

---

**Date:** November 30, 2010

**To:** Environmental Quality Commission

**From:** Dick Pedersen, Director

**Subject:** Agenda item K, Action item: Revisions to DEQ Regional Haze BART Rules for the PGE Boardman Power Plant  
December 9-10, 2010, EQC meeting

**Why this is important**

Portland General Electric's coal-fueled electric power plant at Boardman is the largest single source of air pollution in Oregon. Current DEQ rules allow the plant to operate until at least 2040 with stringent emission controls for reducing regional haze. Portland General Electric has requested that the EQC consider new rules that would impose less stringent emission controls but guarantee the permanent closure of the Boardman coal-fired boiler by no later than December 31, 2020. This rule proposal would satisfy federal Clean Air Act requirements, provide significant environmental and public health benefits to Oregon and Washington and set a national precedent for the early closure of a coal-fired power plant.

**DEQ recommendation and EQC Motion**

The Department of Environmental Quality recommends that the Environmental Quality Commission adopt the following revisions to its existing regional haze rules, and submit the revised rules to the U.S. Environmental Protection Agency as a revision to Oregon's Clean Air Act State Implementation Plan:

- Proposed revisions to the Regional Haze Rules in Division 223, and the State of Oregon Clean Air Act Implementation Plan in Division 200, as presented in Attachment A1.
- Proposed revisions to 2009 Oregon Regional Haze Plan, as presented in Attachment A2.

After an extensive public comment period and consideration of over 8,000 comments, DEQ is recommending that the commission repeal the 2009 BART rules for PGE Boardman, and replace those requirements with new control requirements consistent with the federal regional haze rules based upon PGE permanently ceasing the burning of coal at the Boardman plant in 2020, or an earlier date if the company chooses.

**Report contents**

This report is organized into the following sections:

1. Summary of federal regional haze requirements and 2009 DEQ rules for best available retrofit technology - known as BART - for the PGE Boardman coal-fired power plant.
2. PGE and DEQ rule options developed in spring-summer 2010 to explore BART controls together with PGE Boardman closure.
3. New PGE proposal for BART controls with permanent closure of the Boardman coal-fired power plant no later than Dec. 31, 2020.

4. Other issues affecting the future of the PGE Boardman facility.
5. DEQ recommendation to EQC.
6. Summary of public comment received by DEQ on rule options.

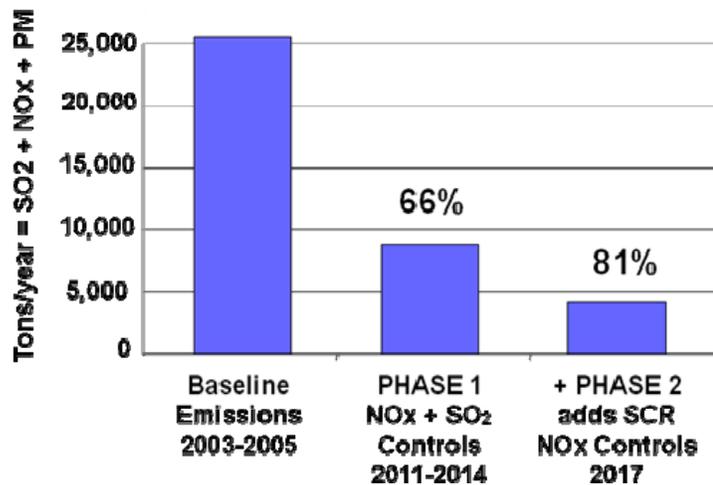
## Background

### 1. Summary of federal regional haze requirements and 2009 PGE Boardman BART rule

The federal regional haze rule requires states to adopt plans to improve visibility in 156 Class I areas across the country. Plans must address BART standards for certain older industrial facilities built before 1977 by evaluating whether they cause significant visibility impacts in wilderness areas and national parks (Class I areas). If they do, the states must require new pollution controls to be installed within five years.

The PGE Boardman plant is a 600 megawatt coal-fired electric generating plant that currently emits about 25,000 tons of air pollution per year. In 2009 the Environmental Quality Commission adopted the Oregon Regional Haze Plan and BART rules for PGE's Boardman plant to address significant visibility impacts in 14 Class I areas in Oregon and Washington, as well as visibility impacts in the Columbia River Gorge National Scenic Area. The 2009 rules use a two-phased approach to reduce total emissions 81 percent, or about 21,000 tons per year, and reduce peak visibility impacts in the 14 Class I areas an average of 83 percent, at a total cost of \$498 million dollars<sup>1</sup>. The emission controls include low-NOx burners with overfire air and selective catalytic reduction (SCR) to control nitrogen oxides, as well as semi-dry scrubbers to control sulfur dioxide. The 2009 BART rule anticipated that PGE would operate the Boardman facility until at least 2040, and likely beyond. The 2009 Oregon Regional Haze Plan contained a provision allowing PGE to submit a formal request to DEQ for a rule change if the company wanted to close the plant earlier.

Figure 1: Summary of emission reductions under the 2009 rules



<sup>1</sup> 2010 dollars.

## 2. PGE and DEQ rule options

Between April and October of 2010, PGE submitted three proposals to revise the 2009 BART rule to allow a 2020 closure date. PGE's first two proposals included emission reduction controls that DEQ found inadequate for meeting federal BART requirements. In response to the company's intention to find an option that met federal requirements, DEQ developed three federally-acceptable options for BART controls consistent with three possible closure dates in 2015, 2018, and 2020. DEQ then sought public comment on these options.

In November 2010, at the request of PGE and several stakeholder groups, DEQ reopened the public record to consider a new proposal from PGE that included more stringent BART controls and the guaranteed, permanent closure of the Boardman coal-fired boiler no later than Dec. 31, 2020. Following is a brief timeline and summary of the PGE and DEQ options developed between April and October 2010, as well as PGE's latest November proposal. Section 3 below further describes PGE's latest proposal that led to the re-opening of the comment period.

**April 2010.** PGE submitted the first proposal as part of a petition to the commission to revise the 2009 rules for the Boardman plant. PGE proposed to install much less stringent BART controls as part of their 2020 closure option. Under PGE's proposal, PGE could choose their early 2020 closure option, or choose to operate the plant indefinitely under DEQ's 2009 BART rule.

**June 2010.** The commission denied PGE's petition, concluding that the emission controls proposed by PGE were inadequate to meet BART. The commission instead directed DEQ to examine a wider range of possible BART pollution control options consistent with an early closure of the plant, and proceed with proposed revisions to the 2009 rules.

**July 2010.** DEQ developed three emission reduction options to satisfy federal BART requirements given three possible early closure dates from which PGE could select. A summary of these three options is provided in **Table 1** with a comparison to DEQ's 2009 Boardman BART rules. Each DEQ option identifies the stringency of control technology that would be required under each closure scenario. In general, the longer the facility operates, the more stringent BART controls are needed to satisfy federal requirements. For example:

- Option 1: 2020 closure. Low-NO<sub>x</sub> burners with overfire air controls for nitrogen oxide (NO<sub>x</sub>) emissions, and semi-dry scrubber controls for sulfur dioxide (SO<sub>2</sub>) emissions. This option does not include selective catalytic reduction controls for NO<sub>x</sub>, as required by the 2009 rules.
- Option 2: 2018 closure. The same Low-NO<sub>x</sub> burners with overfire air, but instead of semi-dry scrubbers, less advanced and expensive SO<sub>2</sub> controls using dry sorbent injection (DSI) technology.
- Option 3: 2015 closure. The same Low-NO<sub>x</sub> burners with overfire air, but no DSI or other controls for sulfur dioxide.

These three options were proposed as an addition to the existing rules, providing PGE four separate choices to meet federal BART requirements.

**Table 1: Summary of DEQ Three Emission Reduction Options**

| Option  | Closure Date    | Controls/Installation Date |                         |                         | Capital Cost (million \$) | Emission reduction tons/year (+percent) |
|---|-----------------|----------------------------|-------------------------|-------------------------|---------------------------|---|
|   |                 | 2011 (NO <sub>x</sub> )    | 2014 (SO <sub>2</sub> ) | 2017 (NO <sub>x</sub> ) |                           |   |
| <b>2009 Rules (adopted)</b>   | None            | LNB/MOFA                   | Semi-dry Scrubber       | SCR                     | \$497.6                   | 20,800 (81%)                            |
| <b>Option 1</b>   | <b>2020*</b>    | LNB/MOFA/SNCR              | Semi-dry Scrubber       | -                       | \$320.6                   | 17,800 (69%)                            |
| <b>Option 2</b>   | <b>2018*</b>    | LNB/MOFA/SNCR              | DSI §                   | -                       | \$102.6                   | 9,900 (39%)                             |
| <b>Option 3</b>   | <b>2015/16*</b> | LNB/MOFA                   | -                       | -                       | \$35.7                    | 4,800 (19%)                             |
| * Closure eliminates all pollution from the Boardman facility (approximately 25,500 tons per year of haze pollution as well as mercury and greenhouse gas emissions)<br>§ Subject to pilot study evaluation   |                 |                            |                         |                         |                           |   |
| <b>Table legend:</b><br><br><b>NO<sub>x</sub> Controls:</b> <ul style="list-style-type: none"> <li>• LNB/MOFA = Low NO<sub>x</sub> burners with modified overfire air system.</li> <li>• SNCR = Selective Non-Catalytic Reduction system.</li> <li>• SCR = Selective Catalytic Reduction.</li> </ul> <b>SO<sub>2</sub> controls:</b> <ul style="list-style-type: none"> <li>• Semi-dry Scrubber, also known as semi-dry flue gas desulfurization system.</li> <li>• DSI = Dry Sobent Injection</li> </ul> |                 |                            |                         |                         |                           |   |

**August 2010.** DEQ convened an advisory committee to review DEQ’s fiscal and economic impact analysis of the proposed rules. The committee provided information on costs and benefits of the options and direct costs of BART attributable to DEQs’ rule, and to PGE’s costs to close the Boardman facility, including costs associated with replacement power and possible economic effects on local economies. Committee members included a wide range of interests and stakeholders, including the Public Utilities Commission, Citizens Utility Board, PGE, Morrow County, Port of Morrow, business, environmental groups, and the Yakama Nation. The committee found that the cost of complying with BART could increase electricity rates to small businesses and other customers served by the Boardman plant in the range of 1 to 3 percent. These rate increases would be subject to future action by the PUC. See page 10 of this report for additional information on the fiscal and economic impact associated with this rulemaking.

**September 2010.** DEQ started a 30-day public comment period, and held five public hearings in Portland, Eugene, Medford, Bend, and Hermiston. DEQ asked for comment on its three options and whether a **cost effectiveness** threshold for BART of \$7,300/ton was justified and appropriate. While high compared to thresholds used by other states, DEQ believes this threshold can be justified given the very large geographic scope and magnitude of PGE’s haze impacts. Emission control options costing more than \$7,300/ton were not proposed by DEQ.

Initially, DEQ proposed an additional nitrogen oxide control technology under DEQ Options 1 and 2 called selective non-catalytic reduction (SNCR). However, upon further analysis, DEQ determined that SNCR was not cost effective because it provided little additional visibility improvement in the affected Class I areas,<sup>2</sup> and could result in a possible side effect of excess ammonia emissions, which can produce fine particulate matter, potentially causing an adverse impact on area air quality.

**September 2010:** At the same time DEQ was seeking comment on the three DEQ options above, the agency also asked for public comment on a proposal from PGE, referred to as the *PGE BART III 2020 plan*. This proposal was very similar to DEQ's Option 2, in that it included the same controls and costs, but would allow the plant to operate until 2020, instead of 2018. PGE also proposed a "pilot study" for the DSI controls that would allow PGE to eliminate the DSI system if it would cause a significant increase in particulate emissions. The result of operating Boardman two years longer (2018-2020) with the same pollution controls as DEQ's Option 2 would be a lower cost-effectiveness level for BART of \$5,500, rather than the \$7,300 in DEQ's three options.<sup>3</sup> This option was more cost effective but less environmentally protective, and it did not guarantee that the plant would close in 2020.

*Note: The September PGE proposal described above was replaced by PGE's October proposal described below.*

### **3. New PGE (October) proposal for BART with permanent closure of the Boardman coal-fired power plant in 2020**

In late October, PGE and several public-interest groups asked DEQ to re-open the public record to consider an agreement they reached regarding the future of the Boardman plant, and PGE asked DEQ to consider a new proposal modifying their BART III plan based on this agreement. DEQ reopened the public comment period from October 29<sup>th</sup> through November 15<sup>th</sup> to take additional comments on PGE's new proposal.

**There are two crucial differences between PGE's prior proposals and this new one.** First, PGE would **guarantee permanent closure of the Boardman coal-fired boiler** by no later than Dec. 31, 2020, as well as install nitrogen oxide and sulfur dioxide emission controls that meet federal BART requirements. All other BART options would be eliminated, including DEQ's 2009 BART rule under which PGE could install expensive BART controls and continue operating the Boardman facility until 2040 or beyond.

Second, **DEQ would establish increasingly stringent emission limits for sulfur dioxide**, beginning with 0.4 lb/mmBtu for the 2014 to 2018 timeframe, and then reducing to 0.3 lb/mmBtu from 2018 to closure in 2020.

---

<sup>2</sup> DEQ's modeling showed an additional 0.18 deciview improvement in the Mt. Hood wilderness area, the highest impacted Class I area (and thus less improvement in the other Class I areas). In comparison, the level of a "perceptible change" in visibility is 0.50 deciview, so this improvement was considerably less than that.

<sup>3</sup> The incremental cost of the semi-dry flue gas desulfurization system, as compared to the dry sorbent injection system, is greater than \$7,300/ton.

The proposed plan, upon EPA approval, would repeal the 2040 option in the 2009 rules that requires an approximately \$498 million dollar investment in controlling emissions for sulfur dioxide and nitrogen dioxide, replacing it with a 2020 closure plan. The new plan would require approximately \$36 million dollars in nitrogen oxide emission controls and \$23 to \$52 million dollars for sulfur dioxide emission controls in the 2011-2020 timeframe. By 2014, nitrogen oxide and sulfur dioxide emissions would be reduced by about 9,900 tons per year, with another 2,400 tons per year reduced by 2018, and all remaining emissions from the plant would be eliminated after 2020.

DEQ held two additional public hearings in Portland and Boardman to take comment on the new PGE proposal. A summary of these comments and those from the first comment period can be found in Attachment B: Summary of Public Comments and Agency Response, and Attachment C: Hearing Officer's Report on Public Hearings.

#### **Need for DSI Pilot Studies**

Both DEQ's Option 2 and PGE's proposal are based on the use of dry sorbent injection (DSI) control technology for sulfur dioxide control. DSI is a proven and effective control technology, but has not been installed on a facility as large as Boardman. PGE therefore proposed, and DEQ concurs, that two pilot studies are needed to ensure DSI does not negatively impact the mercury controls scheduled to be installed in 2011 as required by other DEQ rules, or result in increases in particulate emissions that would violate particulate standards. Based on the pilot studies, DEQ could adjust to the emission limits for sulfur dioxide in 2014 and 2018 by the minimum amount needed to avoid such problems, but sulfur dioxide emissions could not be less stringent than 0.55 lb/mmBtu.

### **4. Other issues affecting the future of the PGE Boardman facility**

#### **Upcoming Federal Hazardous Air Pollutant Emission Standard**

In March 2011, EPA is expected to propose new rules to address hazardous air pollutants from power plants like the PGE Boardman plant. Final adoption of these rules is expected in November 2011. It is anticipated that the rules will address acid gases as well as mercury, and may require PGE to install more stringent controls beyond those required for BART. This could possibly make an even earlier closure date (pre-2020) cost effective for PGE. Since these rules have not yet been proposed, it is unknown how this could affect the Boardman plant.

#### **PGE-Stakeholder Law Suit**

A coalition of environmental groups has sued PGE over alleged violations of Oregon and federal air quality rules. This law suit may take years to resolve, and is one consideration for PGE in planning the future of the Boardman facility.

#### **EPA Notice of Violation**

In October, EPA issued a Notice of Violation to PGE for possible violations of air quality requirements under the Clean Air Act. EPA is currently conducting its investigation. As with the law suit above, this matter may take years to resolve, and is another consideration for PGE in planning the future of the Boardman facility.

**Oregon Public Utilities Commission**

On Nov. 23, 2010 the Oregon Public Utility Commission acknowledged (with requirements) PGE’s 2009 Integrated Resources Plan and 2010 Addendum. PUC staff recommended that the PUC commission acknowledge PGE’s new BART proposal, and require PGE to present an alternative proposal and supporting analysis in its next IRP update if the EQC does not adopt PGE’s new approach.

**5. DEQ recommendation to the EQC**

After reviewing all the public comments (see summary on page 10) and evaluating all proposals, DEQ recommends the rule changes outlined in sections A and B below:

- A. Revise DEQ rules to adopt PGE’s new BART proposal, which includes:**
- Permanent closure of the Boardman coal-fired boiler no later than Dec. 31, 2020.
  - Low NO<sub>x</sub> burners with overfire air to meet BART as proposed by DEQ.
  - DSI controls to meet BART for sulfur dioxide control as proposed by DEQ.
  - A more stringent sulfur dioxide limit from 2018-2020 as proposed by DEQ.
  - Pilot studies for DSI in 2014 and 2017.
  - Repealing the PGE Boardman BART rules adopted in 2009

**Table 2** below summarizes the emission reductions and resulting visibility improvements from the recommended rule change. Specific emission limits and other requirements are described in the revised BART rule (see Attachment A-1).

**Table 2: Summary of the new 2020 rule proposal**

| BART control technology  | Compliance Date | Emission reduction tons/year (+percent) | Mt. Hood Visibility Impacts (dv) | Visibility Improvement (dv) |
|--|-----------------|---|----------------------------------|-----------------------------|
| Baseline   | ----            | ---                                     | 4.98                             | ---                         |
| LNB/MOFA   | 7/1/11          | 4,800 (19%)                             | 3.54                             | 1.44                        |
| + DSI-1 *  | 7/1/14          | 9,950 (39%)                             | 2.57                             | 2.41                        |
| + DSI-2 *  | 7/1/18          | 12,400 (48%)                            | 2.23                             | 2.75                        |
| + Plant Closure  | 12/31/20        | 25,500 (100%)                           | none                             | 4.98                        |
| * Subject to pilot study evaluation<br>~ Closure eliminates approximately 25,500 tons per year of NO <sub>x</sub> , SO <sub>2</sub> , and particulate emissions. This facility is also permitted to emit a maximum of approximately 44,200 tons per year of these pollutants. Closure will eliminate these allowable emissions as well.  |                 |   |                                  |                             |
| <b>Table Legend:</b>   |                 |   |                                  |                             |
| <ul style="list-style-type: none"> <li>• Baseline = visibility impact with no controls</li> <li>• LNB/MOFA = Low NO<sub>x</sub> burners with modified overfire air system.</li> <li>• adds DSI 1 = Dry Sorbent Injection @ 0.40 lb/mmBTU SO<sub>2</sub> emission limit</li> <li>• adds DSI 2 = Dry Sorbent Injection @ 0.30 lb/mmBTU SO<sub>2</sub> emission limit.</li> </ul> |                 |   |                                  |                             |

**B. Adopt DEQ’s Option 3 as a contingency measure**

As described earlier, a number of factors beyond BART requirements could lead to PGE desiring a BART closure option earlier than 2020. While not requested by PGE, DEQ’s Option 3 provides this contingency path for PGE if needed. DEQ’s

Option 3 is summarized below in **Table 3**.

**Table 3: Summary of DEQ Option 3**

| Option   | Closure Date | Controls/Installation Date |                         |                         | Capital Cost (million \$) | Emission reduction tons/year (+percent) |
|--|--------------|----------------------------|-------------------------|-------------------------|---------------------------|---|
|  |              | 2011 (NO <sub>x</sub> )    | 2014 (SO <sub>2</sub> ) | 2017 (NO <sub>x</sub> ) |                           |   |
| Option 3   | 2015/16      | LNB/MOFA                   | -                       | -                       | \$35.7                    | 4,800 (19%)                             |
| ~ It should be noted that PGE Boardman must still comply with DEQ's current mercury regulations in 2012. |              |                            |                         |                         |                           |   |

**DEQ's proposed rules would not preclude PGE from closing the coal-fired boiler before 2020** if that decision is made by PGE. At any time PGE could request an earlier closure date for the coal-fired boiler and a modification to its air quality permit.

**Rationale for DEQ Recommendation**

The nitrogen oxide and sulfur dioxide emission controls proposed by PGE in its modified BART III proposal meet federal BART requirements. More stringent and expensive BART controls for Boardman could also be justified, if the facility operated to 2040 or beyond. However, the guaranteed, permanent closure of the coal-fired boiler must be taken into account when evaluating the overall environmental and public health benefits of the rule, the cost effectiveness of controls, and the level of stringency appropriate for BART controls in the 2011-2019 timeframe.

DEQ concludes that the proposed BART controls, when combined with the permanent closure of the coal fired boiler no later than 2020, meet federal requirements and provide a significant environmental and public health benefit for Oregon. Consultation with EPA suggests that EPA would approve DEQ's recommended rule package as part of Oregon's regional haze plan. In brief, this package would:

- Reduce haze forming emissions by 48 percent in the 2011 to 2019 timeframe and eliminate these pollutants completely after closure.
- Significantly improve visibility in 14 Class I wilderness areas in Oregon and Washington.
- Significantly improve visibility in the Columbia River Gorge National Scenic Area and reduce acid deposition, lessening the risk to Native American natural and cultural resources.
- Permanently eliminate approximately 4,000,000 tons per year of greenhouse gasses and all of the plant's mercury emissions, which currently range from 137 to 281 pounds per year.

**Replacement Power**

DEQ's proposed rules do not prevent plant owners from applying for a new permit to construct a new power plant at the Boardman site, or from repowering the existing

Boardman boiler using an alternative fuel. Any new facility, or the repowering of the existing coal-boiler, would need to be permitted by DEQ as a new facility without relying on the emission reductions from the existing plant and in compliance with all applicable state and federal requirements, including modern air pollution controls and air quality impact analysis.

**Effects of rule**

As described above, if this proposed rulemaking is adopted, it would have the following effects:

1. Require PGE to install nitrogen oxide and sulfur dioxide controls that meet federal BART requirements.
2. Upon EPA approval, guarantee permanent closure of the Boardman coal-fired boiler.
3. Meet Clean Air Act requirements for regional haze, and also provide other environmental and public health benefits.
4. The costs attributable to DEQ's BART requirement are expected to increase electric rates for customers of the Boardman power plant, contingent on approval by the PUC. Additional costs associated with PGE's closure decisions are also expected to affect electric rates, although these costs are not attributable to DEQ's rule.

**Fiscal Impact:**

In August 2010, DEQ discussed its draft fiscal and economic impact analysis with a fiscal advisory committee. DEQ's analysis and committee discussion covered the costs and benefits of DEQ's proposed three options as well as non-BART costs associated with plant closure such as decommissioning the coal boiler, obtaining replacement power, and potential adverse economic impacts on the local economies including job loss and major tax revenue reductions affecting funding for local government, schools and other services in the region if PGE decides to close the plant. The committee found that DEQ's proposed requirements could impact small business and increase electric rates for customers of the Boardman facility in the range of 1 to 3 percent. PGE provided additional information estimating that closure could result in possible rate increases of 3 to 4 ½ percent. Any future rate increases would be subject to actions taken by the Oregon Public Utilities Commission.

For a more detailed summary of the fiscal and economic effects of this proposal see Attachment E: Statement of Need and Fiscal and Economic Impact.

**Commission authority**

The commission has authority to take this action under ORS 468.020, 468A.025, 468A.035, 468A.310 and 477.013.

**Stakeholder involvement**

DEQ solicited early public input on the three draft BART control options during July 2010, in advance of the formal public comment period. Options were posted to DEQ's website and the public was encouraged to send comments to DEQ. These comments were considered by DEQ when finalizing the BART options to propose for rulemaking. As noted above, in August 2010 DEQ also consulted with a fiscal advisory committee to obtain information on the likely costs of this proposed rulemaking.

**Public comment** There were two public comment periods associated with this rulemaking. The first was from Sept. 1 to Oct. 1, 2010, and the second was from Oct. 29 to Nov. 15, 2010. There were seven public hearings held at six different locations: Portland (2 hearings), Eugene, Medford, Hermiston, Boardman, and The Dalles. A total of 359 persons attended the hearings, and 167 provided testimony. DEQ received over 8,000 comments, mostly via email and postcards. DEQ received about 100 written letters.

### **DEQ Summary of the public comments**

The summary of public comments and DEQ's responses are in Attachment B: Summary of Public Comments and Agency Response, and Attachment C: Hearing Officer's Report on Public Hearings.

### **Summary from the first comment period**

During the first comment period, the public comments were generally split between support of PGE's "BART III" 2020 plan, or closing the plant much sooner (such as 2015, or as soon as possible). Other comments from EPA, federal land managers, and others supported DEQ's three emission reduction options.

1. Support for PGE BART III Proposal. Supporters of PGE's BART III proposal included PGE employees, private citizens, and numerous representatives of city/county government, chamber of commerce, and business and economic development associations, specifically in the Portland and Hermiston areas.

Many of the comments focused on concerns about the economic impact of the plant closing early, and the need to provide PGE with sufficient time (10 years) to buy or build replacement power that is affordable, reliable, cost effective, and includes the potential for renewable and "greener" options. It was pointed out that the PGE Boardman plant is currently an important "base load" source of power, and that it would take time to find replacement power. Many expressed the concern that while closure of the Boardman plant would worsen the current economy and affect many jobs, PGE's BART III proposal was the best option realistically available.

Other comments in support of PGE's proposal stated that it (1) ends reliance on coal and provides a smoother transition into other types of energy; (2) eliminates all emissions from the plant after 2020; (3) provides significant cost savings to DEQ's proposed options, and thus lowers the overall economic impact; (4) rather than using the highest cost effectiveness threshold in the nation, it represents a lower and reasonable cost effectiveness level that is more consistent with what other states have adopted for BART; (5) avoids a hasty shutdown that could lead to increased electricity rates and impacts on low-income citizens and small businesses; and (6) gives PGE the ability to verify that the proposed dry sorbent injection controls are technically feasible by conducting a pilot test study first. Representatives of PGE stated that their belief that the BART III proposal would meet EPA approvability requirements and result in significant air quality and environmental benefits after 2020, and would include the installation of \$75 million in pollution controls for nitrogen oxide and sulfur dioxide emissions, significantly reducing these emissions over the next 10 years. They stated that PGE's proposal has no legal barriers in terms of federal approvability or enforceability, and represents a unique opportunity to end coal combustion 20 years early, as an alternative to the plant continuing to operate to 2040 and

beyond. They added that PGE is still moving forward to meet DEQ's mercury rules a year ahead of the required 2012 compliance date, which will reduce these emissions by 90 percent.

2. Support of early or immediate plant closure. Supporters of an earlier closure of the Boardman plant included many environmental groups, several health organizations, and numerous students and private residents.

Most of these comments were divided between closure in 2015, or closing the plant as soon as possible. The reasons cited focused primarily on concerns about the health effects of burning of coal, and the need to address global warming. Health concerns pointed to the plant's current emissions of approximately 25,000 tons of air pollution, as well as mercury emissions, and that these emissions cause significant health problems, including asthma, lung cancer, and other respiratory issues. Global warming concerns pointed to the plant currently emitting about 4 million tons of greenhouse gas emissions, the largest source in the state.

There was strong support to end reliance on coal technology and to pursue cleaner and renewable energy resources. Others commented that allowing PGE to operate until 2020 was too long, would significantly harm public health and the environment, and that PGE does not need 10 years to find affordable and reliable replacement power, as cleaner forms of power generation are available now. Other comments included (1) from a cost standpoint, the earliest closure would avoid making unnecessary investments in expensive controls for an "outdated plant"; (2) transitioning to renewable energy could create more "green jobs"; (3) urging DEQ to repeal the existing rules for PGE Boardman which allow the plant to continue to operate if PGE decides against any of the options, (4) opposition to giving PGE another 10 years to operate when the plant has avoided installing any major pollution controls since it was constructed in 1977, and (5) criticism of DEQ for not taking action during this time to require controls or close the plant.

3. Support of DEQ three options. This support was mostly reflected in comments from EPA, the National Park Service, Forest Service, and several environmental groups. In their comments, EPA and the federal land managers emphasized the visibility and air quality benefits of an early closure. Some of these comments urged more stringent pollution controls prior to closure. A smaller number of the general public supported DEQ's three options than those who supported the positions in #2 above. Out of the three options, more favored Option 3 (closure in 2015/16) than the other options, citing the benefits of an earlier shutdown and avoiding making additional major investments in the coal plant.

### **Summary from the second comment period**

During the second comment period, the public comments were generally split between support of PGE's new BART proposal and general opposition. At the Portland public hearings, supporters of PGE's new proposal commented that it represented a good compromise between DEQ's Option 2 with a 2018 closure date, and PGE's BART III proposal with a 2020 closure date. Those in opposition stated many of the same concerns from the first comment period about public health and the need to address global warming. At the Boardman public hearing, nearly all of the testimony was in support of PGE's new BART proposal. There was also testimony that there should be no earlier closure options

added to the rules, such as in DEQ's Option 2 and 3. The comments stressed the importance of one closure date in 2020, and nothing else. A few comments were made opposing any closure of the Boardman plant, citing the importance of continuing to use coal for energy, and that regional haze is not a valid reason for requiring expensive pollution controls for the plant.

## Key issues

### **Does the suite of nitrogen oxide and sulfur dioxide emission controls proposed by PGE and recommended by DEQ meet federal BART requirements?**

Yes, the proposed emission controls are sufficiently stringent to meet federal BART requirements when taken together with a plant closure in 2020. More stringent and expensive BART controls for Boardman could also be justified, if the facility were to operate to 2040 or beyond. However, the guaranteed, permanent closure of the coal-fired boiler must be taken into account when evaluating the overall environmental and public health benefits of the rule, the cost effectiveness of controls, and the level of stringency appropriate for BART controls in the 2011-2020 timeframe.

### **Should PGE be required to close sooner than 2020?**

The EQC does not have authority to require closure of the Boardman facility. The rule proposed by PGE and recommended by DEQ guarantees permanent closure of the Boardman coal-fired boiler no later than Dec. 31, 2020. DEQ has also proposed an option for a 2015 closure scenario that PGE could use if factors beyond regional haze make an even earlier closure attractive to PGE. DEQ's proposed rule does not preclude PGE from closing the Boardman facility at any time between 2011 and 2019.

There was considerable public support for an earlier closure in 2015, or sooner. PGE's request for a single closure date of 2020 emphasized the importance of having a full 10-year time period to make the necessary transition away from coal burning, to lessen the economic impact of an early plant closure, and to develop replacement power, among other concerns.

### **Should DEQ repeal the existing 2009 BART rules that allow operation until 2040?**

Yes. Repealing the 2009 BART rule (and replacing it with this proposed rule) would remove the option for PGE to install the 2009 BART control equipment and operate the Boardman coal-fired boiler indefinitely (2040 and beyond). PGE's option to implement the 2009 BART rule and operate the plant to 2040 and beyond will end once EPA approves this new 2010 regional haze BART submittal.

### **How can people be sure PGE will actually close the coal-fired boiler?**

Upon EPA approval, DEQ's new BART rules and PGE's 2020 closure commitment will become part of Oregon's Clean Air Act Implementation Plan. This plan will be federally approved and enforceable. Once EPA approves the new 2010 BART rule, DEQ's 2009 BART rule (i.e. 2040 option) will no longer be available to PGE. If PGE operated beyond Dec. 31, 2020 it would be subject to state and federal enforcement that could include both civil and criminal penalties. PGE would also be at risk of third-party law suits for violation of air quality rules.

**Next steps** If approved, DEQ will submit the revised rules and revisions of Oregon's Regional Haze Plan to EPA as a revision to the Oregon State Clean Air Act Implementation Plan. EPA is required to act on DEQ's regional haze state implementation plan submittal no later than May 30, 2011.

- Attachments**
- A. Proposed Rulemaking
    - 1. Revisions to Division 223 and Division 200.
    - 2. Revisions to the 2009 Oregon Regional Haze Plan
  - B. Summary of Public Comments and Agency Responses
  - C. Hearing Officer's Report on Public Hearings
  - D. Relationship to Federal Requirements Questions
  - E. Statement of Need and Fiscal and Economic Impact
  - F. Land Use Evaluation Statement

- Available upon request**
- 1. DEQ's Fiscal Impact Report
  - 2. Proposed Rulemaking Announcement
  - 3. Written comments received
  - 4. DEQ's BART Report for PGE Boardman
  - 5. Rule Implementation Plan
  - 6. Legal Notice of Hearing

Approved:

Section: \_\_\_\_\_  
David Collier, Air Quality Planning Section Manager

Division: \_\_\_\_\_  
Linda-Hayes Gorman, Eastern Region Administrator

\_\_\_\_\_  
Andy Ginsburg, Air Quality Division Administrator

Report prepared by: Brian Finneran and Mark Fisher  
Phone: 503-229-6278