construct*  
4       *or otherwise acquire facilities* that generate electricity from renewable  
5       energy sources *and for associated electricity transmission*.<sup>69</sup>

6       This is the basis of PacifiCorp’s claim that its wind generation costs are eligible  
7       for recovery through a PCAM. PacifiCorp’s testimony states that “SB 838 clearly  
8       anticipates a dollar-for-dollar recovery of actual NPC costs associated with integrating,  
9       firming, and shaping the renewable resources necessary to comply with the law.”<sup>70</sup> The  
10      Company clearly misinterprets the application of the statute here, as the omission of costs  
11      for things other than the construction or acquisition of generation facilities, and for costs  
12      associated with transmission, indicates that the other costs outlined in ORS 469A.120(1)  
13      are not in fact eligible for inclusion in the automatic adjustment clause. CUB anticipates  
14      further detailed discussion of this legal issue during the briefing stage of this docket.

15      **B. Wind Integration Studies**

16      PacifiCorp’s wind integration studies have been a source of controversy over the  
17      past several years. It makes little sense that a study methodology that has come under  
18      consistent criticism from stakeholders and the Commission should now be utilized to  
19      true-up millions of dollars of the Company’s power costs. In both the 2011 and 2012  
20      TAM proceedings (UE 216 and UE 227) CUB argued that PacifiCorp’s wind integration  
21      study failed to show that the Company had demonstrated that costs designated as being  
22      associated with wind integration were fully separate from costs associated with balancing  
23      general system load. PacifiCorp has yet to show that all of the costs associated with wind

---

<sup>69</sup> ORS 469A.120(2) (*emphasis added*).

<sup>70</sup> UE 246/PAC/1800/Duvall/19, lines 4-7.

integration are properly accounted for and are not duplicated elsewhere in the system.<sup>71</sup>

As such, it is difficult to see how the Company's forecasts for future wind integration costs could ever result in anything other than a large discrepancy between forecast and actual costs. PacifiCorp's goal here seems to be to set itself up for a large adjustment under the PCAM every year.

### **C. Precedent**

PGE proposed a hydro-specific PCAM in 2004 in docket number UE 165. The proposed mechanism was intended to dampen the fluctuations in PGE's annual power costs that were caused by variations in hydro conditions. PGE described a number of reasons why it was uniquely suited for such a mechanism—roughly 10 percent of that company's generation portfolio is company-owned hydro, which is an inherently unpredictable resource that has significant swings in annual generation.<sup>72</sup>

OPUC Order No. 05-1261 outlines the Commission's four primary design criteria for a hydro-only PCAM. First, a PCAM should only be triggered by extreme and unusual events. Second, adjustments should not be made if earnings are already reasonable. Third, the mechanism should remain revenue neutral over time. And fourth, in order to ensure that the three prior criteria are effective, the mechanism must be intended to remain in place on a long-term basis.

The Commission ultimately rejected PGE's proposal on the grounds that it failed to fully meet the four criteria described above. PacifiCorp's proposed PCAM in this docket also falls short of at least the Commission's first three design guidelines. First, a dollar-for-dollar true-up would necessarily be triggered every single year, not just in

---

<sup>71</sup> UE 216/CUB/100/Feighner/3.

<sup>72</sup> UE 165 PGE Initial Filing (Advice No. 04-11, page 2).



1 extreme or unusual circumstances. Second, the lack of deadbands and earnings tests in  
2 PacifiCorp's proposal would result in adjustments being made regardless of the  
3 Company's financial condition or the impact of the adjustment on revenue. And third, as  
4 CUB pointed out in UE 165,<sup>73</sup> without an asymmetric deadband, the mechanism is not  
5 revenue-neutral because the costs of purchasing power due to lower-than-expected  
6 generation are greater than the benefits achieved through selling power when generation  
7 is higher than expected. The fact that PacifiCorp's PCAM proposal fails to meet these  
8 previously-established design criteria indicates that there is precedent for the Commission  
9 to reject the mechanism's proposed design. CUB respectfully requests that the  
10 Commission do just that.

#### 11 **IV. Mona to Oquirrh Transmission Tariff Rider**

12 PacifiCorp's request for a tariff rider to recover costs associated with the Mona to  
13 Oquirrh transmission line is inappropriate. The line will not enter into service until May  
14 2013, and as such will not be used and useful before rates go into effect on January 1,  
15 2013. CUB concurs with Staff<sup>74</sup> and ICNU<sup>75</sup> that the project should not be included in  
16 rates before it comes online and is used and useful. CUB further concurs with Staff<sup>76</sup> and  
17 ICNU<sup>77</sup> that the project is simply an issue of regulatory lag, and that the tariff rider is not  
18 the appropriate means to seek recovery of this investment. CUB encourages PacifiCorp to  
19 file for its inclusion in rates on or after the project is complete.

---

<sup>73</sup> UE 165 CUB Opening Brief, pages 2-3.

<sup>74</sup> UE 233/Staff/1000/Johnson/3.

<sup>75</sup> UE 233/ICNU/100/Deen/23.

<sup>76</sup> UE 233/Staff/1000/Johnson/3.

<sup>77</sup> UE 233/ICNU/100/Deen/24.

1   **V. Conclusion**

2           CUB makes three basic recommendations in this testimony.

3   **A. PacifiCorp's Coal Investments**

4           Our testimony further supports the argument put forth in CUB's Response  
5   Testimony that a number of clean air compliance investments at PacifiCorp's coal plants  
6   have been imprudent, or are not used and useful. Both Staff and PacifiCorp have argued  
7   that the Company's actions were prudent, but our testimony shows that both parties'  
8   arguments are flawed.

9           Staff did not conduct a robust enough analysis to support its conclusions  
10   regarding PacifiCorp's clean air investments. Indeed, Staff's conclusion that all of  
11   PacifiCorp's investments were prudent was partially based on an analysis that did not  
12   exist. Staff also falsely claimed that PacifiCorp could not have known about the potential  
13   for flexible closure dates under BART until 2010. CUB's testimony demonstrates that all  
14   of these flaws in Staff's analysis render it ineffective in its support of PacifiCorp's  
15   investment decisions.

16          PacifiCorp has continued to argue that the early closure scenarios CUB modeled  
17   in this testimony should not be part of its least-cost planning process. Our testimony  
18   instead shows that the least-cost, prudent course of action would include the closure of  
19   Naughton 1 and 2 in 2020 and the closure of Bridger 3 in 2022. CUB thus argues that  
20   PacifiCorp's action with regard to its analysis and operation of each of these plants has  
21   been imprudent.

1 CUB provided two recommended options for the Commission for each of these  
2 investments in our Response Testimony.<sup>78</sup> CUB continues to recommend these two  
3 potential remedies—either a disallowance of cost recovery of investment in Naughton 1  
4 and 2 and Bridger 3 on the grounds that PacifiCorp’s investment was not used and useful,  
5 or a disallowance of 25% of all clean air capital investments due to the failure of the  
6 Company to conduct and follow a least cost/least risk analysis.

7 **B. PacifiCorp’s Request for a PCAM**

8 CUB’s position on PacifiCorp’s proposed PCAM is simple. The Company’s  
9 request for a PCAM should not be granted as it is presented in the Company’s testimony.  
10 CUB presented its favored structure for an acceptable PCAM in its Response  
11 Testimony.<sup>79</sup> PacifiCorp takes exception to CUB’s proposed alterations to the PCAM  
12 structure in its Reply Testimony and wrongly claims that it is entitled to full, dollar-for-  
13 dollar recovery of costs associated with firming, shaping, and integration of wind  
14 generation under the state RPS statute. CUB stands firm in its recommendation that the  
15 Commission should adopt CUB’s changes to the PCAM proposal and eliminate  
16 PacifiCorp’s annual TAM proceeding.

17 **C. Mona to Oquirrh Transmission Line Tariff Rider**

18 CUB concurs with Staff and ICUN that the Mona to Oquirrh transmission project  
19 will not be used and useful at the time rates go into effect, and that not including the  
20 project in this rate case is simply an issue of regulatory lag. CUB recommends that the  
21 Commission reject PacifiCorp’s request for a tariff rider for the project.

---

<sup>78</sup> UE 233/CUB/100/Jenks-Feighner/58-59.

<sup>79</sup> UE 233/CUB/100/Jenks-Feighner/6-9.

**Data Request No. 7**

7. On page 11, Staff states:

*"PacifiCorp discusses at PAC/500 Teply/21 that there was one alternative to compliance considered at the time these environmental compliance investments decisions were made – idling a coal plant unit and replacing it with market power purchases. The Company further presents a narrative discussion how its capability to analyze other alternatives has improved during the years after these environmental compliance investments decisions were made (PAC 500 Teply/93- 95). Based on this testimony, I conclude that PacifiCorp did evaluate alternatives to compliance, used its latest analysis capability when it made these decisions and acted reasonably."*

Staff's testimony does not address the issue of the Company choosing immediate closure of the plant as the alternative to clean air investment rather than running the plant until the compliance deadline (the alternative to a Bridger scrubber upgrade is immediate closure in 2008; for Naughton, the alternative is immediate closure in 2009).

- a. Before filing testimony, did Staff consider the impact of the closure date being used in these studies? If so, what was Staff's conclusion?
- b. Does Staff believe that the least cost alternative to the Bridger 3 investment at issue in this case was closure of the plant in 2008? If so, why? If not, why not?
- c. Does Staff believe that the least cost alternative to the Naughton 1 investment at issue in this case was closure of the plant in 2009? If so, why? If not, why not?
- d. For each unit that is subject to review in this case (Naughton 1, Naughton 2, Dave Johnston 4, Hunter 1, Hunter 2, Wyodak and Jim Bridger 3), please provide Staff's analysis of the impact of PacifiCorp's decision to close the plant ahead of its compliance deadline. In 2008, did the Company have the capability to consider other closure dates for Jim Bridger 3 in addition to, or as a substitute for, a 2008 closure?
- e. Did the Company have the capability to analyze alternative supply-side and demand-side portfolios in its IRP in 2008?
- f. Does Staff believe that the Company was unable to conduct a study that considered alternative closure portfolios in 2008?

Data Response No. 7

7.

- a. In its testimony Staff did not consider the impact of the assumed idling date on the PVR(d) analyses. Staff has issued DR No. 340 to PacifiCorp requesting the reasoning behind the assumed idling dates. The Company's response to the data request was that the intent was to understand the economics of the coal plant units at the time of decision making. While Staff can agree this reasoning was logical, in the context of decision making Staff doesn't consider it reasonable because of the impact on the PVR(d) results. As a result, Staff would conclude the assumed idling dates, rather than State permit compliance dates, is a decision process infirmity.
- b. See response to a.
- c. See response to a.
- d. See response to a. In addition, yes, the Company had the ability in 2008 to consider other idling dates.
- e. Yes. The Company had the ability in 2008 to analyze alternative resource portfolios in its IRP.
- f. No. The Company had the ability in 2008 to consider other idling dates and replacement resources.

**Data Request No. 8**

8. On page 13, beginning at line 11, Staff witness Colville states:

*"I conclude PacifiCorp was reasonable in re-evaluating its environmental compliance investment decisions as significant milestones were reached. This is based on its updates to the PVRR(d) analyses in the Company's annual business planning and integrated resources planning, which have included proxy costs for CCR and 316b requirements (PAC/500, Teply/16-19), the effect of possible CO2 regulatory cost, and variation in fuel and electricity cost. These PVRR(d) updates continue to show benefit to customers for making all the known environmental compliance investments and continuing to operate each coal plant unit."*

- a. Please provide a list of all PVRR(d) updates reviewed by Staff before filing its testimony. Please also provide the source of each study (IRP, Data Request, etc.)
- b. Staff claims that prior to PGE's "advancement in thinking" in its 2010 Boardman analysis, it was reasonable to consider the remaining life of the plant as fixed. Were any of these PacifiCorp PVRR(d) updates referred to by Staff conducted after January 2010, the date of PGE's Boardman analysis? If so, did the PacifiCorp PVRR(d) studies consider alternative closure dates that reduce the remaining useful life?

**Data Response No. 8**

8.
  - a. After filing its testimony Staff learned it had misinterpreted Company testimony and drawn an incorrect conclusion that PVRR(d) analyses were updated annually in the Company business planning process (refer to the Company's response to Staff DR No. 336 which refers to the response to Sierra Club data request 3.1). The PVRR(d) analysis updates Staff reviewed were the Supplemental Coal Replacement Study filed as a supplement to the Company's 2011 IRP, the Coal Replacement Study Screening Analysis that was provided in support of the Company's 2011 IRP Update, and the Coal Replacement Study Update filed with the Company's 2011 IRP Update.
  - b. The dates of these PVRR(d) analysis updates were September 21, 2011, February 17, 2012, and March 30, 2012. These analyses were performed after the 2010 Boardman analysis. Pages 68-71 of the Coal Replacement Study Update address applicability of the Boardman approach to the PacifiCorp coal plant units.

**Data Request No. 2**

2. On page 5, lines 1-5, Staff discusses the contracts that PacifiCorp signed between 2008 and 2011 for the projects at issue in this docket.
  - a. Did Staff review the contracts?
  - b. Staff discusses the efforts of the contract to balance costs and risks, but fails to address whether the Company can cancel the contract if the pollution control requirements of the State differ from the analysis the contract is based on. Did PacifiCorp's contract include any provision dealing with the risk that the pollution control requirements of the State could differ from the analysis the contract is based on?
  - c. If so please identify the provisions of the contract that contain this information.

**Data Response No. 2**

2.
  - a. No. Staff did not review the contracts.
  - b. Staff does not know whether the contracts had cancelation provisions specifically related to a change in pollution control requirements.
  - c. Based on response to b., this question is not applicable.



**Data Request No. 9**

9. Staff's conclusion that the PacifiCorp's clean air investments are prudent seems to be based upon an analysis that is not included in Staff's testimony:

*I reach this conclusion by extrapolating from updated PVRR(d) analyses that do account for CO2 emission regulation and that do included sensitivity cases for variations in fuel, electricity and CO2 regulatory cost analysis. Based on these updated analyses, I can extrapolate what the results would have been had these more robust analyses been done at the time of the business decisions at issue. (Staff/400/16/lines 8-13)*

- a. Please provide all workpapers associated with this extrapolation.
- b. For each unit investment that Staff finds to be prudent, please provide each updated PVRR(d) that was used as the basis of Staff's extrapolation.
- c. For each unit, please explain how Staff got from each PVRR(d) analysis to the extrapolated results.
- d. For each unit, please describe the alternative to environmental control investment that was used in Staff's extrapolation (For example, what unit closure date did Staff use, what did Staff have replacing the unit, what costs did Staff consider as sunk and unavoidable). In each case, does Staff believe that the inputs used by Staff reflect the least cost retirement scenario for the unit?
- e. Staff's extrapolation was conducted after January 2010 and PGE's "advancement in thinking." Did Staff's extrapolation consider alternatives to the Company's proposed useful life for each unit?

**Data Response No. 9**

- 9.
- a. As used in Staff's testimony, "extrapolating" means to infer by extending or projecting known information. Staff infers that if the sensitivity analysis conducted in the updated PVRR(d) analysis had been conducted at the time of the business decisions at issue, that the results would not have changed the final decisions. In other words, based on the updated PVRR(d) analyses Staff now knows that the positive PVRR(d) results are not sensitive to variations in these factors. This use of the word "extrapolate" is in contrast to the mathematical meaning "To estimate (a value of a variable outside a known range) from values within a known range by assuming that the estimated value follows logically from the known values." As a result, there are no workpapers.
  - b. See response to a.



UE 246 CUB Data Request 1-17 to PUC Staff  
Page 16

- c. See response to a.
- d. See response to a.
- e. See response to a.

**Data Request No. 11**

11. On page 20-21, Staff states that "prior to the advancement in thinking brought about by the 2010 Boardman Coal Plant BART analyses, considering the remaining useful life as fixed was a reasonable action.
- Does Staff think considering the useful life as fixed is still a reasonable action?
  - Please provide any and all evidence that Staff used to support the conclusion that considering the remaining useful life as fixed was considered reasonable prior to 2010.
  - On page 19, Staff recognizes that BART analysis is based on the "remaining useful life of the facility." Because the cost effectiveness of pollution control under BART is determined based on a \$/ton of pollution removed during the life of the plant, and the useful life of a plant is not a natural phenomenon but is a decision of a plant owner, why would utilities not be expected to conclude that they could reduce pollution control costs by reducing the useful life of the plant?
  - On December 17, 2008, PGE submitted to Oregon DEQ a proposal that would have allowed PGE to consider scenarios for closing Boardman in 2020 and 2029 as part of BART (sometimes referred to as the "Decision Points" proposal. Did anyone from Staff review that proposal?
  - Was a member of the PUC Staff at the April 10, 2009 IRP workshop on Boardman where PGE shared its analysis of the Decision Points options it had proposed to DEQ, including plant retirements 2020, and 2029?
  - Was a member of the PUC Staff at the first DEQ Fiscal Advisory Committee in early 2009 where PGE Decision Points proposal was discussed and the issue of how the life of the plant influenced the cost effectiveness of pollution control?

**Data Response No. 11**

- 11.
- There is no indication in the BART guidelines that the remaining useful life is considered to be variable. However, there also is no restriction on considering it to be variable and Staff's opinion is the decision making process could be better informed by considering the remaining useful life to be a variable. Staff also recognizes that the ability to meaningfully consider alternatives to compliance derived from varying the remaining useful life is likely dependent upon the regulatory environment where the coal plant unit is located. Going forward, Staff believes it is the Company's responsibility to prove whether it is not reasonable to consider the remaining life as a variable in BART analyses.
  - Staff/400, Colville/19-21 presents Staff's evidence that remaining useful

life is "traditionally" considered fixed.

- c. See response to b.
- d. Yes, Staff reviewed the proposal.
- e. Yes, Staff attended this meeting.
- f. Yes, Staff attended this meeting.



UE 246/CUB/206  
Jenks-Feighner 1

December 17, 2008  
ES-266-2008  
Gov Rel 9

Mr. Brian Finneran  
Oregon Department of Environmental Quality  
811 SW Sixth Ave  
Portland, OR 97204

**Re: Preliminary Comments on Proposed Regional Haze Rules**

Dear Brian:

Portland General Electric Company (PGE) appreciates this opportunity to comment on the proposed Regional Haze rulemaking. As you know, the proposed rules are the result of the federal requirement that Oregon submit an initial implementation plan for regional haze (the Regional Haze SIP). This plan must include a determination of Best Available Retrofit Technology (BART) for each BART-eligible source in the state that emits any air pollutant which may reasonably be anticipated to cause or contribute to visibility impairment in any mandatory Class I area. 40 CFR § 51.308(e)(1)(ii). The federal Clean Air Act contains specific criteria for establishing BART and these criteria are carried over into the regulations. In developing these regulations, EPA also promulgated guidelines to be used by the states in developing BART determinations. These guidelines, found in 40 CFR § 51 Appendix Y, contain the majority of the detail regarding how BART determinations are to be conducted.

**1. Background**

On November 2, 2007, PGE submitted a BART analysis for its coal-fired power plant located in Boardman, Oregon (the Boardman plant).<sup>1</sup> Sources in existence on August 7, 1977 and that both fall into one of the designated source categories and have the potential to emit more than 250 tons per year of a haze-causing pollutant are required to determine BART if they cause or contribute to visibility impairment in a mandatory Class I area. 40 CFR § 51.308(e). DEQ previously determined that the Boardman power plant was in existence, as that term is defined in the federal

---

<sup>1</sup> The Foster-Wheeler boiler is identified by the U.S. Environmental Protection Agency (EPA) as acid rain program ORISPL code 6106.

Regional Haze program, on August 7, 1977.<sup>2</sup> The Boardman plant emits more than 250 tons per year of NO<sub>x</sub>, SO<sub>2</sub> and PM, is in one of the designated source categories and was determined by the Oregon Department of Environmental Quality (DEQ or Department) to cause visibility impairment in at least one mandatory Class I area. Therefore, PGE engaged an extensive group of experts that assisted the company in preparing a BART determination for the Boardman plant. This report was submitted on November 2, 2007 and subsequently supplemented in response to dozens of questions posed by various state and federal agencies and interested third parties. The team of experts concluded that for the Boardman plant BART constituted the installation of new low-NO<sub>x</sub> burners with a modified overfire air system for NO<sub>x</sub> control and the installation of a semi-dry scrubbing system with fabric filters for SO<sub>2</sub> and PM control. PGE concluded that due to the long lead time and complex engineering challenges the company needed five years from the date that the Regional Haze SIP is approved in order to engineer, bid, procure, install and start up the semi-dry scrubbing system. Federal law authorizes DEQ to allow up to five years from the date EPA approves the Regional Haze SIP. 40 CFR § 51.308(e)(1)(iv).

On December 1, 2008, the Department issued the proposed Regional Haze proposal for public comment. The proposal includes new regulations that would require the installation of the controls identified below.

Limit (Assumed Control)	Installation Deadline	Authority
0.23 lb NO <sub>x</sub> /MMBtu (Low-NO <sub>x</sub> Burners/Overfire Air)*	7/1/2011	BART
0.12 lb SO <sub>2</sub> /MMBtu 0.012 lb PM/MMBtu (Semi-Dry Scrubber)	7/1/2014	BART
0.070 lb NO <sub>x</sub> /MMBtu (SCR)	7/1/2017	Reasonable Progress

\* If LNB/OFA doesn't meet limit, SNCR required by 7/1/2014

---

<sup>2</sup> 40 CFR § 51.301 defines “in existence on August 7, 1977” as “meaning that the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (1) begun, or caused to begin, a continuous program of physical on-site construction of the facility or (2) entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of construction of the facility to be completed in a reasonable time.”

Mr. Brian Finneran  
December 17, 2008  
Page 3

The Department's proposed BART determination is consistent with the controls determined to be BART by PGE's experts. However, the schedule proposed for installation of the semi-dry scrubber system is shorter than that proposed by PGE. DEQ anticipates presenting the final BART determination package to the Environmental Quality Commission (EQC) at its April 2009 meeting. Assuming the EQC adopts the package in April 2009, it must then be submitted to EPA for approval into the State Implementation Plan (SIP). This process is anticipated to take a minimum of six months and more likely a year or longer. Assuming that EPA does not approve the Regional Haze SIP until July 1, 2010, the proposed rule does not provide all of the time allowed for PGE to install the semi-dry scrubbers.

Although all that is required of DEQ at this time is to promulgate BART, DEQ chose to go further and also impose a requirement under the future "Reasonable Progress" program. The first stage of the Regional Haze program is to determine and require BART. However, each state must subsequently develop a plan to ensure that by 2064 visibility is restored to pre-human levels in mandatory Class I areas (BART and Reasonable Progress controls are evaluated based on benefits to mandatory Class I areas only). Consistent with this requirement, states must submit SIPs containing emissions limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the 2064 visibility goal. DEQ must also demonstrate to EPA every ten years that the state is making reasonable progress towards the ultimate visibility improvement goal. These "Reasonable Progress" demonstrations do not require any determination of controls on stationary sources at this time and we are aware of no western state making Reasonable Progress based control determinations at the same time that the state is making BART determinations. For example, California just released its draft Regional Haze SIP and it is proposing no stationary source Reasonable Progress control determinations. Nonetheless, the Department has proposed as part of this rulemaking that the Boardman plant be required to install additional NO<sub>x</sub> controls, specifically selective catalytic reduction (SCR), in 2017. These controls were demonstrated not to constitute BART due to their extreme cost and their limited effectiveness in addressing visibility impacts.

PGE has reviewed the Department's proposed BART and Reasonable Progress rules in light of this regulatory and statutory background. Based on our review, we have the following comments.

## **2. Comments on Proposed NO<sub>x</sub> BART Rule**

### **NO<sub>x</sub> BART Limit Determination**

PGE supports the Department's NO<sub>x</sub> BART determination. The proposed NO<sub>x</sub> BART determination will reduce NO<sub>x</sub> from the Boardman plant by approximately 46% from current levels by preventing the formation of NO<sub>x</sub> in the first place. While this comes at a significant capital expense, we believe that these controls constitute BART and note that the Department's determination is consistent with BART determinations throughout the western U.S. We believe that the determination of feasible control level is aggressive and concur with the Department that it is appropriate to determine compliance with the 0.23 lb/MMBtu heat input limit based on a rolling 12-month average.

#### NO<sub>x</sub> BART Compliance Schedule

PGE generally supports the NO<sub>x</sub> BART installation schedule, but notes that compliance with these deadlines is dependent on EPA approving the Regional Haze SIP and DEQ approving the necessary preconstruction permits in a timely manner. Because of the need to know with certainty that the SIP is approved and the need for preconstruction permits prior to commencing construction, PGE is faced with potentially critical delays beyond its control. In order to avoid PGE being placed in the untenable position of having to proceed with millions of dollars worth of controls in the absence of clear regulatory or permit authority, PGE requests that DEQ add language authorizing the Department to delay installation of the controls in the event of delays beyond PGE's reasonable control. We recognize that under federal law the Department cannot extend the compliance deadline by more than five years after EPA approves the portion of the SIP containing the NO<sub>x</sub> BART limits.

Neither PGE nor the Department can have absolute certainty that EPA will approve the Regional Haze SIP. Therefore, PGE believes that it is critical to add language to the proposed rules specifying that if the Regional Haze SIP provisions relating to the NO<sub>x</sub> BART determination is disapproved that PGE is not required to proceed with installation of the controls as a matter of state rule. If EPA disapproves the SIP provisions mandating controls, that agency will presumably require some other approach. Therefore, we suggest that the proposed rules provide a mechanism for staying the control requirements in the event that EPA disapproves the SIP provisions mandating controls.

### **3. Comments on Proposed SO<sub>2</sub> BART Rule**

#### SO<sub>2</sub> BART Limit Determination

PGE supports the Department's SO<sub>2</sub> BART determination. The proposed SO<sub>2</sub> BART determination will reduce SO<sub>2</sub> from the Boardman plant by approximately 80% from current levels through the installation of a semi-dry scrubber system. While this technology comes at both a capital expense and generation efficiency penalty, we agree that these controls constitute BART and note that the Department's determination is consistent with or more aggressive than BART determinations throughout the western U.S. We concur with the Department that it is appropriate to determine compliance with the 0.12 lb/MMBtu heat input limit based on a rolling 30-day average basis.

#### SO<sub>2</sub> BART Compliance Schedule

PGE generally supports the SO<sub>2</sub> BART installation schedule, but notes that compliance with the deadline is also dependent on EPA approving the Regional Haze SIP and DEQ approving the necessary preconstruction permits in a timely manner. As noted above PGE needs to know with certainty that the SIP is approved and that it has all permits in hand prior to commencing construction of several hundred million dollars worth of control equipment. In addition, if EPA does not approve the portions of the Regional Haze SIP containing the SO<sub>2</sub> limits in a reasonable time frame then PGE will not have enough time to procure and install the controls. Therefore, we suggest that either DEQ change the installation deadline to be five years from the date of EPA approval of the relevant portions of the Regional Haze SIP or that DEQ add a provision to the rules extending the deadline to five years post-SIP approval in the event that EPA does not approve these portions of the SIP by the end of 2009.

#### Alternative SO<sub>2</sub> BART Determination

PGE also requests that DEQ add an alternative SO<sub>2</sub> BART determination to the proposed regulations. Section 169A(g) of the Clean Air Act specifies that BART determinations must take into account the remaining useful life of the BART eligible emission unit. See, also 40 CFR § 51.308(e)(1)(ii)(A). EPA stated that this factor should be accounted for in assessing the cost impacts of a particular control technology. 70 Fed. Reg. 39127 (July 6, 2005). In its November 2007 BART determination PGE noted that the possible premature cessation of operations of the coal-fired boiler may be appropriate for consideration in determining BART. Consistent with 40 CFR § 51, App Y Section IV(D)(4)(k) ("How do I take into account a project's 'remaining useful life' in calculating control costs"), PGE recognized the possibility that it might be necessary to include a regulatory scenario that anticipated the early closure of the Foster-Wheeler boiler. Based on the continued uncertainties about fuel cost/availability, replacement power, carbon regulation, control technologies and combustion technologies, PGE believes that



including an alternative to the proposed BART determination is appropriate. EPA specifically anticipated sources needing flexibility and seeking alternatives, and addressed this possibility in Section IV(D)(4)(k)(3) of 40 CFR § 51, App Y. In evaluating the cost-effectiveness of the proposed SO<sub>2</sub> controls, PGE assumed that the controls would be in place and operational for twenty years. As a result, the annualized capital cost was amortized over the full twenty-year life of the control device. We believe that it is consistent with the Clean Air Act and EPA's regulations to include an alternate BART determination for SO<sub>2</sub> that reflects a shorter facility life than the twenty-year life assumed in the current evaluation.

Incorporating an alternative SO<sub>2</sub> BART determination into the Oregon BART rules provides PGE the flexibility needed to best protect its customers while protecting the environment. PGE is requesting the option to assume a federally enforceable permit limit requiring cessation of the Foster-Wheeler boiler operations by the end of 2020 in lieu of installing the semi-dry scrubbers. In order to ensure adequate time to incorporate the permit limit into its permit as well as to ensure that the permit limit was in place prior to the 2014 deadline for installing the SO<sub>2</sub> controls, PGE would need to apply for this federally enforceable limit no later than July 1, 2012. If PGE submitted an application requesting the condition by that date, and responded in a timely fashion to any Department requests, PGE would be required to terminate operation of the Foster-Wheeler boiler by 2020. Alternatively, if PGE did not submit an application by July 1, 2012 requesting the permit limit, PGE would be bound by the Department's proposed SO<sub>2</sub> BART compliance deadlines and would have to install the semi-dry scrubbers by July 1, 2014. Both options, including the requirement to submit the permit limit application by July 1, 2012, would be placed in the rules. PGE, with guidance from the Oregon Public Utilities Commission (OPUC) and stakeholders, would then need to decide no later than July 1, 2012 whether to install the SO<sub>2</sub> BART controls or cease operating the Foster-Wheeler boiler by the end of 2020.

Incorporating the recommended alternative SO<sub>2</sub> BART determination with the 2012 decision point into the Oregon BART rules is consistent with all federal requirements. As noted above, not only is there no prohibition on the Department incorporating alternative BART options, Appendix Y to the federal BART regulations states that alternatives are permissible so long as each option independently meets the BART criteria. 40 CFR § 51, App Y, Section IV(D)(4)(k). The 2020 alternative BART determination clearly meets the BART criteria. As noted above, the Clean Air Act requires consideration of the remaining useful life of the plant. EPA's rules recognize that if the remaining useful life is limited by permit condition then the cost-effectiveness needs to be determined based on amortizing the capital cost over the reduced equipment life. The cost-effectiveness of the semi-dry scrubbers based on a useful life of 6.5 years (i.e., the number of years after July 1, 2014 that the control would be operated if the Foster-

Wheeler boiler ceased operation in 2020) is approximately \$5,200 per ton of SO<sub>2</sub> controlled (see attached spreadsheet for details of cost-effectiveness evaluation).<sup>3</sup> This cost-effectiveness far exceeds the range of SO<sub>2</sub> cost-effectiveness evaluated by EPA in establishing the presumptive BART limits. In EPA's assessment they looked at costs ranging from \$400/ton to \$2,000/ton. The cost-effectiveness of the semi-dry scrubbers if operated only 6.5 years would be almost triple the high end of the range of what EPA considered cost-effective. Therefore, with only a 6.5-year operational life it is appropriate to consider BART to require no additional SO<sub>2</sub> controls so long as the Foster-Wheeler boiler is required to cease operation by the end of 2020. This determination would not affect the requirement to operate the NO<sub>x</sub> BART controls and nor would it affect PGE's obligation to control mercury emitted from the boiler.

It is also appropriate to consider the alternative SO<sub>2</sub> BART determination in light of the long term benefits to the environment provided by both options. If the plant installed the proposed BART controls (i.e., low-NO<sub>x</sub> burners, modified overfire air and semi-dry scrubbers) and operated through 2040, the aggregate visibility pollutant (i.e., NO<sub>x</sub>, SO<sub>2</sub> and PM) emissions calculated on a potential to emit basis would total 336,358 tons.<sup>4</sup> If the proposed NO<sub>x</sub>/SO<sub>2</sub> BART controls and SCR were installed, the aggregate visibility pollutant emissions through 2040 would total 237,149 tons. If NO<sub>x</sub> BART but no other controls were installed on the boiler and the boiler ceased operation at the end of 2020, 232,453 tons of visibility pollutants would be emitted. A comparison of the aggregate emissions is presented below.

Controls Installed	Boiler Operated Through	Total Visibility Pollutant Emissions (tons)			
		NO <sub>x</sub>	SO <sub>2</sub>	PM	Aggregate
LNB/OFA	12/31/2020	63,588	158,311	10,554	232,453
LNB/OFA and SD scrubbers	12/31/2040	184,960	139,313	12,084	336,358
LNB/OFA, SD Scrubbers & SCR	12/31/2040	85,752	139,313	12,084	237,149

Notes: All computations start 1/1/2011; emissions calculations based on plant potential to emit.

---

<sup>3</sup> Section 4(k)(2) of Appendix Y specifies that the remaining useful life of a control is the difference between the date the controls would go into place and the date the controlled unit permanently stops operation.

<sup>4</sup> 2040 is the current projected life of the Foster-Wheeler boiler that was identified in PGE's BART analysis. However, there is no legal requirement to cease operation of the boiler at that time and the actual life of the boiler could be longer.

These suggested revisions are consistent with the BART requirements, are environmentally beneficial and also provide additional benefits. As the Department knows, the electrical generation business is in a time of tremendous transition. Over the next decade we anticipate tremendous advances in both electricity generation and control technology (e.g., carbon capture and sequestration). In addition, we anticipate that carbon will become subject to regulation. The full costs and benefits of these changes cannot be fully assessed at this time. However, by the time that PGE must decide whether to apply for its federally enforceable condition requiring cessation of operation of the Foster-Wheeler boiler or install the SO<sub>2</sub> BART controls, both PGE and the OPUC likely will have a better idea of the best future for the Boardman plant. As the Department knows, PGE is also regulated by the OPUC, and resource decisions such as the installation of BART controls must be fully vetted in the OPUC's Integrated Resource Planning (IRP) process. That process includes extensive public and stakeholder input and detailed modeling of resource decisions to yield the best combination of expected costs and risks. By building this decision point into the BART rules, it will help ensure that the decisions regarding Boardman are made with the most complete information. By enabling a more comprehensive and reasoned decision making process on the future of Boardman we also anticipate that DEQ will reduce the fiscal impacts to businesses in Oregon as compared to the Department's proposed BART rules.

#### Startup, Shutdown and Malfunction Exemption

We appreciate the recognition in the proposed rules that the technology based limits do not apply during startups and shutdowns. EPA was clear in the BART regulations that startups and shutdowns were not normal operating conditions and that the BART visibility impact assessment was intended to assess normal operating conditions. Therefore, we believe that it is appropriate to not include periods of startup and shutdown in determining compliance. However, it is equally true that the controls cannot be anticipated to perform as designed during a malfunction (defined under federal law, see, e.g. 40 CFR 63.2, as an upset that is not reasonably foreseeable or preventable and not resulting from inadequate design or maintenance). Therefore, we suggest that the regulations similarly note that malfunction periods should similarly not be included when evaluating whether the controls are operating properly and compliance is being achieved.

#### PM Limit Error

The proposed BART rule identifies the PM limit as 0.12 lb/MMBtu heat input, but PGE's BART determination and the Department's documentation indicate that it should read "0.012 lb/mmBtu heat input." We believe this was just a typographical error.

Recommended BART Rule Edits

For the reasons stated above, we request that section 1 of the proposed OAR 340-223-0030 (the Boardman BART rule) be revised as follows:

**340-223-0030**

**BART Requirements for the Foster-Wheeler boiler at the Boardman Coal-Fired Power Plant (Federal Acid rain program facility ORISPL code 6106)**

(1) Emissions limits:

(a) On and after July 1, 2011, nitrogen oxides emissions must not exceed 0.28 lb/mmBtu heat input as a 30-day rolling average and 0.23 lb/mmBtu heat input as a 12-month rolling average.

(A) If it is demonstrated by July 1, 2012 that the emission limits in (a) cannot be achieved with combustion controls, the Department may grant an extension of compliance to July 1, 2014.

(B) If an extension is granted, the nitrogen oxides emissions must not exceed 0.23 lb/mm Btu heat input as a 30-day rolling average on and after July 1, 2014.

(b) On and after July 1, 2014, sulfur dioxide emissions must not exceed 0.12 lb/mmBtu heat input as a 30-day rolling average.

(c) On and after July 1, 2014, particulate matter emissions must not exceed 0.012 lb/mmBtu heat input as determined by compliance source testing.

(d) The emission limits in (a) through (c) above do not apply during periods of startup, ~~or~~ shutdown or malfunction.

(e) The emission limits in (b) and (c) above do not apply if the operator has assumed a federally enforceable permit condition prior to July 1, 2014 requiring that the Foster-Wheeler boiler cease emissions by December 31, 2020. In order to ensure adequate time for the Department to process the permit modification by this deadline, the request for the federally enforceable permit condition must be submitted to the Department no later than July 1, 2012. If the permittee submits a permit application requesting the permit limit on or before July 1, 2012 and submits to all Department information requests associated with the application in a timely manner, the permittee shall be deemed to have the permit condition in place.

(f) The emission limits in (a), (b) and (c) above do not apply if EPA disapproves the portion of the Regional Haze SIP containing these limits or that portion of the Regional Haze SIP is otherwise invalidated.

(g) If EPA fails to approve the portion of the Regional Haze SIP containing the emission limits and compliance deadlines in (b) and (c) above by December 31, 2009, then those deadlines shall automatically change to five years after approval of the portion of the Regional Haze SIP containing these limits and deadlines.

(h) The Department may extend the deadlines in (a), (b) and (c) above to account for delays beyond the reasonable control of the permittee, including delays in the issuance of permits authorizing construction of the controls. The Department may not extend the compliance deadline more than five years after the date that EPA approves the portion of the Regional Haze SIP containing these limits and deadlines.

#### **4. Comments on Proposed Reasonable Progress Rule**

##### SCR Is Not Justified by Reasonable Progress Requirements

PGE has significant concerns regarding DEQ's proposal that SCR is required under the Reasonable Progress program. In the November 2007 BART determination report, PGE demonstrated that SCR is not BART for the Boardman boiler. The technology is not cost-effective, does not provide material benefits to visibility in the mandatory Class 1 areas and has material non-air quality environmental impacts. For all these reasons DEQ reasonably concluded that SCR is not BART. Section 169A(g)(1) of the federal Clean Air Act mandates that the same considerations must be applied in determining what constitutes Reasonable Progress controls. Therefore, for the same reasons that DEQ determined that SCR did not constitute BART, it should not consider SCR to be required by Reasonable Progress.

##### DEQ Has No Basis For Imposing Reasonable Progress Requirements on Boardman At This Time

PGE is similarly concerned about DEQ's choice to proceed at this time with a Reasonable Progress determination for the Boardman Plant while not considering Reasonable Progress for any other emission sources in Oregon. We are not aware of any other state in the western U.S. addressing additional controls under Reasonable Progress at this time. The Reasonable Progress assessment in the Department's proposed Regional Haze SIP states that "it is not reasonable to require controls" for any of the stationary source categories reviewed and notes that the Department will be developing guidance for conducting Reasonable Progress control

Mr. Brian Finneran  
December 17, 2008  
Page 11

determinations over the next five years. Proposed Regional Haze Plan at 171. Putting aside the fact that for the reasons stated in the previous paragraph SCR does not meet the Reasonable Progress guidelines established by statute and EPA guidance, it is arbitrary for DEQ to single out one source for a program that is otherwise in its nascent stages and where no other source in the state is under consideration. For these reasons we propose that DEQ not include the Reasonable Progress component in the BART rules. DEQ can address Reasonable Progress for the Boardman plant when it develops its Reasonable Progress SIP for the state as a whole.

#### Alternative Reasonable Progress Determination

Even if DEQ were to proceed with Reasonable Progress at this time for the Boardman Plant and SCR was determined to constitute a Reasonable Progress control, we believe that DEQ should include an alternative determination similar to what is proposed above for BART. EPA's June 2007 EPA Reasonable Progress guidance states:

“The fourth statutory factor is ‘the remaining useful life of any existing source subject to [reasonable progress] requirements.’ This factor is generally best treated as one element of the overall cost analysis. The “remaining useful life” of a source, if it represents a relatively short time period, may affect the annualized costs of retrofit controls. For example, the methods for calculating annualized costs in EPA’s *Air Pollution Control Cost Manual* require the use of a specified time period for amortization that varies based upon the type of control. If the remaining useful life of the source will clearly exceed this time period, the remaining useful life factor has essentially no effect on control costs and on the reasonable progress determination process. Where the remaining useful life of the source is less than the time period for amortizing the costs of the retrofit control, you may wish to use this shorter time period in your cost calculations.”

This statement supports a similar approach to that required under BART where a shorter facility life is taken into account when determining cost-effectiveness. In evaluating the cost-effectiveness of SCR, PGE assumed that the controls would be in place and operational for twenty years. As a result, the annualized capital cost was amortized over the full twenty-year life of the control device. We believe that it is consistent with the Clean Air Act and EPA’s regulations to include an alternate Reasonable Progress determination for NO<sub>x</sub> that reflects a shorter facility life.

If DEQ proceeds with requiring SCR as Reasonable Progress, PGE recommends incorporating an option under which PGE may assume a federally enforceable permit limit requiring cessation of the Foster-Wheeler boiler operations by 2029. In order to ensure adequate time to incorporate the permit limit into its permit as well as to ensure that the permit limit is in place prior to the 2017 deadline currently proposed for installing SCR, PGE would need to apply for this federally enforceable limit no later than July 1, 2015. If PGE submitted an application requesting the condition by that date, and responded in a timely fashion to any Department requests, it would be required to terminate operation of the Foster-Wheeler boiler by 2029. Alternatively, if PGE did not submit an application by July 1, 2015 requesting the permit limit, PGE would be bound by the Department's proposed Reasonable Progress NO<sub>x</sub> control compliance deadline and would have to install SCR by July 1, 2017. Both options, including the requirement to submit the permit limit application by July 1, 2015, would be placed in the rules. PGE, with guidance from the OPUC and stakeholders, would then need to decide no later than July 1, 2015 whether to install SCR or cease operating the Foster-Wheeler boiler by the end of 2029.

Incorporating the recommended option into the Oregon Reasonable Progress rules is consistent with all federal requirements. As with BART, there is no prohibition on the Department incorporating alternative Reasonable Progress options so long as each option independently meets the Reasonable Progress criteria. The alternative Reasonable Progress option clearly meets all the statutory and regulatory criteria. As noted above, the Section 169A of the federal Clean Air Act requires consideration of the remaining useful life of the plant for both BART and Reasonable Progress determinations. EPA's rules recognize that if the remaining useful life is limited by permit condition then the cost-effectiveness needs to be determined based on amortizing the capital cost over the reduced equipment life. 40 CFR 51, App. Y Section IV(D)(4)(k). The cost-effectiveness of the SCR based on a useful life of 12.5 years (i.e., the number of years after July 1, 2017 that the control would be operated if the plant had to close by the end of 2029) is over \$7,300 per ton of NO<sub>x</sub> controlled. This cost-effectiveness far exceeds the range of NO<sub>x</sub> cost-effectiveness evaluated by EPA in establishing the presumptive BART limits. In EPA's assessment they looked at costs ranging from \$100/ton to \$1,000/ton. The cost-effectiveness of the SCR if operated only 12.5 years would be over seven times greater than the high end range of what EPA considered cost-effective. Therefore, with only a 12.5-year operational life it is appropriate to consider the cessation of operation of the Foster-Wheeler boiler by the end of 2029 to constitute Reasonable Progress. This determination would not affect the requirement to operate the NO<sub>x</sub> and SO<sub>2</sub> BART controls and nor would it affect PGE's obligation to control mercury from the boiler.

It is also appropriate to consider the alternative of cessation of the Foster-Wheeler boiler operations at the end of 2029 to be Reasonable Progress in light of the long term benefits to the environment provided by both options. If the plant installed the proposed BART controls (i.e., low-NOx burners, modified overfire air and semi-dry scrubbers) and operated through 2040, the aggregate visibility pollutant emissions calculated on a potential to emit basis would total 336,358 tons. If the BART controls and SCR were installed, the aggregate visibility pollutant emissions through 2040 would total 237,149 tons. If the BART controls were installed on the boiler, no SCR was installed, and the boiler ceased operation at the end of 2029, then 231,292 tons of visibility pollutants would be emitted. By not installing the SCR, a material quantity of ammonia emissions would be avoided. A comparison of the aggregate emissions is presented below.

Controls Installed	Boiler Operated Through	Total Emissions (tons)			
		NOx	SO <sub>2</sub>	PM	Aggregate
LNB/OFA and SD scrubbers	12/31/2029	118,208	104,485	8,602	231,292
LNB/OFA and SD scrubbers	12/31/2040	184,960	139,313	12,084	336,358
LNB/OFA, SD Scrubbers & SCR	12/31/2040	85,752	139,313	12,084	237,149

Notes: All computations start 1/1/2011; emissions calculations based on plant potential to emit.

These suggested revisions are consistent with the Reasonable Progress requirements, are environmentally beneficial and also provide additional benefits. As we discussed above, the electrical generation business is in a time of tremendous transition. Over the next decade we anticipate tremendous advances in both electricity generation and control technology (e.g., carbon capture and sequestration). In addition, we anticipate that carbon will become subject to regulation. The full costs and benefits of these changes cannot be fully assessed at this time. However, by the time that PGE must decide whether to apply for its federally enforceable condition requiring cessation of operation of the Foster-Wheeler boiler or install SCR, both PGE and the Oregon Public Utilities Commission will have a much better idea of the best future for the Boardman plant. By building this decision point into the Reasonable Progress rules, it is possible to ensure that the decisions regarding Boardman are made with the most complete information. By enabling a more comprehensive and reasoned decision making process on the future of Boardman we also anticipate that DEQ will reduce the fiscal impacts to businesses in Oregon as compared to the Department's proposed rulemaking.



Startup, Shutdown and Malfunction Exemption

As noted above in relation to the BART controls we appreciate the recognition in the proposed rules that the technology based Reasonable Progress limit does not apply during startups and shutdowns. EPA was clear in the BART regulations that startups and shutdowns were not normal operating conditions and that the BART visibility impact assessment was intended to assess normal operating conditions. Therefore, we believe that it is appropriate to not include periods of startup and shutdown in determining compliance. However, it is equally true that the controls cannot be anticipated to perform as designed during a malfunction (defined under federal law as an upset that is not reasonably foreseeable or preventable and not resulting from inadequate design or maintenance). Therefore, we suggest that the regulations similarly note that malfunction periods should similarly not be included when evaluating whether the controls are operating properly and compliance is being achieved.

For the reasons stated above, we request that the proposed OAR 340-223-0040 (the Boardman Reasonable Progress rule) be revised as follows:

**340-223-0040**

**Additional NO<sub>x</sub> Requirements for the Foster-Wheeler boiler at the Boardman Coal-Fired Power Plant (Federal Acid rain program facility ORISPL code 6106)**

(1) On and after July 1, 2017, nitrogen oxides emissions must not exceed 0.070 lb/mmBtu heat input, excluding periods of startup, ~~or~~ shutdown or malfunction.

(a) Compliance with the NO<sub>x</sub> emissions limit must be determined with a continuous emissions monitoring system in accordance with OAR 340-223-0030(2) and (3).

(b) The Department must be notified in writing within 7 days after any control equipment used to comply with the emission limit begins operation.

(c) A compliance status report, including CEMS data, must be submitted by January 1, 2018.

(d) The emission limit in (1) above does not apply if the operator has assumed a federally enforceable permit condition prior to July 1, 2017 requiring that the Foster-Wheeler boiler cease emissions by December 31, 2029. In order to ensure adequate time for the Department to process the permit modification by this deadline, the request for the federally enforceable permit condition must be submitted to the Department no later than July 1, 2015. If the permittee submits a permit application

requesting the permit limit on or before July 1, 2015 and submits to all Department information requests associated with the application in a timely manner, the permittee shall be deemed to have the permit condition in place.

(e) The emission limit in (1) above does not apply if EPA disapproves the portion of the Regional Haze SIP containing that limit or that portion of the Regional Haze SIP is otherwise invalidated.

(f) If EPA fails to approve the portion of the Regional Haze SIP containing the emission limit and compliance deadline in (1) above by December 31, 2009, then those deadlines shall automatically change to eight years after approval of the portion of the Regional Haze SIP containing these limits and deadlines.

## **5. Conclusion**

Attached please find spreadsheets documenting the cost-effectiveness values stated in our comments above as well as the comparative emissions between the different BART and Reasonable Progress alternatives. Please consider these spreadsheets to be an addendum to our November 2007 report. You will also find a flow diagram that visually presents the proposed alternative BART and Reasonable Progress determinations.

Thank you for your consideration of these comments. As you know, the OPUC and PGE must engage in a public IRP process that includes considering alternatives to the emission controls. By incorporating the BART and Reasonable Progress alternatives discussed above DEQ will better align the DEQ and OPUC processes. This protects the best interests of PGE, its customers and the Oregon economy while also satisfying all state and federal requirements, including protection of Oregon air quality. Therefore, we believe that it provides an important improvement to the proposed rules. We hope that DEQ will recognize these benefits, incorporate our suggested edits into the proposed rule and re-notice the package so as to enable the greatest degree of public participation.

Mr. Brian Finneran  
December 17, 2008  
Page 16

UE 246/CUB/206  
Jenks-Feighner 16

Please contact me if you have any questions or would like to discuss these comments further.

Sincerely,

Arya Behbehani-Divers

cc: Stephen Quennoz  
Loren Mayer

Attachments: Tables 1-4  
Flow Diagram



# Citizens' Utility Board of Oregon

---

610 SW Broadway, Suite 308

Portland, OR 97205

(503) 227-1984 • (503) 274-2956 • [cub@oregoncub.org](mailto:cub@oregoncub.org) • [www.oregoncub.org](http://www.oregoncub.org)

January 30, 2009

Brian Finneran  
Oregon Department of Environmental Quality  
811 SW Sixth Avenue  
Portland, OR 97204

## **RE: CUB Comments on Proposed Regional Haze Rules**

Dear Mr. Finneran:

The Citizens' Utility Board (CUB) was established under Oregon law to represent the interests of residential utility customers "before legislative, administrative and judicial bodies."<sup>1</sup> While utility customers worry a great deal about the price of energy, they also are concerned about the environmental consequences of energy production. Few Oregonians would argue against requiring that our utility companies comply with the Federal Clean Air Act, even though, in most circumstances, those costs will be added to customer bills.

Customers should expect, however, that air quality regulations are implemented in a smart, rational, cost effective manner. CUB has some concerns that clean air regulations which target some pollutants, while ignoring CO<sub>2</sub> could impose significant, unnecessary costs onto customers, or place a barrier to reduction of carbon emissions.

CUB recognizes that neither Congress, nor the Oregon Legislature, have adopted a regulatory approach to carbon. At the same time, we believe that such regulation must, and will, happen soon. One critical question in this proceeding is the determination of the most effective approach to comply with current Best Available Retrofit Technology (BART) requirements without inadvertently precluding PGE from closing the plant early to reduce carbon emissions, or causing the eventual closure of the plant to unnecessarily burden customers with hundreds of millions of dollars in unamortized BART investment costs.

### **These Rules and Carbon Regulation.**

Regulation of carbon emissions is coming soon. The scientific consensus on Climate Change is quickly leading to a political consensus to take action and regulate

---

<sup>1</sup> ORS 774.030

greenhouse gas emissions. Such regulation will have a large effect on using pulverized coal as a fuel to generate electricity. While many hope that carbon sequestration will allow coal to continue to be burned, there is little doubt that sequestration, if possible, will be expensive and will be dependent on the geology near the coal generation facility. Even with sequestration, the cost and the geology will lead to the closure of many coal generation facilities. Without sequestration, it will be necessary to close a great deal of the nation's coal-fired power plants.

It is with the recognition that some coal plants will close in response to climate change that CUB is concerned with the consequences of this rule. To understand our concerns, let us assume for a minute that Boardman is one of the coal plants that ideally should be closed to help Oregon, the United States, and the World combat global warming. What effect would this rule have on that closure?

One of the most difficult and controversial issues in utility regulation is what happens to unamortized investment in a utility asset when that asset is retired early. PGE closed the Trojan nuclear power plant in 1994, and the issue of what happens to Trojan's capital investment still has not been resolved. It is not in anyone's interest to create another Trojan.

Under traditional utility regulation, capital investment can only be charged to customers if that investment is "used and useful" to serve customers. Oregon voters captured this concept in 1978's Ballot Measure 9 which required utility property to be "presently used for providing utility service to customers" in order to be included in rate base.<sup>2</sup> Since this time this law has been amended by the legislature and interpreted and reinterpreted by Oregon courts. Litigation concerning this statute and Trojan continues. Now, nearly 15 years after Trojan closed, Oregon law is still unsettled as to how unamortized investment in a prematurely retired power plant must be treated.

The unsettled law described above presents a huge barrier to PGE's ever closing the plant if it is first forced, under the proposed rule, to invest \$470 million on BART. This is because early closure of the plant, would make it more difficult for PGE to recover its investment and earn a rate of return on that investment. This being the case, if PGE is forced to make the \$470 million BART investment now, it will likely decide that it can not afford to close Boardman early and will decide instead to keep on operating the plant so that the \$470 million investment can be considered "presently used." And the result will be that Oregon will lose the option of seeing Boardman closed early, eliminating both carbon and other pollutants from the atmosphere, all without the need of an expensive BART retrofit.

After making the investment in BART, the only way PGE would likely ever agree to close the plant, would be if the legislature guaranteed it that it could charge customers for its investment and its return on its investment in BART. But this would mean that the same customers who are paying for the replacement power costs related to Boardman's retirement would also be paying for Boardman's BART investment.

---

<sup>2</sup> ORS 757.355

## **Preventing These Unwanted Consequences.**

These consequences both come from the same cause: moving forward on the clean air rule before we have decided Boardman's fate with regards to climate change. Therefore, the key to preventing these consequences is to ensure that we consider Boardman's fate before spending millions of dollars on air quality, and that we reevaluate Boardman's fate as we go forward.

PGE is regulated by the Oregon Public Utility Commission. Utility regulation allows a utility to pass costs of providing service through to customers if the utility can prove that it acted prudently when it incurred those costs. For PGE to recover costs associated with Boardman Clean Air investments, it will have to prove that such investments were reasonable. CUB believes that PGE will need to demonstrate that adding an additional \$470 million in investment at Boardman is prudent even with the expectation that carbon will be regulated during the life of the investment.

In addition, CUB expects that PGE will reevaluate its prudency analysis as we go forward. Even if PGE's prudency analysis today demonstrates that investing in BART under the proposed rule is prudent based on the current expected life of Boardman, this prudency analysis could change as more is learned about how Oregon and the United States will regulate carbon. We would expect PGE to analyze whether this entire clean air investment is reasonable before it begins spending money and asking customers to pay higher rates. Assuming that PGE decides not to close Boardman, but to go ahead with the BART investments today, we expect that they will update their prudency analysis by 2012 when they have to commit to the next phase of the project. Finally, we expect PGE to reevaluate their prudency analysis again before the final stage of the project in 2017.

By evaluating and reevaluating whether closing Boardman is the best solution to both air quality and climate change, PGE can reduce (though not eliminate) the risk that we spend hundreds of millions of dollars on investments in a power plant that Oregon later determines should be closed.

The plan that was proposed by PGE in December would allow for the prudency analysis that is necessary to avoid these unintended consequences. While CUB is unable to comment on whether the level of pollution under PGE's plan is consistent with the Clean Air Act, we do believe that their plan is consistent with good utility planning which is important to minimize customer rates and utility risk.

## **Conclusion.**

The unwanted consequences discussed above can be avoided, and the flexibility discussed here can be achieved. DEQ can write a rule that allows it to consider alternatives to BART determinations. CUB encourages DEQ to explore the alternatives provided for in 40 CFR 51.308(e)(1) and (2) and 40 CFR 51 App. Y and to draft a rule

UE 246/CUB/207  
Jenks-Feighner 3

that allows early closure of the Boardman plant without the necessity of first making costly BART upgrades.

Thank you for your attention to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "Bob Jenks", written in a cursive style.

Bob Jenks  
Executive Director

## Decision Points Proposal for BART + Reasonable Progress (Matrix of Sensitivity Results)\*

Operate thru 2020		CO2 Level for 2012 Policy start						CO2 Level for 2013 Policy start					
Gas input	Coal input	\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65	\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65
Ref_Gas	Ref_Coal	586	511	461	386	304	184	586	527	488	429	364	267
Ref_Gas	Low_Coal	641	567	517	442	360	236	641	583	544	484	420	320
Ref_Gas	High_Coal	524	450	400	325	245	127	524	466	426	367	305	210
Low_Gas	Ref_Coal	348	275	227	155	79	(29)	348	291	253	197	139	54
High_Gas	Ref_Coal	1,065	988	936	857	772	641	1,065	1,003	962	900	832	724

Operate thru 2029		CO2 Level for 2012 Policy start						CO2 Level for 2013 Policy start					
Gas input	Coal input	\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65	\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65
Ref_Gas	Ref_Coal	612	437	322	153	(20)	(253)	612	458	357	208	52	(155)
Ref_Gas	Low_Coal	785	610	494	319	135	(124)	785	631	528	375	207	(25)
Ref_Gas	High_Coal	405	236	126	(30)	(186)	(372)	405	257	161	25	(114)	(273)
Low_Gas	Ref_Coal	74	(83)	(179)	(312)	(426)	(562)	74	(61)	(144)	(257)	(354)	(463)
High_Gas	Ref_Coal	1,725	1,545	1,424	1,242	1,045	747	1,725	1,566	1,459	1,298	1,116	846

Operate thru 2040		CO2 Level for 2012 Policy start						CO2 Level for 2013 Policy start					
Gas input	Coal input	\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65	\$ -	\$ 12	\$ 20	\$ 32	\$ 45	\$ 65
Ref_Gas	Ref_Coal	663	370	184	(67)	(296)	(539)	663	394	223	(10)	(218)	(441)
Ref_Gas	Low_Coal	937	642	448	167	(102)	(409)	937	666	487	224	(24)	(311)
Ref_Gas	High_Coal	327	60	(99)	(310)	(473)	(653)	327	84	(61)	(253)	(396)	(555)
Low_Gas	Ref_Coal	(67)	(307)	(448)	(594)	(705)	(838)	(67)	(283)	(410)	(537)	(628)	(740)
High_Gas	Ref_Coal	2,237	1,935	1,734	1,431	1,113	641	2,237	1,959	1,772	1,489	1,190	739

	Positive NPV Count	% of Total	Avg NPV	Min NPV	Max NPV	NPV Spread	Avg vs Min NPV	Avg vs Max NPV
2020	59	98%	\$ 472	\$ (29)	\$ 1,065	\$ 1,095	\$ 501	\$ 594
2029	40	67%	\$ 353	\$ (562)	\$ 1,725	\$ 2,287	\$ 915	\$ 1,372
2040	30	50%	\$ 257	\$ (838)	\$ 2,237	\$ 3,075	\$ 1,096	\$ 1,979



\* Results based on the assumed range of fuel and CO2 prices



- Jan. 2006:** PGE volunteers Boardman to submit data for DEQ regional haze study
- Nov. 2007:** PGE proposes BART – Best Available Control Technology – for Boardman
- Nov. 2008:** DEQ issues proposed regional haze rule requiring BART controls
- Dec. 2008:** PGE recommends “decision point” plan with off-ramps in 2020 and 2029, reflecting uncertainty of future carbon costs
- June 2009:** DEQ adopts regional haze rule. Rejects decision point plan but allows possibility of future rule revision
- 

## **DEQ -- Best Available Retrofit Technology (BART) Requirement:**

- |                                       |                                |
|---------------------------------------|--------------------------------|
| ▪NOx (Low NOx Burner & Over Fire Air) | 0.23 lb/mmBtu by July 1, 2011  |
| ▪SO <sub>2</sub> (Semi-Dry Scrubber)  | 0.12 lb/mmBtu by July 1, 2014  |
| ▪PM (Bag House)                       | 0.012 lb/mmBtu by July 1, 2014 |

## **DEQ -- Reasonable Progress (RP) Requirement:**

- |                                      |                               |
|--------------------------------------|-------------------------------|
| ▪NOx (Selective Catalytic Reduction) | 0.07 lb/mmBtu by July 1, 2017 |
|--------------------------------------|-------------------------------|

**DEQ's regional haze rule effectively left PGE with two options: Close the plant in 2014, or install controls and operate thru 2040+**

# Boardman: Recent Regulatory History

- Sept. 2009:** Despite DEQ rule limitations, stakeholders ask PGE to consider 2020 closure in Integrated Resource Plan
- Nov. 2009:** PGE submits IRP to OPUC, incorporates required BART controls with 2040 operating plan as best option actionable under current rules
- Sept. 2009 - Jan. 2010:** PGE conducts additional cost and risk analysis of Boardman operating scenarios
- Jan. 2010:** PGE announces intent to cease Boardman operations 20 years early
- April 2010:** PGE submits "BART II" proposal to DEQ, files IRP Addendum with OPUC to incorporate 2020 plan

---

## PGE Proposal -- Best Available Retrofit Technology (BART II) :

- |  |                                   |
|--|-----------------------------------|
| ▪ NO <sub>x</sub> (Low NO <sub>x</sub> Burner & Over Fire Air)           | 0.23 lb/mmBtu by July 1, 2011     |
| ▪ SO <sub>2</sub> Sulfur restriction #1 (Pre combustion controls – Coal) | 0.96 lb/mmBtu in 2011             |
| ▪ SO <sub>2</sub> Sulfur restriction #2 (Pre combustion controls – Coal) | 0.60 lb/mmBtu in 2014             |
| ▪ Particulate Matter (PM)  | No change in current PM emissions |
| ▪ Cease operation of the Boardman Plant boiler by December 31, 2020      |                                   |

Under a separate DEQ rule PGE will be reducing mercury (Hg) at Boardman by 90% by 2012

# **Oklahoma, EPA, and PSO Reach Agreement on Air Quality Rules**

**[April 24, 2012]**

OKLAHOMA CITY – Today Oklahoma Governor Mary Fallin announced that the State of Oklahoma has reached an agreement with Public Service Company of Oklahoma (PSO) and the Environmental Protection Agency that settles compliance challenges with federal air quality rules relating to PSO's two coal-fired power plants at its Northeastern Station in Oologah, OK.

This Oklahoma based agreement permits PSO to comply with EPA rules, including the Regional Haze Rule and the Mercury and Air Toxics Rule, while simultaneously protecting Oklahoma consumers and ratepayers. Under the settlement agreement, PSO agrees to meet specified emission rates at both Northeastern coal units, retire one unit in 2017, install certain emissions control equipment on one Northeastern unit in 2015, and retire the second unit in 2025 or 2026.

"I am pleased that the parties could come to an agreement that is in Oklahoma's best interest," said Governor Fallin. "This agreement provides much needed certainty for PSO and its utility customers, ensures manageable and acceptable costs to consumers, transitions PSO's fleet to be cleaner and more efficient, and provides real environmental benefits for all Oklahomans," said Fallin.

"I want to thank Secretary of Environment Gary Sherrer and Secretary of Energy Michael Ming, whose leadership was instrumental in achieving this agreement. My thanks go out also to PSO and both state and federal officials who helped to make this possible," added Fallin.

Oklahoma Secretary of the Environment Gary Sherrer praised the cooperative effort.

"It is always more positive when the federal government can work cooperatively with the state government and local companies. In this case, we've been able to develop a common sense solution with PSO that is in the best interests of all involved. I hope this agreement can serve as a model for others to use, as well as improve Oklahoma's environment and provide certainty to ratepayers," said Sherrer.

Oklahoma Secretary of Energy Michael Ming said the settlement agreement would avoid costly litigation while protecting consumers.

"The proposed settlement provides much needed certainty, manageable and acceptable costs to customers, and greatly reduced emissions in addition to leveraging Oklahoma resources," said Ming. "This agreement avoids costly and uncertain litigation and mitigating risks to consumers, all while improving the environment with an Oklahoma solution," Ming added.

The parties to the agreement will work together to develop definitive settlement documents in the next 30-60 days, and the agreement will then be subject to public review and comment. Any necessary approvals will be filed at the Oklahoma Corporation Commission.

For more information on this settlement agreement, please contact Tyler Powell, the director of the Office of the Secretary of Environment, at 405-530-8998.

4/24/2012

# **PSO, STATE REACH AGREEMENT WITH EPA ON EMISSIONS REDUCTION PLANS**

Public Service Company of Oklahoma (PSO), a unit of American Electric Power (NYSE: AEP), has entered into an agreement in principle with the U.S. Environmental Protection Agency, the State of Oklahoma and the Sierra Club that establishes a framework for PSO to comply with EPA regulations affecting PSO's two coal-fired generating units at its Northeastern Station in Oologah, Oklahoma.

Specifically, the agreement addresses PSO's future obligations under the EPA's Regional Haze rule (RHR) and EPA's Mercury and Air Toxics Standard (MATS). Under the agreement, PSO would meet specified emissions rates at both Northeastern coal units, install certain emissions control equipment on one of the Northeastern coal units in 2015, and retire the other unit in 2016. The coal unit with the emissions controls would be retired in the 2025-26 timeframe.

The agreement also will result in PSO withdrawing its lawsuit against the EPA regarding the Regional Haze rule.

"This landmark agreement outlines a clear and cost-effective path for compliance by PSO's Oklahoma coal-fired generating units with the EPA's new rules," said Stuart Solomon, PSO's president and chief operating officer. "It allows PSO to implement a compliance plan that resolves the Company's most significant environmental issues, provides a manageable transition for our generation fleet, and assures continued reliability for our customers."

The agreement is the result of extensive negotiations concerning compliance with the EPA's MATS rule and its "Federal Implementation Plan" for the RHR, both issued in December 2011.

"There are many people I'd like to thank for their essential role in reaching this agreement, including Governor Mary Fallin, Attorney General Scott Pruitt, Oklahoma Secretary of Environment Gary Sherrer, Secretary of Energy Mike Ming, Oklahoma Department of Environmental Quality director Steve Thompson, the EPA and the Sierra Club," said Solomon. "All provided great leadership in taking a positive and cooperative approach to improving Oklahoma's environment and also providing a sensible approach to environmental compliance for PSO and our customers."

The parties to the agreement will work together to develop definitive settlement documents in the next 30-60 days. The settlement will then be subject to public review and comment.

PSO will file with the Oklahoma Corporation Commission (OCC) an environmental compliance plan that reflects the agreement. The OCC must approve costs associated with the plan before PSO can recover those costs from customers.

**CUB EXHIBIT 211 IS CONFIDENTIAL  
SUBJECT TO PROTECTIVE ORDER NO. 12-060**

**CUB EXHIBIT 212 IS CONFIDENTIAL  
SUBJECT TO PROTECTIVE ORDER NO. 12-060**

**CUB EXHIBIT 213 IS CONFIDENTIAL  
SUBJECT TO PROTECTIVE ORDER NO. 12-060**