

Summary of Public Comments and Agency Responses

Adoption of 2008 Oregon Regional Haze Plan and New Controls for PGE Boardman Power Plant

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Comment Period:	The public comment period opened on December 1, 2008, and closed at 5:00 p.m. on January 30, 2009.
Public Hearings:	<p>DEQ held the following public hearings:</p> <ul style="list-style-type: none"> • January 6, 2009, 6:00 p.m. DEQ Headquarters, Room EQC-A 811 SW 6th Avenue Portland, OR 97204 28 people attended the hearing; 11 people testified. • January 7, 2009, 6:00 p.m. Lane Regional Air Pollution Authority, LRAPA Meeting Room 1010 Main Street Springfield, OR 97474 5 people attended the hearing; 1 person testified. • January 8, 2009, 6:00 p.m. DEQ Medford Office, Conference Room, Suite 201 221 Stewart Avenue Medford, OR 97501 4 people attended the hearing; 1 person testified. • January 12, 2009, 6:00 p.m. Hermiston Conference Center, Rotary Altrusa Room 415 S. Hwy 395 Hermiston, OR 97838 28 people attended the hearing; 5 people testified. • January 13, 2009, 6:00 p.m. Columbia Gorge Community College, Lecture Hall, Building Two, Room 2.384 400 E. Scenic Drive The Dalles, OR 97058 46 people attended the hearing; 17 people testified. <p>Total attendance at public hearings: 111 persons Total number providing verbal testimony: 45 persons</p>
Organization of comments and responses:	Summaries of the comments received and DEQ's response are provided below. Comments are summarized by issue category. The full public record is available for review by the public at the Portland DEQ office (811 SW 6th Ave.). Copies are available upon request.

Explanation of acronyms used in this document	BART = Best Available Retrofit Technology DEQ = Department of Environmental Quality EPA = Environmental Protection Agency EQC = Environmental Quality Commission LNB/MOFA = Low NOx Burner with Modified Overfire Air (control equipment) NOx = Nitrogen oxides PGE = Portland General Electric PM10 = Particulate Matter under 10 microns in size SO ₂ = Sulfur dioxide SCR = Selective Catalytic Reduction (control equipment) SNCR = Selective Non-Catalytic Reduction (control equipment) SIP = State Implementation Plan VOC = Volatile Organic Compounds WRAP = Western Regional Air Partnership
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Overview of Public Comment process

DEQ presented this proposed rulemaking for public comment from December 1, 2008 until January 30, 2009. Comments were received via email, in writing and orally. DEQ received the following types of comments:

- 1134 emails
- 61 written letters (by mail, at hearings, or attached to emails)
- 45 persons testified at the public hearings. (see DEQ’s Hearing Officer’s Report on Public Hearings, Attachment C)

Overall, DEQ received 1215 comments.

All comments received have been made part of the public record and have been reviewed by DEQ. In addition to this summary, the full record of individual comments will be made available to the Environmental Quality Commission. A copy of the full public comment record is available for the DEQ Headquarters, 811 SW 6th Ave. Portland. Photocopies of the record are available for a fee. This summary is also available on the agency website: <http://www.deq.state.or.us/eq/haze/>.

Overview of this Comment and Response Document

Due to the extremely large number of comments, this document has been organized in the following format. Comments and DEQ responses are divided into five sections, as described below. Within each section, public comments and DEQ responses are grouped into issue categories. There are 56 issue categories in this document. DEQ responses correspond to the order of the comments listed in each issue category. In a few cases, there may be one DEQ response addressing several comments. Due to this format of grouping comments by issue category, most comments have been summarized or paraphrased.

The following describes the five sections in this document:

1. Comments directly or indirectly related to DEQ’s proposed controls or any controls (more or less stringent) related specifically to the PGE Boardman coal-fired power plant.
2. Any comments in response to PGE’s proposed “decision points” closure options (mostly listed as either “for” and “against” the proposal).
3. Specific comments on the contents (analysis, data, strategies, etc.) of the proposed Oregon Regional Haze Plan. These are listed by the chapter they appear in the Plan.

4. General comments and issues indirectly related to this rulemaking, and not falling into any of the above sections. In most cases these comments are beyond the scope of this rulemaking, but DEQ responses have been provided.
5. Miscellaneous comments, similar to section 4, but beyond the scope of this rulemaking with no DEQ response. These were included as general issues and concerns that are being included for the record.

How to Find Your Comments

All comments in this document are followed by a number that represents the person or organization that provided the comment. DEQ made every effort to match the commenter to the comment.

The list of commenters begins on page 36. This list is divided into (1) written letters, sent by mail, provided at a hearing, or attached to an email; (2) verbal testimony only, provided at the public hearings; and (3) email comments only.¹

Finally, many of the email comments were provided via a form letter. For instance, one form letter represented over 1000 comments. As a result, identical form letter emails were given one reference number. There were three form letters, and the reference numbers are highlighted in bold to reflect more than one comment.) Attachment 1 to this document provides additional names of those who commented by form letter email.

General Guide to Comments

To assist in finding your comments, the following is a summary of the different groups that commented on this rulemaking, and notes where in this document the responses can be found. This is intended to be a general guide to finding most of the comments, but not all.

1. *Comments provided by EPA, National Park Service, U.S Fish & Wildlife Service, U.S. Forest Service, and the Southwest Clean Air Agency.* These comments focused on the technical and cost aspects of DEQ's BART determination, citing reasons for slightly more stringent emission limits, including requiring Phase 2 SCR controls as BART in 2014. These comments were opposed to PGE's proposal for closure options. They also cited legal issues associated with PGE's proposal meeting all of the BART and Reasonable Progress requirements. *These comments can be found in Section 1, categories 1-9, Section 2, categories 23-25, 28-29, and Section 3, categories 31, 33-34, 38-45.*
2. *Comments from PGE, Industry, Business and Utility related groups, and Morrow County government.* These comments supported PGE's proposed closure options, and generally supported DEQ's Phase 1 controls, but opposed the Phase 2 SCR controls. They also commented on the overall cost of the proposed controls, and potential impacts on the economy. *These comments can be found in Section 1, categories 7, 10-13, 15, Section 2, categories 19-20, and Section 4, category 56.*

¹ Those who submitted written letters with verbal testimony or attached to an email are listed under group 1, written letters. This grouping of comments is based on ease of organization, and does not reflect any ranking or priority order based on type of comment provided to DEQ.

3. *Comments provided primarily by environmental groups.* Most of these comments focused on the stringency of the proposed controls for PGE Boardman, and the timetable for installation and compliance. They also focused on PGE Boardman's visibility impacts in Class I areas and the Columbia Gorge, and on public health and the environment in general. Some cited specific technical and cost reasons for lower emission limits from the proposed controls, including requiring SCR controls as BART in 2014. Also cited was opposition to the proposed compliance date contingency extensions for Phase 1 NOx and Mercury controls, and comments on an earlier decision point (2011) than 2012, and earlier shutdown dates, related to PGE's closure options proposal. *These comments can be found in Section 1, categories 1-7, 10-12, 14, Section 2, categories 22-23, 28, and Section 3, categories 30, 32, 35-37, and Section 4, categories 46-51, 53-54.*
4. *Comments from the general public.* Most of these reflected the comments of the environmental groups described above. Some advocated immediately closing PGE Boardman. Many cited concerns about air quality and visibility impacts in the Columbia Gorge. A smaller segment of public comments supported PGE's proposal, reflecting those of the industry, business and utility-related groups described above. *These comments can be found in Section 1, categories 3-7, 11, 13-18, Section 2, categories 19-23, 26, and Section 3, categories 46-49, 52, 54-55.*
5. *Comments from tribal nations.* The Umatilla, Yakama, and Nez Perce tribal nations provided comments regarding PGE Boardman's emissions, PGE's proposed closure options, DEQ's proposed controls, and the impacts on air quality, visibility, the ecosystem, public health, and acid deposition, including impacts on cultural resources. *These comments can be found in Section 1, category 17, Section 2, categories 23, 29, and Section 3, categories 47, 50.*
6. *Comments from forestry-related groups, state and federal agencies, and the Oregon Forest Industries Council.* Most of these comments were directed at DEQ's planned evaluation of forestry burning under the Long-Term strategy, and regarded the terms of the criteria and methodology for conducting this evaluation. The comments urged coordination with appropriate forestry agencies, representatives and stakeholders in all steps of the evaluation, including the review of findings and any recommendations for additional smoke management controls. *These comments can be found in Section 3, category 41.*

SUMMARY OF COMMENTS AND DEQ RESPONSES

I. Comments on DEQ's Proposed Phase 1 BART and Phase 2 Reasonable Progress Controls for PGE Boardman

<p>1. DEQ's Phase 1 NOx emission limits</p>	<ul style="list-style-type: none"> a) Many other coal plants similar to Boardman can achieve lower emission rates with the Low NOx burners being proposed by DEQ. (54) b) Lower NOx emission rates can be achieved with Ultra-Low NOx burners. (17)(54) c) Lower emission rates reaching 66% reductions (equal to a limit of 0.15 lbs/mmBtu) are reasonable and achievable. (17)(19)(72) d) BART guidelines recommend only a 30-day rolling average for utility boilers, not an annual rolling average. (50) e) The annual limit is not enforceable during the first year of operation (17) f) It is well documented that Low NOx Burners with Overfire Air (LNB/MOFA) cannot achieve the same level of emission reduction when installed on wall-fired dry bottom boilers as when they are installed on tangentially fired boilers (22) g) Add a zero to the BART limits for compliance enforcement purposes (47) h) Supports DEQ's Phase 1 NOx limit determination. (22)
<p>Response</p>	<ul style="list-style-type: none"> a) <i>The effectiveness of low LNB/MOFA air is dependent upon the design of the boiler and the type of coal burned. The Foster-Wheeler boiler at the Boardman plant is a wall-fired dry bottom boiler, but has unique design features that will affect the performance of low NOx burners. One significant difference between the boiler at the Boardman plant and other wall-fired dry bottom boilers are the wing walls that are installed in the upper region of the furnace zone for heat transfer. These wing walls reduce the effective mixing zone of the gases that would otherwise be available in other boilers. Since low NOx burners rely on staged combustion, reducing the mixing zone will reduce the effectiveness of the burner and overfire air system.</i> b) <i>The Ultra-Low NOx burner cited in the comments was installed on a B&W boiler (Unit 6 at the W.A. Parish facility in Texas). B&W boilers have a different internal design configuration than the Foster Wheeler boiler at the Boardman plant.</i> c) <i>DEQ did not find that a 66% reduction (at a limit of 0.15 lbs/mmBtu) was achievable. There are approximately 230 wall-fired dry bottom boilers in the US, but DEQ could only identify one other boiler that is comparable to the boiler at the Boardman plant and that has relatively new low NOx burners (Unit 1 at the Gerald Gentleman Station in Nebraska). In 2008 the annual average NOx emissions were 0.223 lb/mmBtu. Only 32 of the 230 wall-fired dry bottom boilers with low NOx burners had better emission rates in 2008. The few that had lower emissions rates have different designs or burn different types of coals than the boiler at the Boardman plant.</i> d) <i>Based on the performance of Unit 1 at the GGS facility in Nebraska, DEQ believes that a limit of 0.23 lb/mmBtu would be difficult to meet with low NOx burners on a 30-day rolling average, but should be achievable as an annual rolling average.</i> e) <i>The annual limit <u>is</u> enforceable during the first year of operation. Annual emissions will be monitored with a certified continuous emissions monitoring system (CEMS). CEMS are the most reliable compliance monitoring method available.</i> f) <i>The Department agrees that dry bottom wall-fired units with low NOx burners and overfire air will not achieve the same emission rates as tangentially fired units with low NOx burners and overfire air. The presumptive BART limits proposed by EPA are 0.23 and 0.15 lb/mmBtu heat input for dry bottom wall-fired units and tangentially fired units; respectively. Actual emissions data shows a difference between the two types of boiler designs, but there is considerable scatter in the data suggesting that the emission</i>

	<p><i>performance is not just dependant on the general design category, but it is also dependent upon the specific design of the units within in the general categories, as discussed above.</i></p> <p><i>g) The Department does not agree to add a zero to the standards because the monitoring and testing methods are generally only precise to two significant digits. Establishing limits with 2 significant digits is consistent with most New Source Performance Standards promulgated by EPA.</i></p> <p><i>h) DEQ appreciates the support for the Phase I NOx limit.</i></p>
<p>2. DEQ's SO₂ emission limits</p>	<p>a) DEQ is incorrect in saying that a wet scrubber SO₂ emission rate of 0.06 lb/mmBtu is not achievable as annual average. (52)</p> <p>b) DEQ should require a wet scrubber. (54)</p> <p>c) In evaluating semi-dry scrubbers for Boardman, DEQ should have looked at the Rawhide plant in Colorado and Stanton #10 plant in North Dakota, which can achieve .05 -.08 lb/mmBtu on an annual average.</p> <p>d) Regardless of whether wet or dry scrubbers are required, Boardman should be able to meet 0.07 lb/mmBtu on a 30-day rolling average rather than the 0.12 lb/mmBtu proposed by DEQ. (52)</p> <p>e) DEQ should have considered Eastern U.S. retrofits. (47)</p> <p>f) The SO₂ controls proposed by DEQ should be able to achieve over a 90% reduction, rather than 80% that DEQ cites. (17)(21)(54)(72)</p> <p>g) The SO₂ BART limit should be 0.03 lb/mmBtu. (17)</p> <p>h) Add a zero to the BART limits for compliance enforcement purposes (47)</p> <p>i) Supports DEQ's SO₂ BART limit determination. (22)</p>
<p>Response</p>	<p>a) <i>The control effectiveness of the wet scrubber that DEQ used in its BART analysis was based on actual emissions representative of the best performing systems in the U.S, taking into consideration normal fluctuations in emissions. For example, unit BW22 at the Centralia Plant in Washington had an annual average emission rate of 0.036 lb/mmBtu in 2008. However, when the 30-day rolling averages are evaluated, the 95% confidence level is about 0.1 lb/mmBtu. Some of the difference between the annual and short term emission rate may be due to start-up or shutdown emissions, but DEQ believes it is important to base the control effectiveness for the BART analysis on emission limits that can be achieved in practice. Based on the data, DEQ believes that a control effectiveness of 0.07 lb/mmBtu is appropriate.</i></p> <p>b) <i>DEQ does not agree that a wet scrubber should be required for BART. DEQ agrees that a wet scrubber can achieve lower emission rates than a dry scrubber, but the two control technologies produce about the same visibility protection. DEQ used an emission rate of 0.07 lb/mmBtu for the wet scrubber and 0.12 lb/mmBtu for the dry scrubber in the BART analysis. Even though a wet scrubber can achieve lower emission rates, the wet scrubber does not provide more visibility improvement than a dry scrubber because of the plume characteristics (e.g., wet plume with much lower temperatures) and the wet scrubber is \$135 million dollars more than a dry scrubber. Therefore, DEQ determined that BART is a dry scrubber rather than a wet scrubber.</i></p> <p>c) <i>Stanton #10 in North Dakota is only about 100 MW, and the Rawhide Unit 101 in Colorado is about 280 MW, which are both much smaller than the Boardman plant at about 600 MW. The control effectiveness of the dry scrubber that DEQ used in its BART analysis was based on the performance of emission units similar to the boiler at the Boardman plant. Although the SO₂ controls are less sensitive to boiler design, the type of coal and the size of the unit can have significant effects on the control effectiveness. Analysis of existing dry scrubber systems indicates that smaller electric generating units generally are capable of achieving lower emission rates than larger units probably because there is less stack gas to treat in the scrubber. In addition, when a detailed analysis of the emissions data is conducted, the emission levels that</i></p>

	<p>can be achieved for compliance purposes are higher than the annual average emission rates recommended in the comments.</p> <p>d) In terms of meeting 0.07 lb/mmBtu on a 30-day rolling average with either a wet or dry scrubber, DEQ's response in (b) above describes why a dry scrubber was selected. DEQ's responses in (c) and (e) describe why the 0.12 lb/mmBtu emission rate was selected.</p> <p>e) DEQ has considered Eastern U.S. retrofits. In the U.S., there are 51 coal-fired electric generating units with dry scrubbers. Of these, more than half had annual average emission rates greater than 0.12 lb/mmBtu in 2008. Of the ones that had lower emission rates than 0.12 lb/mmBtu, most are much smaller units than at the Boardman plant.</p> <p>f) DEQ does not believe that a 90% reduction in SO₂ is achievable in practice due to the relatively low sulfur content of the coal burned at the Boardman plant. There is a point of diminishing returns when the addition of more lime will not continue to significantly reduce the SO₂ emissions. This phenomenon has always been addressed in regulations dealing with systems that rely on reagents to control pollutant emissions. For example, the New Source Performance Standard for electric generating units has a requirement to reduce SO₂ emission by 90% if the emissions are greater than 0.6 lb/mmBtu and 70% if the emissions are less than 0.6 lb/mmBtu.</p> <p>g) As discussed above, DEQ believes that the appropriate emission limit for the dry scrubber controls is 0.12 lb/mmBtu as a 30-day rolling average.</p> <p>h) The Department does not agree to add a zero to the standards because the monitoring and testing methods are generally only precise to two significant digits. Establishing limits with 2 significant digits is consistent with most New Source Performance Standards promulgated by EPA.</p> <p>i) DEQ appreciates the support for the SO₂ BART limit.</p>
<p>3. DEQ's Phase 1 NOx controls extension contingency</p>	<p>a) PGE should require Phase 1 NOx controls by July 1, 2011 and not be allowed a compliance extension to July 2014. (17) (49).(48) (51)</p>
<p>Response</p>	<p>a) DEQ has proposed a provision for extending the BART compliance date for NOx to 2014 because there is some uncertainty as to whether LNB/MOFA can achieve a limit of 0.23 lb/mmBtu. Although not specifically required by the regional haze rules, DEQ believes that it is important to at least try to achieve the presumptive limits provided in EPA's guidance document for national consistency. The BART limit proposed for 2011 satisfies the intent of the guidelines for installing LNB/MOFA. However, due to the unique design of the Boardman boiler, it may not be possible to meet the limit. DEQ could only identify one other unit in the United States that has the same design as the Boardman boiler and already has new LNB/MOFA installed. In 2008, the NOx emissions from unit 1 at the Gerald Gentleman Station in Nebraska were 0.223 lb/mmBtu as an annual average. Based on this data and average emissions from previous years, DEQ believes that it is possible for the Boardman boiler to meet an annual limit of 0.23 lb/mmBtu with LNB/MOFA. However, if it is not possible, DEQ proposes an extension to 2014 to allow PGE to install a Selective Non-Catalytic Reduction (SNCR) system. Although SNCR is not recommended as BART for the various reasons provided in the BART report, it is a reasonable add-on for a limited amount of time to meet the presumptive BART limits, again for national consistency. The SNCR system will only be temporary because it will be replaced by the SCR system in 2017 or it will be used in conjunction with the SCR system, but there won't be nearly as much excess ammonia emissions once the SCR is installed. PGE won't know whether the new LNB/MOFA system will achieve the proposed limit until 2012 because the limit is an annual limit and the equipment won't be installed until 2011. If</p>

	<i>the limit can't be met, DEQ's proposal allows 2 additional years for PGE to design, procure, and install the SNCR system, which is a relatively aggressive schedule.</i>
4. DEQ's SO ₂ installation schedule	<ul style="list-style-type: none"> a) PGE should install the SO₂ controls by July 1, 2013, rather than July 1, 2014. (51)(49)(48) b) Similar SO₂ controls required for the Centralia coal plant in 1998 were able to be installed in four years. (51)
Response	<ul style="list-style-type: none"> a) <i>Based on the complexity of the retrofit project as well as the potential for competition with other BART retrofit projects nationally, DEQ does not believe that it is reasonable to require the SO₂ controls be installed by July 1, 2013.</i> b) <i>The Centralia Plant was required to install wet scrubbers as a result of a Reasonably Available Control Technology (RACT) determination and order in 1997. According to the Acid Rain Program emissions data, the controls were installed in 2001 for one unit and 2002 for the other unit. DEQ believes the schedule for the Boardman Plant is consistent with the Centralia Plant; especially considering that the Boardman Plant will have competition with other BART projects.</i>
5. Accelerate the installation timeline (no date specified)	<ul style="list-style-type: none"> a) DEQ should accelerate the timeline for installation of Phase 1 NO_x and SO₂ controls. (4) (19)(21)
Response	<ul style="list-style-type: none"> a) <i>DEQ believes that the schedules for installing the BART controls are reasonable and expeditious. The Phase 1 NO_x controls are required to be installed within 2 years and the SO₂ controls are required to be installed within 5 years. The schedule takes into consideration the time necessary for engineering, procurement, and construction of the specific control technologies and coordination with the normal maintenance outage that occurs each year in the late spring. However, the schedule does not take into consideration final approval of the SIP by EPA. According to the regional haze rules, the BART controls are to be installed no later than 5 years from approval of the SIP. Therefore, the proposed schedule is more stringent than required because the SIP approval will probably not occur until the beginning of 2010 at the earliest. In establishing the schedule, DEQ also considered it unreasonable to expect PGE to commit resources to the retrofit projects until they are certain what requirements must be met. DEQ is sensitive to the fact that there will be numerous other retrofit projects occurring at the same time throughout the country, and these projects will be in direct competition for the necessary equipment and resources, which was not necessarily the case when retrofit controls were added to the Centralia coal plant.</i>
6. DEQ's Phase 1 NO _x controls should include SCR	<ul style="list-style-type: none"> a) The addition of SCR to Phase 1 NO_x controls would almost double the visibility improvement at Mt. Hood, and by 25% for the 14% Class I areas impacted by PGE Boardman, as the SO₂ controls. SCR should be BART because PGE Boardman's singular and significant contribution to haze and impact on visibility. (17) (52) (54) b) Adding SCR to the Phase 1 NO_x controls is more cost-effectiveness and provides more visibility improvement than DEQ's SO₂ BART controls, and therefore should be included as BART to Phase 1. (17)(47)(52)(53) c) DEQ overestimated the cost of SCR, and the costs of a combined LNB+MOFA+SCR system. (52)(54) d) DEQ underestimated the reductions achievable by SCR. (17)(52) e) DEQ's estimate of emissions reductions from SCR controls should be 9,266 tons, not 8,647 as estimated by DEQ (based on a 30-day rolling average). (17)(52) f) SCR costs did not consider the savings due to potential improvements in thermal efficiency. (47) g) SCR is only six times as much as LNB/MOFA, not eight times as stated in the BART Report. (47) h) SCR is almost as cost effective as SNCR, and SNCR is relied on as a contingency for

	<p>BART. (47)</p> <p>i) One reason for not selecting SCR as BART was to allow time for the development of innovative controls. Innovative controls should be evaluated before they are installed. (47)</p> <p>j) The Salt River consent decree concluded that SCR is a reasonable retrofit. (47)</p>
<p>Response</p>	<p>a) <i>DEQ agrees SCR controls would provide significant visibility improvements, but does not agree SCR should be BART, because its annual costs are about 6 times more than LNB/MOFA, yet provides about 2 times more visibility improvement. It is also unlikely that SCR could be installed within the 5-year period allowed by the BART rules due to the significant boiler modifications that will be necessary for the retrofit.</i></p> <p>b) <i>DEQ agrees that when compared to each other, SCR is more cost effective and provides more visibility improvement than the SO₂ dry scrubber controls. However, BART must be evaluated for each pollutant separately. Similar costs are not necessarily an indicator that two control options are equal. DEQ concluded that LNB/MOFA better fits the concept of BART than SCR, and that SCR is cost-effective for providing additional NO_x control. This was not the case when comparing the dry scrubber to the wet scrubber, where visibility improvement was about the same, yet the cost for the wet scrubber was much higher.</i></p> <p>c) <i>In response to the comment that DEQ overestimated the cost of SCR, DEQ believes that the costs used in the analysis reflect real world costs of complex retrofit projects. DEQ's consultant Eastern Research Group (ERG) concluded that traditional tools (CUECost and EPA's Cost Manual) underestimate the costs for SCR, but that PGE's estimates are probably 20% high. ERG's conclusion was based on an assessment of retrofits projects that have occurred primarily in the eastern U.S. and may represent easier retrofit projects, as companies were inclined to get as much emissions reduction as soon as possible at the lowest cost. The retrofit at the Boardman plant is considered to be complex because of the extensive modifications to the boiler that are necessary to reduce the temperature of the exhaust gases entering the SCR. In terms of the cost of a combined system, DEQ believes it is appropriate to add the annual costs for LNB and SCR together to arrive at a total cost for the entire package. The only savings as a result of having the LNB in front of the SCR is the amount of reagent used in the SCR system each year and that is not a significant portion of the total annualized cost. Assuming that only half as much reagent is required when LNB is installed ahead of the SCR, the annual cost of the SCR system with LNG would be \$22.7 million, versus \$23.1 million without LNB.</i></p> <p>d) <i>In terms of the reductions achievable by SCR, DEQ conducted a more extensive evaluation of the SCR control effectiveness. There are 190 coal-fired electric generating units with SCR controls in the U.S. In 2008, 17 of the 190 units had an annual average emission rate less than 0.07 lb/mmBtu and only three of the 17 were dry bottom wall-fired units. The lowest emission rate for the dry bottom wall fired units was 0.052 lb/mmBtu as an annual average. When evaluated on a 30-day rolling average, the 95% confidence level was 0.068 lb/mmBtu. Based on this data, DEQ believes that the control effectiveness (e.g., 0.07 lb/mmBtu) used in the BART analysis represents the best controlled dry bottom wall-fired unit in the U.S.</i></p> <p>e) <i>DEQ's estimate of emission reductions used in the calculation of cost effectiveness was based on the difference between the maximum hourly emission rate in lb/mmBtu during the period of 2003 and 2005 and the control effectiveness/emission limit in lb/mmBtu for the control option. The maximum hourly emission rate during 2003 to 2005 was used to calculate "baseline" emission because it corresponds to the hourly emissions used in the visibility impact analysis. The annual emissions before and after controls were calculated using the highest 12-month heat input during the 2003 to 2005 period, assuming that the unit will be operated at the same levels in the future. For both the pre and post control emission calculations, the annual emissions will be more</i></p>

	<p><i>than the actual emissions. DEQ took this approach because there is no way to know what the actual emissions will be in the future, except that the actual emissions should be less than the allowable emissions calculated using the control effectiveness/emission limit for the control option. Since the pre-controlled emissions are based on the maximum hourly emissions, it is more accurate to determine the emission reduction using the allowable emissions after the controls are added because the allowable emissions are more representative of maximum emissions, making this an apples-to-apples comparison.</i></p> <p><i>f) The exhaust gas going to the ESP has to remain about the same before and after the redesign of the lower economizer. As a result, it is anticipated that the increased thermal efficiency of a larger economizer prior to the SCR will be offset by a decrease in thermal efficiency due to cooler combustion air after the SCR. More heat will be extracted from the hot gases in the economizer to get the temperature down to the desired level before the SCR but this means that the temperature of the gases will be cooler at the preheater so that there will be less heat transferred to the combustion air. Balancing the temperatures is the primary reason for why the SCR retrofit is so difficult.</i></p> <p><i>g) DEQ agrees the capital cost of SCR by itself (\$191 million) is about 6 times as much as the cost of LNB/MOFA (\$32.7 million), not 8 times as much as stated in the BART report.</i></p> <p><i>h) SNCR is considered BART only as a contingency due to other factors besides cost and visibility protection. As a result, DEQ did not consider the relative costs of SNCR and SCR. However, there is a substantial difference in costs. The capital cost of SNCR is \$17.4 million dollars versus \$191 million for SCR.</i></p> <p><i>i) BART represents emission limits that can be achieved using control technologies that meet the BART criteria. However, BART does not require that a certain type of control be installed to meet the limits. Some other type of control may be installed to satisfy the BART requirement if the alternative or innovative control technology can achieve the emission limit established for BART. The only test for acceptance is whether the control technology meets the limit.</i></p> <p><i>j) DEQ does not believe that controls established as the result of an enforcement action should be considered BART unless they meet the BART criteria.</i></p>
<p>7. EPA SIP approval and timeline for installation</p>	<p>a) DEQ has set a deadline for installing SO₂ controls of July 1, 2014, without knowing how long EPA approval of the SIP will take, which may not give PGE Boardman the full 5 year-time period allowed under BART after EPA approval of the SIP. (22)(58)</p> <p>b) DEQ should add provisions to the rules specifying that if EPA does not approve DEQ's SIP, PGE does not have to install any of the proposed controls. (22)</p> <p>c) PGE should be allowed to have the full five-year time period after EPA approval of the SIP. (159)(164)(170)</p> <p>d) The timeline for installing Phase 2 NO_x should be 8 years after approval. (22)</p> <p>e) The timetable for PGE installing controls should start right after EQC approval of the rulemaking, and not start after EPA approval of DEQ's SIP, which could take a year or more. (51)</p> <p>f) EPA's Regional Haze Rule requires BART be installed "as expeditiously as possible", but not more than 5 years. The dates set by DEQ for compliance with BART are not as expeditiously as possible. (17)</p> <p>g) DEQ should add provisions that it may extend the Phase 1 deadlines in the event there are delays beyond PGE's control. (22)</p>
<p>Response</p>	<p>a) <i>Under BART, the controls must be installed "as expeditiously as possible, but no later than five years".</i></p> <p>b) <i>DEQ has every expectation EPA will approve the SIP and these rules. DEQ as a matter of policy does not adopt rules with conditional provisions related to EPA approval.</i></p>

	<p>c) See DEQ's response to (a) above.</p> <p>d) DEQ expects EPA will approve this SIP in a timely manner. Assuming this approval in early 2010, the timeline for installing Phase 2 NOx is about 7 years. This was determined by DEQ to be reasonable timeline, given the need for engineering, procurement, and construction, as well as additional time to make boiler modifications to accommodate the retrofit.</p> <p>e) Under the BART requirements, the timeline for installing controls does not officially start until EPA approval of the SIP. For both the Phase 1 NOx and SO₂ controls, DEQ has established a timeline (2011 for NOx, 2014 for SO₂) that is shorter than the 5-year maximum period.</p> <p>f) As stated above, the timeline for installing BART controls for PGE Boardman was determined by DEQ to be "as expeditiously as possible".</p> <p>g) Except for the compliance extension contingency for Phase 1 NOx controls, DEQ does not support adding other provisions that could extend the Phase 1 deadlines.</p>
<p>8. Cost-effective metrics</p>	<p>a) DEQ should have more consistently used the EPA's Control Cost Manual. (52)</p> <p>b) DEQ placed undue emphasis on incremental cost-effectiveness. (52)</p> <p>c) The cost effectiveness for SO₂ BART is \$3.5 million/dV and the cost effectiveness for NOx SCR is \$2.2 million/dV, therefore SCR should also be BART. (52)</p> <p>d) The BART Report has errors in tables 15 and 16, which make it difficult to evaluate the cost effectiveness. (47)</p>
<p>Response</p>	<p>a) DEQ did rely on EPA's Control Cost Manual as a tool for estimating cost, but also researched "real world" costs as part of our evaluation of control costs. DEQ believes it is important to use the best available information and to provide the best estimate of the true costs.</p> <p>b) Incremental cost-effectiveness is an important metric to consider for retrofit projects to ensure that the additional cost of controls is justified by corresponding environmental improvement.</p> <p>c) DEQ does not believe that the intent of the BART regulations was to compare the cost effectiveness of controls for one pollutant to the cost effectiveness of controls for another pollutant. In fact, the BART guidelines specifically state that BART should be evaluated on a pollutant by pollutant basis. The costs of controls will vary dramatically from pollutant to pollutant, depending on the degree of difficulty associated with reducing the pollutant emissions.</p> <p>d) DEQ apologizes for the errors in tables 15 and 16. However, the cost effectiveness and incremental cost effectiveness in terms of \$/ton in Table 15 are correct. The annual costs should have been \$3.7 million for LNB/MOFA, \$7.1 million for LNB/MOFA/SNCR, \$23.1 million for SCR, and \$26.8 million for LNB/MOFA/SCR. In table 16, the baseline emissions were not included for SO₂ and PM. The baselines are 14,902 tons for SO₂ and 417 tons for PM. These errors were pointed out to DEQ early in the public notice period and a revised report was posted on the rulemaking web page. Notice of the revised report was provided to all interested persons at the time that DEQ provided notice for extending the comment period. In addition, the spreadsheets supporting the data in the tables were provided on the rulemaking web page.</p>
<p>9. DEQ's evaluation of SNCR</p>	<p>a) SNCR controls can achieve more NOx reduction than estimated by DEQ. (52)</p> <p>b) Although SNCR controls raise a problem of unreacted ammonia emissions, the benefits of reducing NOx far outweigh the drawbacks of ammonia slip. (52)</p> <p>c) What role will DEQ play in the SNCR contingency decision? (47)</p>

<p>Response</p>	<p>a) <i>There is no actual data demonstrating that Selective Non-Catalytic Reduction (SNCR) can perform better than 0.23 lb/mmBtu on a dry bottom wall-fired boiler in the size range of the boiler at the Boardman plant. There are 87 coal-fired electric generating units with SNCR controls and most of them are combined with low NOx burners and overfire air. Only eight of the 87 boilers are larger than 400 MW. The largest dry bottom wall-fired unit is 541 MW and the annual average emission rate in 2008 was 0.28 lb/mmBtu. The next largest is 437 MW and the annual average emission rate in 2008 was 0.229 lb/mmBtu. Based in this information, DEQ does not believe that SNCR can achieve more NOx reduction than used in its BART analysis.</i></p> <p>b) <i>DEQ concluded that in general, LNB/MOFA controls can meet the proposed Phase 1 NOx emission limit. However, due to the design of the boiler at PGE Boardman, it is possible these controls may not quite achieve the proposed limit, which is why SNCR was added as a contingency measure to the proposed rules. The cost of SNCR is considerably higher than LNB/MOFA, and SNCR not only has ammonia slip drawbacks, but also slag issues and storage and handling safety concerns, which are the reasons it was not recommended as BART.</i></p> <p>c) <i>The contingency will be added to the Title V permit along with a requirement that PGE submit a request for the contingency if the limit cannot be met after installing the low NOx burners. The Department will evaluate the request and either approve or disapprove the compliance extension. Under the authority of the Highest and Best Practicable Treatment and Control regulations in OAR 340, Division 226, the Title V permit will include requirements for operating the LNB/OFA system as effectively as possible in the interim until the SNCR control is installed and operating.</i></p>
<p>10. Startup, Shutdown, and Malfunction conditions</p>	<p>a) Although DEQ's rules include provisions that the emission limits do not apply during periods of startup and shutdown, they should also include malfunction or upset conditions. (22)</p> <p>b) Startup and shutdown exemptions should be removed, and a malfunction exemption should not be added. (17)</p>
<p>Response</p>	<p>a) <i>DEQ does not believe that an exemption should be provided for malfunctions because that is exactly the type of excess emissions that should be avoided with an adequate preventive maintenance program. In the event that there is a malfunction that is unavoidable, DEQ's excess emissions rules allow for enforcement discretion, but it should not be automatic for each malfunction.</i></p> <p>b) <i>DEQ believes that the BART emission limits should not apply during startups and shutdowns if it is not possible to operate the controls during these periods. The low NOx burners will not be effective until the combustion process is stabilized and the SO₂ controls cannot be operated until the exhaust temperature is at least greater than the moisture dew point to prevent clogging and/or damage of the bag filters. DEQ's excess emissions rules require startup and shutdown plans to minimize emissions during these periods to the extent practicable.</i></p>
<p>11. Phase 2 NOx controls comments only</p>	<p>a) SCR results in significant visibility improvement in the Class I areas impacted by PGE Boardman's emissions. (47)(50)(53)</p> <p>b) SCR controls can achieve emissions rates lower than what DEQ has proposed. (17)(54)</p> <p>c) DEQ's Phase 2 controls for SCR are too stringent and go beyond regional haze requirements (22)(24)(25)(27)(35)(62)(69)(76)</p> <p>d) DEQ's reasonable progress Phase 2 controls for SCR do not achieve a significant visibility improvement for the cost involved. (22)(25)(27)(38)(57)(69)(108)(164)(170)</p> <p>e) DEQ has singled-out PGE Boardman for a reasonable progress determination, rather than looking at the contribution of other sources around the state. (22)(24)(27)(57)(66)(159)(164)(170)</p> <p>f) In considering the benefits of SCR controls, DEQ is limited to only considering the</p>

	<p>visibility benefits, as the 5 BART criteria do not include the consideration of air quality benefits. (22)(24)(25)(38)(57)</p> <p>g) DEQ should delay adopting Phase 2 rules until the next SIP submittal. Including these controls now will likely delay EPA SIP review and approval process, which in turn could delay implementation of the Phase 1 BART. (22)</p> <p>h) The Boardman Plant should be subject to Reasonable Progress due to the significant impacts. (17)</p>
Response	<p>a) <i>DEQ agrees that SCR will result in significant visibility improvements in most of Oregon's Class I areas.</i></p> <p>b) <i>As discussed in comment 6, DEQ believes that the emission limit proposed for SCR is as stringent as possible, but still achievable by PGE Boardman.</i></p> <p>c) <i>For the reasons described in this group of DEQ responses, the Phase 2 controls do not go beyond regional haze requirements, in DEQ's judgment.</i></p> <p>d) <i>DEQ's visibility modeling showed PGE Boardman to be one of the most significant single sources of haze pollution in Oregon, impacting 14 Class I areas in Oregon and Washington, with the highest impact at the Mt. Hood Class I Area, at about nine times the significant visibility impact level, and accounting for half of the Class I visibility impacts from the BART sources that were modeled. The proposed Phase 1 NOx and SO₂ controls reduce the impact from PGE Boardman at the 14 Class I areas by an average of 52%. The addition of Phase 2 SCR controls increases that reduction to 81%, and also reduces the average impact to below the significant visibility impact level.</i></p> <p>e) <i>DEQ's proposed Phase 2 SCR controls are needed for reasonable progress purposes, will provide significant visibility improvements, and are cost-effective and realistically achievable for PGE. Phase 1 NOx controls provide only a 46 percent reduction, while Phase 2 NOx controls using SCR provides 84 percent. This additional reduction will provide greater visibility improvement by the 2018 Milestone. Also, the magnitude and extent of PGE Boardman's visibility impacts in the 14 Class I areas cited in d) above justifies requiring these controls at this time.</i></p> <p>f) <i>DEQ is not proposing Phase 2 SCR controls for BART, but rather for reasonable progress purposes. SCR controls will provide significant visibility benefits and help achieve the reasonable progress goals, and are consistent with the reasonable progress requirements under the federal Regional Haze rule. Moreover, the Phase 2 SCR controls will provide additional improvements, such as reducing acid deposition, improving visibility in the Columbia Gorge, and general benefits to air quality and public health, that the EQC may consider under its state authority.</i></p> <p>g) <i>Prior to the next SIP submittal (plan update) in five years, DEQ will be evaluating other industrial sources besides PGE Boardman as part of the evaluation of non-BART sources in the Long-term Strategy for making reasonable progress. In terms of delaying SCR controls for PGE Boardman, as noted above, DEQ's visibility modeling showed that PGE Boardman is one of the most significant single sources of haze pollution in Oregon. Requiring SCR controls now will result in significant visibility improvements, and is needed to make reasonable progress in meeting the 2018 Milestone. It will also provide regulatory certainty now, in terms of being able to plan for these controls in the upcoming years. For these reasons, DEQ does not support delaying adoption of Phase 2 controls. In terms of EPA SIP review and approval, DEQ expects this process will be expedited, due to EPA's involvement and coordination with DEQ in this rulemaking effort, and based on EPA's comments during the public comment period that indicate general support of this rulemaking as proposed.</i></p> <p>h) <i>DEQ agrees that the Boardman Plant should be subject to Reasonable Progress due to the significant impacts.</i></p>
12. PM10 emission limits not BART	<p>a) DEQ's proposed rule has 0.12 lb/mmBtu as the limit. This is a typo, and should be 0.012 lb/mmBtu. (22)</p> <p>b) DEQ's proposed PM10 emission limits of 0.012 lb/mmBtu is not BART. A limit of 0.010</p>

	<p>lb/mmBtu has been required for new coal plants and should be required for Boardman. (54)</p> <p>c) A continuous emissions monitoring system (CEMS) should be required for determining compliance with the PM limit. (17)(47)</p>
<p>Response</p>	<p>a) <i>The proposed rule has a typo. The PM BART limit should be 0.012 as specified in the BART Report. The rule has been revised to reflect this change.</i></p> <p>b) <i>The proposed PM10 emission limits are based on DEQ's BART evaluation, which involves retrofitting existing facilities. This is different than the Best Available Control Technology (BACT) requirements for a new source. The limit for a retrofit project under BART should be based on what is demonstrated in practice for similar types of controls and emission units. Also, limits for new plants that are identified under a BACT analysis are not always achieved in practice. The difference between the proposed limit of 0.012 and 0.010 is not significant when considering the reference test methods for PM are generally only accurate to plus or minus 20%.</i></p> <p>c) <i>DEQ does not agree that a continuous emissions monitoring system (CEMS) for measuring particulate matter emissions is necessary to assure compliance with the BART limit. CEMS for particulate matter are expensive and require extensive maintenance to ensure they remain accurate. DEQ does not believe that the extra cost of a CEMS is warranted for systems that rely on fabric filters for meeting the standards. Fabric filters are generally very reliable control devices. The Title V permit will include parametric monitoring to ensure that the control device is operating properly. In addition, periodic testing will be required to determine compliance. The testing will also be used to establish parameter operating levels to be monitored to ensure that the control device is operating properly on a continuous basis.</i></p>
<p>13. Cost of DEQ's proposed controls and economic impact</p>	<p>a) DEQ's proposed rules may lead to closing of the plant which would have a serious negative impact on the economy. (38)(60) (130)</p> <p>b) DEQ's proposed rules could affect economic development and impact the 2100 jobs at the Boardman plant. (69)</p> <p>c) DEQ's proposed rules would force PGE to raise rates and place an undue hardship on our economy. (31)(69)</p> <p>d) PGE should not be required to install expensive controls that could be scrapped in the near future, where they might not be able to recoup their investment. (66)</p> <p>e) In these very difficult economic times DEQ should not be demanding utilities to absorb unnecessary costs, which ultimately have to be passed to the consumer. (95)(108)</p> <p>f) Whether new controls are required for PGE Boardman, or the plant is shut down, will have a significant economic impact on low-income Oregonians. (29)(61)</p> <p>g) Cost effective power generating facilities here in the Pacific Northwest are extremely important to the economic well being of the area. (150)</p> <p>h) PGE Boardman plant is a significant source of affordable electricity for Oregon, and the proposed rules puts PGE in a position of potentially implementing measures without significant environmental benefit and unnecessarily spending large sums of money.(95)</p> <p>i) DEQ should take steps to lessen the impact on electricity customers if the plant has to shutdown.(108)</p> <p>j) I am PGE customer and am willing to pay more in order to have clean air through comprehensive pollution controls at PGE Boardman.(88)(127)</p> <p>k) The people who want some other type of power or none at all have seen only one side of the issue. More power at less cost should be the approach. (93)</p> <p>l) Money targeted on controls for PGE Boardman would be better spent on solar panels and other alternatives. (75)</p>
<p>Response</p>	<ul style="list-style-type: none"> • <i>DEQ's fiscal and economic impact analysis on the proposed controls for PGE Boardman determined the costs are cost-effective and realistically achievable for PGE. DEQ's Fiscal Advisory Committee reviewed the cost estimates associated with the</i>

	<p><i>proposed controls and concluded they were reasonable. DEQ anticipates that PGE and other owners of the Boardman plant will seek to pass along compliance costs to customers by increasing electricity rates. Any rate increase will be subject to the approval of the Oregon Public Utility Commission. DEQ's analysis concluded that the average rate increase for PGE customers would be approximately 2.8 percent in 2014, and 4.1 percent by 2018. Between 2010 and 2014, rate increases could range from 0.2 percent to 0.3 percent. In terms of the economic impact on low-income Oregonians, DEQ cannot quantify the significance of a rate increase of 3-4 percent over 11 years. Any assessment on the economic impact regarding a possible future shutdown of this facility cannot be made by DEQ at this time, and would be a decision made by PGE and the other plant co-owners .</i></p>
<p>14. Mercury controls compliance extension contingency</p>	<p>a) DEQ should not allow a 2-year extension beyond the 2012 compliance date for installing mercury controls. (17) (19) (20) (21) (48) (49)(96)(118)(168)</p>
<p>Response</p>	<p>a) <i>In 2006, DEQ adopted Mercury rules that require PGE Boardman to reduce mercury emissions by 90% in 2012. Included in that rulemaking was a one-year compliance extension contingency, if there were circumstances preventing compliance by 2012. DEQ's proposed SO₂ controls to meet BART are required by July 2014. Since the mercury and SO₂ control technologies are integral to each other, DEQ is proposing to change the compliance extension contingency to 2 years, to align the installation of these controls. PGE is still required to comply with the mercury standard by 2012 using existing equipment, if possible. However, the activated carbon used for controlling mercury emissions may contaminate the fly ash collected in the ESP to the extent that the material could not be used as a concrete additive and would have to be disposed in a landfill. This rulemaking adds fly ash contamination as a reason for granting a two-year extension.</i></p>
<p>15. Supporting documentation</p>	<p>a) While the monthly cost increase to the average residential rate payer is relatively small, businesses are affected more and I didn't see those costs reflected in the cost analysis. b) DEQ's Land Use Evaluation Statement is inadequate and does not address the full range of impacts to land use, state agency coordination requirements, nor does it address the impact on jobs and other economic consequences if this rulemaking causes the Boardman plant to shut down. (38)(60) c) DEQ did not provide the required Land Use Compatibility Statement (LUCS). (60) d) DEQ's fiscal and economic impact analysis should consider the cost of new carbon dioxide rules and controls. These costs could force PGE to close the plant. (30)(40)(58)(59)(60) e) DEQ's Fiscal Impact Report erroneously states that there would be no direct fiscal or economic impacts on any local government. (38) (60) f) Does DEQ have legal authority to change the air permit for PGE Boardman, and adopt rules that specifically apply to one source - PGE Boardman? (60) g) Has DEQ considered the impacts to the Site Certificate originally issued to PGE Boardman by the Oregon Department of Energy? (38) h) There is multi-pollutant control technology available called the "cloud chamber scrubber" that could be a viable alternate retrofit technology for PGE Boardman.(65)</p>
<p>Response</p>	<p>a) <i>DEQ's Fiscal and Economic Impact Statement estimates that the proposed rules would not have a direct economic impact on small business, but could have a significant indirect impact through increased electricity rates. If approved by the PUC, DEQ estimates that rates could increase 0.3 percent in 2011, 2.9 to 3.4 percent by 2014, and 4.2 to 5 percent by 2018. These rates increases could be less if the small</i></p>

	<p><i>business is charged at the residential rate class, and would only affect small businesses that are customers of PGE and the other companies that own the Boardman plant.</i></p> <p>b) <i>DEQ believes its Land Use Evaluation Statement appropriately addresses the impact on land use. The consequences of whether this action will cause PGE Boardman to shutdown cannot be ascertained at this time. DEQ believes the proposed controls are realistically achievable and cost-effective for PGE Boardman.</i></p> <p>c) <i>DEQ is not required to provide a LUCS with this proposed rulemaking. DEQ has met all the legal requirements regarding land use impacts associated with this proposed rulemaking. The LUCS are required for new sources when they submit their application for a permit. In some cases, the LUCS is required for a permit modification of an existing source if the change will involve a physical expansion on the property or proposed use of additional land, or if the change results in a net significant emission rate increase as defined in DEQ rules. However, for this rulemaking, the LUCS is not required.</i></p> <p>d) <i>DEQ's fiscal and economic impact analysis is not required to analyze the potential impact of regulations (such as carbon rules) that have not been adopted yet. Any attempt to do so would be speculation.</i></p> <p>e) <i>DEQ believes the Fiscal Impact Report is correct in stating no <u>direct</u> fiscal or economic impact is anticipated on local government from the proposed rules. The Fiscal Impact Report did acknowledge the proposed rules could have an <u>indirect</u> impact on local government in terms of increased electricity rates, if approved by the Oregon Public Utility Commission. DEQ cannot estimate at this time any economic impact on local government if PGE chose to close the plant in the future.</i></p> <p>f) <i>The Environmental Quality Commission has the authority to adopt rules for specific sources when mandated by the federal government or when necessary to protect the environment. Once a rule is adopted for a specific source, it becomes an applicable requirement under the Oregon Title V Operating Permit program and the permit must be revised to include the requirement in the permit. (ORS 468A.025(4) and (5) and OAR Chapter 340, Division 218)</i></p> <p>g) <i>DEQ would consider comments addressing impacts on the Site Certificate; especially if they pointed out an inconsistency. However, DEQ did not receive any comments pertaining to any inconsistency with the Site Certificate.</i></p> <p>h) <i>DEQ evaluated all control technologies that have been demonstrated in practice for coal plants similar to Boardman. Innovative controls, such as the "cloud chamber scrubber" were not considered because they are not available and applicable controls according to the BART guidelines. Although innovative control technologies were not evaluated for BART, PGE may use any control technology that will meet the BART limits to satisfy the BART requirements.</i></p>
<p>16. General comments in favor of more controls</p>	<p>a) PGE Boardman is the largest single source of haze-causing pollution in Oregon. The current proposal fails to adequately control air pollution from the plant, and should be revised to better protect the Columbia River Gorge, human health and ecosystems. (96)(103)(118)(156)(161)(168)</p> <p>b) DEQ should require the controls for Boardman to reduce air pollution by over 90%. (19)(21)(96)(104)(118)(156)(161)(168)(169)</p> <p>c) DEQ should require substantial reductions in emissions. These reductions should be the greatest allowed by law. (113)</p> <p>d) DEQ's proposed emission limits should be strengthened to reflect what the proposed control technology can achieve. (6)(72)(96)(97)(118)(132)(148)(155)(168) (169)</p> <p>e) All available air pollution controls should be required for Boardman, regardless of the cost. (84)(99)</p> <p>f) PGE Boardman should be shut down or have the most stringent controls installed now (5)(14)(10)(92)(122)(135)(146)</p> <p>g) Require SCR and SO₂ controls by 2011, then consider shutdown in 2016 to address</p>

	<p>climate change. (55)</p> <p>h) DEQ proposed rules should be required sooner and should be the most stringent controls. (4)(74)</p>
Response	<ul style="list-style-type: none"> • DEQ conducted an exhaustive three-year evaluation of the appropriate controls for this facility. The end result was a suite of emission controls for PGE Boardman which is both stringent and cost-effective, and complies with the regulatory requirements for BART and Reasonable Progress. Over the next eight years these controls will reduce the plant's emissions by approximately 21,000 tons per year, thereby reducing peak visibility impacts at all 14 Class I areas by an average of 83 percent, improving visibility by the 2018 Milestone, reducing visibility degradation and acid deposition in the Columbia Gorge, and providing general air quality and public health benefits. Given the extent and magnitude of PGE Boardman's current visibility impacts, and the requirements of the regional haze rule, DEQ believes the proposed controls represent the appropriate level of stringency for this facility.
17. General comments in support	<p>a) DEQ's proposed rules for Boardman will not only improve visibility but also reduce air pollution impacts on tribal lands. (1)(2)(3)</p> <p>b) PGE Boardman has been allowed to operate with bare minimum controls for 30+ years, and now should install controls as soon as possible. (3)(73)(74)(77)</p> <p>c) PGE Boardman has by far the greatest impact on Oregon's Class I areas and the Columbia Gorge, both on visibility but also tribal cultural resources in these areas. (2)</p> <p>d) PGE Boardman contributes significantly to the overall pollution load, in terms of acid rain, haze, ozone and greenhouse gases. (1)</p> <p>e) DEQ should adopt all the proposed controls for PGE Boardman. (2)(25)(115)(120)</p> <p>f) Strong pollution controls are needed as soon as possible to protect the Columbia Gorge. (7)(11)(18)(147)</p> <p>g) DEQ should take action now to clean up PGE Boardman, and there should be no further delay in reducing its' emissions. (3)(11)(63)(78)(79)(84)(86)(94)(100)(106)(107)(125)(134)(138)</p> <p>h) The Boardman plant is the largest haze-producing source in the state and it's time for something to be done about it. (63)(88)(105)</p> <p>i) Oppose any modification of DEQ's proposed rules that would allow PGE additional time to reduce emissions. (12)</p> <p>j) Aggressive action must be taken to curb PGE Boardman emissions, not only of mercury, but also haze causing sulfur and other gasses and particulates. (127)(165)</p> <p>k) Please reduce the amount of pollution the PGE Boardman power plant is allowed to emit.(129)</p> <p>l) We may need the power, but surely we need to restrict emissions to new standards to help preserve our environment and the planet as we know it. (157)</p> <p>m) These pollution restrictions are completely reasonable and achievable. Their full implementation will produce a better and cleaner environment. (115)</p> <p>n) Support the proposed controls but believe the timelines for implementation should allow for EPA approval of the SIP before PGE has to spend any money related to costs of installing controls. (159)(170)</p>
Response	<ul style="list-style-type: none"> • DEQ agrees that strong pollution controls are needed for the PGE Boardman plant given the extent of its visibility impacts, and as stated in #16 above, has recommended controls that will have significant environmental benefits.
18. General Comments in opposition	<p>a) DEQ's proposed rules should not be adopted as currently presented. (38)(130)</p> <p>b) The impact of these rules single out PGE Boardman at the expense of all the other contributing sources to haze. (38)(60)(116)(162)</p> <p>c) EPA's Regional Haze Rule is a 60-year rule, so why is DEQ accelerating the federal timeline by requiring controls by the 2018 Milestone? (38)(60)</p>

	d) Is it possible to provide PGE with more flexibility and/or more options to address this regional haze issue?
Response	<p>a) DEQ disagrees, and has cited many reasons why these proposed rules should be adopted.</p> <p>b) DEQ's visibility modeling for PGE Boardman showed this power plant to be one of the most significant single sources of haze pollution in Oregon, impacting 14 Class I areas in Oregon and Washington, within a 200 mile radius of the plant, and accounting for half of the Class I visibility impacts from the five BART sources. Given the magnitude of PGE Boardman impacts, the need for additional visibility improvement for Reasonable Progress, and other air quality benefits that could be achieved, the proposed controls for PGE Boardman are justified. It should be noted that the other four BART sources that showed significant visibility impacts (although much less than PGE Boardman) have lowered their emissions as well, by taking a federally enforceable permit limit.</p> <p>c) Although the Regional Haze rule is over 60 years, the first regional haze plan has to demonstrate Reasonable Progress by the 2018 Milestone.</p> <p>d) As stated in DEQ's response #16, the proposed controls for PGE Boardman were the result of an exhaustive three-year evaluation in which many options were considered. They represent DEQ's determination of the appropriate stringency and cost-effectiveness, given the extent of the plants' regional haze impacts, and the need to meet the regulatory requirements for BART and Reasonable Progress under the Regional Haze Rule.</p>

II. Comments on PGE Proposed "Decision Points" option for PGE Boardman closure

A. General comments in Support of PGE's proposal.

19. Allows flexibility and sound decision-making	<p>a) PGE's proposal will allow needed flexibility in making critical decisions about upcoming regulations to address global warming. (22)(23)(24)(25)(26)(27)(28)(29)(32)(33)(34)(35)(36) (37)(39)(40)(42)(41)(44)(56)(58)(59)(60)(61)(62) (69)(76)(85)(95) (116) (117)(139)(164)(170)</p> <p>b) PGE's proposal will allow sound economic decisions to be made.(23)(24)(25)(26)(27)(28)(30)(32)(33)(35)(36)(37)(40)(43)(44)(59)(62)(76)(164)</p> <p>c) Allows for better planning and more time to find replacement power if the plant needs to be shut down. (28) (43)(58)</p> <p>d) Helps PGE in its planning process with the Public Utilities Commission. (22)(24)(26)(27)(28)(30)(35)(41)(42)(44)(58)(59)</p> <p>e) PGE's proposal will minimize rate impacts on PGE customers. (23)(24)(26)(28)(30)(31)(34)(35)(40)(42)(56)(58)</p> <p>f) The decision points will lessen the impact on the economy by using the best information available before making a decision to shut down the plant. (24)(29)(30)(31)(38)(40)(42)(43)(61)</p> <p>g) There is no risk to PGE's proposal, but considerable risk to customers if the DEQ plan is accepted. (40)</p> <p>h) I believe it would be in the best interests of the residents of Oregon for the DEQ to allow PGE to follow through with their proposal.(91)</p> <p>i) Approve PGE's timetable for deciding when to install the new emission control devices at the Boardman coal-fired power plant. (108) (119)(139) (150)</p> <p>j) Support PGE's proposal. If the plant has to shut down by 2020, PGE should pursue cleaner energy choices like wind or solar. (146)</p>
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<p>Response</p>	<ul style="list-style-type: none"> • <i>DEQ understands PGE's desire to have regulatory flexibility once future carbon regulations are adopted. However, trying to establish alternative closure dates by rule at this time can only be based on incomplete information and speculation. As a regulatory matter DEQ has additional concerns, which are described below in detail in DEQ response #20 a).</i> • <i>The preferred approach would be for PGE to submit a written request to DEQ for a rule change at a time when the full extent of carbon regulations is known, when costs and tradeoffs have been evaluated, and when a decision has been made on the future of the Boardman plant. At that time DEQ and the EQC can evaluate the options for modifying the emission control requirements in light of a plant closure. DEQ would also work with EPA and others to take action as needed to prevent unnecessary expenditures.</i> • <i>In response to PGE's proposed closure options, DEQ has revised the Oregon Regional Haze Plan to add provisions that would allow PGE to make a formal request for a rule change to DEQ, if PGE determines that the impact and cost of carbon regulations will require the closure of the PGE Boardman plant. These provisions can be found on pages 155 and 202 of the proposed Oregon Regional Haze Plan. This action could be included in the 2013 regional haze plan update. The decision by DEQ to consider any rule changes would reflect the need to conduct this action in an expeditious manner, yet with the full involvement of the public, stakeholders, and the fiscal advisory committee process. An ideal time for PGE to present such a request would be as part of the 2013 regional haze plan update; although PGE could make this request at any time the decision has been made to close the Boardman plant.</i>
<p>20. Meets regulatory requirements</p>	<ol style="list-style-type: none"> a) PGE's proposal meets the BART and Reasonable Progress regulatory requirements. (22)(24)(27)(28)(35)(62) b) Based on PGE's 2012 decision point, DEQ should adopt an alternative to the Phase 1 SO₂ BART controls, using PGE's proposed 2020 shutdown date as the basis for the remaining useful life of the plant. (22)(24)(164) c) Based on PGE's 2015 decision point, DEQ should adopt an alternative to the Phase 2 NO_x controls, using PGE's proposed 2029 shutdown date as the basis for the remaining useful life of the plant. (22)(24)(164) d) Using PGE's 2020 shutdown date, only the Phase 1 NO_x controls proposed by DEQ represent BART. No SO₂ controls should be required, as they are too expensive at \$5,167/ton of SO₂ controlled, which is not cost-effective for BART. (22) e) Using PGE's 2029 shutdown date, PGE would install DEQ's Phase 1 for NO_x and SO₂, but no SCR controls (Phase 2), as they are too expensive at \$7,312/ton of NO_x removed, which is not cost-effective. (22) f) PGE's proposal does not increase emissions and has same environmental impact. The aggregate emissions with the 2020 shutdown = 232,453 tons, while for 2029 shutdown = 231,292 tons. Under DEQ's proposed Phase 1 & 2 controls, the aggregate emissions = 237,149 tons (assuming plant life of 2040). PGE's proposal same or less than DEQ's rules. (22)(23)(24)(25)(26)(27)(30)(34)(36)(37)(41)(44)(58)(59)(61)(62) g) PGE's proposal meets BART and the environmental goals supported by our state but also respect the need to keep our economy as strong and local as possible. (159)
<p>Response</p>	<ol style="list-style-type: none"> a) <i>DEQ disagrees that PGE's proposed closure options meets the BART and Reasonable Progress requirements. DEQ agrees with the comments submitted by EPA and federal land managers that PGE's proposal lacks an evaluation of alternate controls that might be cost-effective and feasible (and the visibility improvements that such controls might provide) prior to the proposed closure dates. EPA's BART rules require that all control technologies be evaluated with specific emphasis on the expected visibility improvements. There is also a requirement for full public review and</i>

	<p><i>comment of any BART determination. These factors were not fully addressed in PGE's proposal for the 2012 decision point. PGE also concluded that no additional NOx controls (i.e. no SCR or other controls) were needed prior to the 2029 closure date if PGE made a closure decision in 2015. This critically overlooks the need for visibility improvements prior to the 2018 Milestone. Timely air quality improvements in Class I areas is a key reason for DEQ proposing additional SCR controls.</i></p> <p>b) <i>DEQ does not support the 2012 decision point. See DEQ's response in (a) above.</i></p> <p>c) <i>DEQ does not support the 2015 decision point. See DEQ's response in (a) above.</i></p> <p>d) <i>DEQ disagrees that the proposed SO₂ controls and Phase 2 NOx controls are too expensive. EPA has not defined an upper limit to the cost of BART, and States can use discretion in determining the cost effectiveness for controls based on reasonable guidelines. Even assuming a theoretical closure date of 2020 or 2029 and the associated shorter remaining useful life of the pollution control equipment, DEQ would consider costs in the range of \$5,000 to \$7,000 per ton to be cost-effective for the PGE Boardman facility, and well below control costs of \$10,000 to \$15,000/ton typical for Best Available Control Technology (BACT) required for new or expanding major industrial sources.</i></p> <p>e) <i>See DEQ's response in (d) above.</i></p> <p>f) <i>DEQ disagrees that PGE's closure options provide the same environmental benefit as DEQ's proposed rules. Allowing the Boardman facility to continue operation for many years without additional controls will result in continued visibility degradation and acid deposition. It is true that closure of the plant would result in a significant total reduction in air pollution (i.e., PGE's "aggregate emissions" comparison) over the long run. However, this would come at the expense of continued visibility degradation and increase risk to Class I areas in the near term. Allowing visibility degradation to continue to 2020 or 2029 is not beneficial to Class I areas, nor to the Columbia Gorge Scenic Area.</i></p> <p>g) <i>DEQ disagrees, based on the responses provided above.</i></p>
21. Unwanted Consequences	a) Once the decision is made to invest \$470 million (total cost for all controls proposed by DEQ), Oregon will lose the option of closing the plant early (and eliminating both carbon and other pollutants) due to the investment made by PGE and need to recover that investment. (42)
Response	a) <i>DEQ's proposed rules for PGE Boardman would not require the full investment all at once, but rather in three separate time periods (compliance dates of 2011, 2014, and 2017). It is anticipated that any decision PGE makes to close the plant early will be made considering numerous factors, including but not limited to the overall investment.</i>
B. Support of alternate "decision points" or closure dates for PGE.	
22. Support of a 2011 decision point	<p>a) DEQ should consider whether it's more prudent to close the plant ahead of schedule or to invest hundreds of millions of dollars in pollution controls. (17)</p> <p>b) DEQ should give PGE until 2011 to decide, not 2012, as PGE will have all the information needed to make a decision on plant closure. (4)(17)(20)(21)(64)(71)(96)(118)(138)(168)</p> <p>c) With a 2011 decision point, closure of plant should be no later than 2020. (20)(21)(71)(98)</p> <p>d) With a 2011 decision point, closure of plant should be no later than 2016. (17)(55)</p> <p>e) Closure of the plant should be 2018 at the latest. (131)</p> <p>f) Allow the coal plant to operate, as is, until 2015 providing PGE invests an additional 200 million dollars in wind or solar during that period of time. (123)</p> <p>g) DEQ should give PGE until 2011 to decide whether to install the most expensive control equipment (Selective Catalytic Reduction system and a Semi-Dry Scrubber) or</p>

	cease emissions from the plant entirely, no later than 2020.(109)
Response	<ul style="list-style-type: none"> As stated above, DEQ does not support incorporating PGE's proposed closure options into the rules for several reasons. However, DEQ is proposing an alternative process in which DEQ could revise its rules at a future date if PGE decides plant closure is necessary. See DEQ response #19.
C. Comments opposed to PGE's proposed "decision points".	
23. General comments	<ul style="list-style-type: none"> a) PGE's proposed shutdown dates (2020 and 2029) allow PGE to continue to emit at too high a level in the short-term, before closure. (17)(50)(53)(64)(71) b) PGE's proposal is a significant change to DEQ's proposed Phase 1 and Phase 2 controls for Boardman, and the general public should be given additional time to review and comment (47)(53) c) Both shutdown options allow continued impacts on the ecosystem and cultural resources in the short-term, before shutdown occurs (1)(50)(53) d) PGE's proposal is not acceptable given the current level of impact on visibility, air quality, and cultural resources. (2)(3) e) Both shutdown options have impacts in neighboring states of Washington and Idaho, yet there has been no consultation with these states, and how it will affect their regional haze plans. (53). f) PGE's proposal does not establish an enforceable mechanism to ensure plant closure, and runs the risk of continued facility operation at a level higher than DEQ proposed controls. (50)(53) g) PGE's use of aggregate emissions to show the "benefits" of their early shutdown options is deceptive due to the higher emission that would occur in the short-term, before shutdown. (47) h) PGE's use of aggregate emissions combines all pollutants, however NOx emissions contribute more to haze than SO₂. (17) i) If DEQ were to allow PGE to operate beyond the SO₂ or Phase 2 NOx compliance dates without installing the planned controls, DEQ must demonstrate there would be equivalent visibility benefits. (17) j) Under no circumstances should PGE be allowed to emit more under their proposal than under DEQ's, or weaken DEQ's proposed rules. (71) k) PGE should have until December 2009 to decide to install controls or shut down the plant, and if the later, cease emissions by no later than 2012. (161)
Response	<ul style="list-style-type: none"> DEQ agrees with the majority of the comments above. The closure dates would result in higher short-term emissions, which would have a greater impact on the ecosystem and cultural resources than DEQ's proposed rules. The use of aggregate emissions does not address visibility impacts. PGE's proposal is a significant change to the proposed rules, and would need further review by the public, as well as by neighboring states, in terms of how it would affect their regional haze plans. An enforceable mechanism to ensure plant closure would be addressed by an enforceable permit condition established in the source's air permit. However, as noted above, DEQ does not support PGE's proposal closure options.
24. The 2012 Decision Point	<ul style="list-style-type: none"> a) BART reductions and controls are required within 5 years of SIP approval, however the PGE proposal allows the plant to operate beyond that time without such controls, and is inconsistent the BART regulations. (50)(53) b) This decision point changes the BART determination made by DEQ, yet there has been no full analysis of BART, nor any ability for the public to comment. This requires DEQ to redo the BART evaluation for Boardman, considering all 5 BART factors, and take back out for public comment. (47)(53).
Response	<ul style="list-style-type: none"> PGE's 2012 decision point changes DEQ's BART evaluation, and represents an

	<p><i>alternate BART analysis based on using a shorter remaining life of the equipment associated with plant shutdown in 2020. DEQ's understanding of the federal BART rule is that it allows a facility to use a shorter useful life of the equipment if it obtains a federally enforceable permit condition in which it commits to a specific shutdown date. Whether PGE's proposal is inconsistent with BART in terms of going beyond the 5 years for installing BART controls is not the issue here, but rather that PGE's proposal does not fully meet BART for the reasons stated above in DEQ response #20 a).</i></p> <p><i>b) DEQ agrees PGE has not provided a sufficient BART analysis reflecting the 2012 closure option, and the proposal does not fully meet BART due to the reasons stated in DEQ response #20 a).</i></p>
25. The 2015 Decision Point	<p>a) DEQ's Phase 2 SCR NOx controls help achieve Reasonable Progress. PGE's 2015 decision point would allow shutdown in 2029, which is 12 years (2017-2029) without any emission reductions. (47)(50)(53)</p> <p>b) PGE's proposed shutdown option for 2029 would deny the opportunity to review Boardman emissions as part of the required 10-year plan review in 2018 and 2028. (53)</p> <p>c) If PGE chooses this decision point, they should be required to shutdown the facility as soon as possible after PGE makes the decision not to install SCR controls. (47)</p> <p>d) PGE states the cost-effectiveness of SCR is \$7,300/ton if based on the years 2017-2029, however, if SCR is part of the Phase 1 NOx controls, it is only \$3,709/ton. (47)</p> <p>e) The 2029 closure date is too long with no controls in place. (134)(140)</p>
Response	<p>a) <i>DEQ agrees with the comments that PGE's 2015 decision point does not meet Reasonable Progress requirements based on the reasons cited in DEQ response 20. This includes not evaluating other emission controls that might be feasible prior to 2029.</i></p> <p>b) <i>DEQ also agrees the 2029 shutdown option does not address the review of Reasonable Progress in plan reviews in 2018 and 2028.</i></p> <p>c) <i>DEQ acknowledges that PGE's proposed 2029 closure date is a long period of time, and that a shorter closer date would be preferable.</i></p> <p>d) <i>DEQ agrees the cost-effectiveness of SCR would be less if made part of the Phase 1 controls.</i></p> <p>e) <i>DEQ agrees controls are needed, based on the schedule it has proposed.</i></p>
D. Other comments on PGE's proposal	
26. Shut down now	<p>a) PGE Boardman is a huge source of air pollution that is a danger to human health and the environment and should be closed now. (14)(15)</p> <p>b) PGE should consider creating a plan now to shut down the plant ASAP. (4)</p>
Response	<ul style="list-style-type: none"> <i>The decision to shut down the plant is a decision for PGE to make. This facility has a legal permit to operate at its current emission levels. DEQ's proposed controls for this facility will reduce its emissions by 21,000 tons, which is expected to benefit public health. While the extent of the public health benefit cannot be quantified, the magnitude of the emission reduction is significant. As PGE has indicated, it may decide to shutdown the plant in the future based on eventual carbon regulations and other considerations.</i>
27. Option to shut down in 5 years	<p>a) PGE has the option to shutdown within 5 years of EPA approval of the SIP, and still be in compliance with BART. (47)(50)(53)</p>
Response	<p>a) <i>It is clear that shutting down PGE Boardman in the 5 years period allowed under BART would more than satisfy this requirement.</i></p>
28. No offsetting of emissions	<p>a) If PGE chooses to shutdown, DEQ should make provisions in their rules that would not allow the emission reductions from shutdown to offset emissions from a new facility.</p>

	(47)(50)(53)
Response	a) <i>Under DEQ’s rules, an owner or operator which voluntarily chooses to shutdown a process, activity, or equipment at a source, may use the emission reductions to offset emissions from new or modified equipment at the source without being subject to New Source Review provided the netting basis is sufficient for the change. If the shutdown is required by rule, the emission reductions would not be available for offsets after the date of the required shutdown. (See definition of “netting basis” and “major modification” in Division 200 and the rules for Emission Reduction Credits in Division 268).</i>
29. PGE’s proposal related to the Columbia Gorge (see also #47)	<p>a) PGE’s proposal adversely impacts the Columbia River Gorge National Scenic Area for an unacceptably long time (i.e., 2020). (51)(64)</p> <p>b) Further delays in reducing emissions allow continued impairment of haze and damage to ecosystems and cultural resources in the Gorge. (50)(53)</p> <p>c) PGE’s proposal is counter-productive to the 7-year work effort by Southwest Clear Air Agency, the USFS and DEQ to improve visibility in the Gorge. (50)(51)</p> <p>d) PGE’s proposal may negatively affect SWCAA and DEQ relationships with the four Tribal Nations that have treaty rights in the Gorge. (51)</p>
Response	<p>a) <i>DEQ agrees that PGE Boardman’s emissions impact both visibility and air quality in the Columbia Gorge.</i></p> <p>b) <i>The proposed controls under this rulemaking will reduce total plant emissions by 81%, and result in visibility improvements in 14 Class I areas in Oregon and Washington currently impacted by PGE Boardman. Although the Columbia Gorge is not a federal Class I area, DEQ did conduct an analysis of this area. It showed that the proposed controls, when fully installed by 2017, will reduce PGE Boardman’s visibility impacts by 78%, and provide significant reductions in acid deposition.</i></p> <p>c) <i>Under PGE’s proposal, the short-term emissions prior to the proposed 2020 and 2028 closure dates would be higher than DEQ’s proposed controls. DEQ agrees this would be counter-productive to efforts over recent years to improve visibility in the Gorge.</i></p> <p>d) <i>As stated in this document, DEQ does not support PGE’s proposal.</i></p>

III. Specific Comments on the Contents of the Oregon Regional Haze Plan.

A. Chapter 5 – Basic Plan Elements.

30. Natural Conditions in 2064	a) DEQ estimate of “natural conditions” in 2064 is based on reliance on EPA guidance, but DEQ does not explain how it applied that guidance or estimated this value. (17)
Response	a) <i>DEQ did rely on EPA’s 2003 “Guidance for Estimate Natural Visibility Conditions under the Regional Haze Rule” for obtaining values representative of natural conditions for the 20% worst and 20% best days. DEQ agrees with the comment that a State can “refine” these estimates based on its own analysis of natural conditions for the Class I areas within its borders. DEQ chose not to consider any refinement to these estimates for several reasons: (1) DEQ believes EPA’s estimates are scientifically sound and generally accurate, given the limitations in estimating “pre-manmade impairment” visibility conditions, (2) DEQ acknowledges it does not have the technical expertise to conduct such an analysis; (3) re-evaluating EPA’s estimates of natural conditions would be a major scientific study,(4) for the first regional haze plan, using the EPA “default values” is acceptable to DEQ, and (5) as regional haze plan updates are made over the next 60 years, it’s likely new science and estimation techniques may lead to revisions of these estimates of natural conditions.</i>

B. Chapter 8 – Emission Source Inventory.	
31. Emission tables	a) The emission tables in this chapter do not reflect emission reductions from Oregon's BART process. (53)
Response	a) <i>The emission tables in this chapter reflect the emissions information available at the time the Oregon Regional Haze Plan was being developed. Oregon, similar to other Western states, used the emissions inventory from the WRAP Technical Support System, which consisted of Plan 02d emissions (2000-2004 baseline) and PRP18a (2018 projection). PRP18a reflects emission estimates from national "on-the-books" regulations and the future year 2018 projected emissions, and included estimated emission reductions for BART, but for electric generating units (power plants) only, and only SO₂ controls, no other pollutant. The WRAP is preparing a PRP18b emissions update, which will reflect BART emission reductions across the West, including Oregon. DEQ will add this information as part of its 2013 plan update, as well as any other relevant emission inventory adjustments. It should be noted that updating regional haze plan emission inventories will be a routine process as future plan updates are made.</i>
32. Ammonia emissions	a) This chapter describes ammonia emissions and sources, but the plan does not include any measures to control sources of ammonia. (17)
Response	a) <i>DEQ cites in this chapter that ammonia emissions play a key role in the formation of haze. However, as stated on page 87, estimates of ammonia emissions have a high degree of uncertainty, and as a result not much is known on the extent ammonia sources currently contribute to regional haze in Oregon. DEQ has been studying ammonia emissions from animal feeding operations through the Oregon Dairy Task Force, which may lead to possible Best Management Practices (BMPs) to reduce these emissions. Improvements and refinements to ammonia emission inventories are expected in the future. The next regional haze progress report in 2013 will provide an update on efforts to improve ammonia emission inventories and ammonia source contributions to regional haze.</i>
C. Chapter 9 – Source Apportionment.	
33. Biogenic emissions	a) Include a discussion of the contribution of secondary biogenic emissions to organic carbon, based on WRAP TSS organic tracer modeling results. (50)
Response	a) <i>DEQ agrees biogenic emissions contribute to regional haze, and that adding this information to the plan would be useful in showing the extent of the contribution of natural sources (biogenics and wildfire) to high organic carbon levels in the summer months. However, DEQ had to make certain decisions on what information could reasonably be included in this plan, and placed greater priority on addressing man-made (anthropogenic) sources, which are "controllable", instead of natural sources, which are mostly uncontrollable. Future updates to the regional haze plan will attempt to add this information to the plan.</i>
34. PSAT vs. WEP techniques	a) Sulfate and nitrate contributions to haze are summarized using PM Source Apportionment Technology (PSAT) tool. DEQ should include Weighted Emissions Potential (WEP) tool as well. (53)
Response	a) <i>DEQ believes PSAT is a better tool than WEP for identifying the contribution of sulfates and nitrates to Oregon Class I areas, because (1) PSAT accounts for atmospheric chemistry and deposition, while WEP does not, (2) PSAT is better at identifying the regional contribution of sources from outside the WRAP region, and (3) PSAT is the better tool for identifying anthropogenic sources. The results from the</i>

	<p><i>WEP analysis were used primarily to identify the pollutants more commonly associated with non-anthropogenic (natural) sources. Appendix B of the plan does include some WEP information for sulfates and nitrates in the form of maps which show the location and transport of each pollutant and its potential contribution to the 20% worst days at each Class I area.</i></p>
<p>D. Chapter 10 – BART Evaluation</p>	
<p>35. BART process</p>	<p>a) DEQ’s process for determining BART sources was under protective, by not making all BART-eligible sources subject to a BART evaluation. (17)</p>
<p>Response</p>	<p>a) <i>EPA’s BART rules were adopted to address older sources that came into operation prior to 1977 when New Source Review (NSR) rules were adopted. The BART rules and EPA guidance identify a 3-step process for evaluating these older sources: (1) determining BART-eligibility; (2) modeling Class I area visibility impacts; and (3) conducting a BART control evaluation for sources with a “significant” impact. Legally, it is correct that States have the option to skip step 2 and make a finding that all BART-eligible sources should be evaluated for BART. However, DEQ believes that prior to evaluating BART controls for a source, it is important to first determine the extent of the visibility impact in any Class I area. This approach is nearly identical with NSR rules that require similar visibility impact modeling. While it is correct DEQ had the choice to subject all BART-eligible sources to a BART evaluation, we decided not to pursue this option. This “3-step” approach to BART is consistent with actions taken by other States across the country for evaluating BART sources.</i></p>
<p>36. BART Modeling</p>	<p>a) The BART modeling protocol that was developed by DEQ for modeling BART sources was done without public involvement. (17) b) DEQ’s choice of the metric for modeling visibility impacts from BART sources was under protective. (17) c) DEQ’s should not have used the “98th percentile” in its’ BART modeling for determining sources “subject to BART”. (17) d) DEQ’s use of the maximum 24-hour actual emissions in its modeling understates potential haze impacts. DEQ should have modeled the sources at the permitted level, taking into account periods of startup, shutdown, and malfunction. (17)</p>
<p>Response</p>	<p>a) <i>DEQ used a BART Modeling Protocol that was developed jointly by Oregon, Idaho and Washington, including Federal Land Managers (National Park Service and U.S. Forest Service), and EPA Region 10, based on EPA Guidelines for BART Determinations under the Regional Haze Rule (Appendix Y). The development of technical protocol is normally not a public process. The opportunity for comment on the technical aspects of DEQ’s work (in this case, dispersion modeling) is when the results of that work is made available to the public for review.</i> b) <i>DEQ chose 0.5 dv as the metric for the “significance level”, consistent with EPA’s BART modeling guidance. This decision was based on several factors: (1) it equates to the 5% extinction threshold for new sources under NSR rules, (2) is consistent with the threshold selected by other States across the country,(3) it represents the limit of perceptible change, and (4) there was no clear rationale or justification for selecting a lower level.</i> c) <i>The use of the 98th percentile follows EPA’s recommended approach for modeling BART sources. The 98th percentile is a frequently used cutoff in modeling where there are measurement limitations, and certain model assumptions and uncertainties involved.</i> d) <i>Use of the maximum 24-hour actual emissions, similar to the 98th percentile, was based on the above BART Modeling Protocol.</i></p>

37. BART-eligibility	<p>a) DEQ excluded Oregon Steel Mills from the BART-eligible list as a “reconstructed source”, without indicating if the source was subject to New Source Review. (17)</p> <p>b) DEQ excluded the SFPP Eugene Gasoline Bulk Terminal from the BART-eligible list even though it met all applicable criteria. (17)</p>
Response	<p>a) <i>Oregon Steel Mills met the definition of a “reconstructed source” under EPA’s guidelines for identifying BART-eligible sources (40 CFR 51.308, Appendix Y, II, How to Identify BART-Eligible Sources). The guidance defines reconstruction as when “the fixed capital cost of the new component exceeds 50 percent of the fixed capital cost of a comparable entirely new source.” In the case of Oregon Steel Mills, the emission unit that was being reviewed for BART-eligibility went through a reconstruction as defined above. However, this reconstruction resulted in a net decrease in emissions, and did not represent a major modification, which would have triggered New Source Review (NSR). The specific emission unit is also currently shut down. It should be noted the definition of a reconstructed source does not cite NSR as a prerequisite in meeting this definition for determining BART-eligibility. This is in contrast to the definition of a “modification” in the next section of Appendix Y, which does cite NSR in making this determination.</i></p> <p>b) <i>In fact, it specifically states that “any emissions unit for which reconstruction commenced after August 7, 1977, is not BART-eligible.” This is in contrast to the definition of a “modification” in the next section of Appendix Y, which does reference New Source Review as a factor in defining this term.</i></p> <p>c) <i>EPA’s guidelines for identifying BART-eligible sources allow VOC sources to be excluded from BART due to the difficulty to model VOC emissions. The SFPP terminal meets the BART criteria for only VOC. Rather than choosing to immediately exclude the source, DEQ applied a screening model that treated 50% of the VOC emissions as being greater than six carbon atoms and equivalent to organic carbon (OC) for visibility modeling purposes. Results of the conservative modeling analysis showed visibility impact well under the significant visibility impact level of 0.5 deciview.</i></p>
E. Chapter 11 – Reasonable Progress Goal Demonstration.	
38. The 4-Factor Analysis	<p>a) The 4-factor analysis for non-BART source categories shows some very cost-effective measures, yet DEQ concluded it is not reasonable to require controls for these sources at this time. Please explain why. (50)(53)</p>
Response	<p>a) <i>As noted on page 161 of the plan, in conducting this four-factor analysis, EPA guidance indicates that States have “considerable flexibility” in how these factors are taken into consideration, in terms of what sources or source categories should be included in the analysis, and what additional control measures are reasonable. DEQ’s analysis provided useful information on possible control options and general costs, but was too preliminary to determine actual controls that would be reasonable at this time. A more in-depth evaluation of non-BART sources will take place as part of the Long-Term Strategy of the plan. The first step in this evaluation will be to develop guidance for conducting a comprehensive review of these sources. The 2013 plan update will contain a report summarizing the development of the guidance and its application to non-BART sources, including estimates of additional emission reductions that may result from installation of new controls for these sources.</i></p>
39. Redo years to reach Natural Conditions	<p>a) Since the Reasonable Progress Goals (RPGs) in the plan do not meet the 2018 Milestone, DEQ is required to provide an assessment of how many years it would take to attain natural conditions. (50)</p>
Response	<p>a) <i>Under the regional haze rule the State may determine RPGs at greater, lesser or equivalent visibility improvement than the uniform rate of progress to meet natural conditions in 2064. In cases where the RPG results in a slower rate of improvement by</i></p>

	<p><i>2018, the State must demonstrate why the uniform rate of progress “is not achievable”, and then show how many years it would take to attain natural conditions. However, DEQ concluded it would be premature to assume that uniform rate of progress is not achievable, based solely on the initial estimates of progress in the first regional haze plan. New measures contained in the Long-Term Strategy may produce significant visibility improvements by 2018, including the evaluations of non-BART sources and forestry prescribed burning. Further analysis of the RPGs in this plan will be included as part of the progress reporting required for the 2013 plan update.</i></p>
<p>F. Chapter 12 – Long-Term Strategy.</p>	
<p>40. Non-BART source evaluation</p>	<p>a) This evaluation should include looking at cumulative source impacts and modeling from a grouping of industrial sources. (50)(53) b) The USFS would like to participate in the development of the guidance for this evaluation. (50)</p>
<p>Response</p>	<p>a) <i>On page 200 of the plan, the list of factors to be considered in developing the guidance for evaluating non-BART sources includes cumulative impacts (see #4).</i> b) <i>DEQ will be developing comprehensive guidance to conduct this evaluation, and intends to include the USFS and other key stakeholders.</i></p>
<p>41. Prescribed Forestry Burning evaluation</p>	<p>a) The plan should acknowledge and include an assessment of the benefits or “tradeoff value” of forestry prescribed burning in reducing wildfires and their impacts on visibility. (45)(46)(50)(53) b) The methodology proposed to evaluate the contribution of forestry burning has some inherent biases and uncertainties that may result in artificial attribution to this source. (45) c) The analysis should look at year-round impacts rather than spring and fall months. (46) d) Should include an evaluation of wildfire impacts, and compare to forestry burning impacts. (45)(46)(60) e) Need to involve Oregon Department of Forestry and interested forest landowner representatives in the discussions, evaluation, analysis design and conclusions of current conditions and possible policy changes. (45)(56) f) Initiate voluntary measures rather than mandatory, if deemed necessary upon completion of the analysis. (46) g) Page 193 states that the evaluation of prescribed burning will determine “if additional smoke management techniques <u>“can be developed”</u>”. This should say instead “may be required”. (45) h) The evaluation of prescribed burning should not just be limited to this type of burning, but should consider all burning. (45) i) The evaluation of prescribed burning should include a meteorological analysis first. (45) j) Page 203 refers to adopting “basic” smoke management techniques, if additional smoke protection is found to be needed. It does not make sense to add basic smoke management to an already “enhanced” program. (53) k) DEQ should look at reducing man-made burning, such forestry and agricultural burning to improve visibility, as this burning occurs close to Class I areas.(66)(74)</p>
<p>Response</p>	<p>a) <i>While there are clearly benefits to visibility by the use of prescribed burning to minimize both the frequency and magnitude of wildfire, those benefits could be very long-term, and extremely difficult to quantify. DEQ is not aware of any way to estimate those benefits with any reasonable accuracy from a regional haze improvement standpoint. The process of restoring forest ecosystems through increased use of</i></p>

	<p><i>prescribed fire and other practices may take 50 to 100 years. In theory this will reduce wildfire emissions and improve visibility over the long run. However, in the near term prescribed burning can have significant visibility impacts in Class I areas. Should any new information come forward that could be used to reasonably estimate visibility benefits from this tradeoff, DEQ would include this in future plan updates.</i></p> <p><i>b) The methodology described in the plan for conducting this evaluation is general methodology, and as such is considered preliminary. The development of the “final methodology” will occur in consultation with ODF, federal land managers, and other forest stakeholders.</i></p> <p><i>c) As noted in the plan, the reason for evaluating prescribed burning impacts in the spring and fall months rather than year-round is due to monitoring data that shows a sizable contribution of organic and elemental carbon (a strong indicator of fire sources), and the fact that most prescribed burning takes place during these two seasons.</i></p> <p><i>d) The need for this evaluation of prescribed burning is to determine if additional smoke management protection is needed for Class I areas. Including an evaluation of wildfire impacts would not be the best use of available time and resources, as these are natural events not subject to smoke management control.</i></p> <p><i>e) It is DEQ’s intention that the evaluation of prescribed burning, including discussion, conclusions, and policy changes, will be conducted in coordination with ODF, federal land managers, and other stakeholders.</i></p> <p><i>f) One of the outcomes discussed in the plan is the possible identification of additional smoke management measures to protect Class I areas. No decision has been made whether these would be voluntary or mandatory measures.</i></p> <p><i>g) DEQ agrees that the language on page 193 should be changed from “can be developed” to “may be required”, and has made this revision.</i></p> <p><i>h) The focus on prescribed burning over other types of burning is based on the fact that this is the largest man-made source of vegetative burning in Oregon, and that there are indications it may be a significant contributor to Class I visibility impacts in the spring and fall. Since it is already subject to a statewide smoke management program, evaluating its contribution, and adopting additional controls if found to be needed, is a logical step. The next two sections of the plan describe how DEQ will be evaluating the contribution of residential open burning and rangeland burning.</i></p> <p><i>i) A meteorological analysis will be conducted as part of this evaluation.</i></p> <p><i>j) The reference on page 203 to “basic” smoke management techniques should not be confused with “enhanced” smoke management program criteria, but instead refers to the application of the basic principles of smoke management (wind direction and speed, mixing height, relative humidity, lighting techniques, etc.) when burning upwind of an area you are trying to protect from smoke. As stated in the plan, the objective would be to “avoid burning that could cause a prolonged smoke intrusion and heavy smoke concentrations, resulting in a 20% worst day impact.” This is different from more advanced smoke management techniques, where the primary objective is to avoid causing <u>any</u> smoke from entering a smoke protected area.</i></p> <p><i>k) DEQ is looking primarily at forestry, as stated above in (h), due to the large amount of this burning that currently takes place near Class I areas. DEQ will also be evaluating the contribution of residential open burning and rangeland burning.</i></p>
42. Rangeland burning	a) The same evaluation of rangeland burning should be made as is being proposed for prescribed burning. (53)
Response	a) Section 12.6.4 on page 205 states that DEQ will conduct an evaluation of rangeland burning. This evaluation will be different than the prescribed burning evaluation due to the reasons described in this section, related to the current lack of smoke management regulation of this activity and uncertainty as to the amount of this burning

	<i>that is occurring.</i>
43. Area sources of organic carbon	a) There is no mention in the long-term strategy of how the State intends to address area sources of organic carbon, which is one of the largest contributors to haze, especially in the Oregon Cascades. (50)
Response	a) <i>In general, fire emissions (both natural and anthropogenic) are the largest sources of organic carbon affecting haze in Oregon. However, in the northern Cascades, area sources of organic carbon are larger contributors to haze than fire. This is likely due to the influence of the Portland urban area. However, DEQ was unable to conduct an analysis of this prior to completing this plan. Moreover, DEQ was not aware of any measures to add to the Long-Term Strategy that could significantly reduce area source organic carbon. To the extent residential woodstove burning in Portland may be the primary contributor to organic carbon impacts, the Oregon Regional Haze Plan in Section 12.5.1 describes how DEQ residential woodheating rules are an effective on-going measure in reducing particulate matter, and thus organic carbon as well.</i>
44. Crustal material (wind-blown dust)	a) Wind-blown dust is not only a natural source but also an anthropogenic source, and should be addressed under the long-term strategy. (50)
Response	a) <i>DEQ agrees anthropogenic wind-blown dust is a significant source. DEQ does describe in Section 12.5.2 ongoing measures and rules currently in place in Oregon to mitigate dust impacts from construction activities. In terms of new measures to address this source, DEQ was unable to identify any new measures to add to the long-term strategy that could significantly reduce emissions from this source category.</i>
45. Sulfates from area sources	a) Sulfates from area sources have been implicated as a significant source of haze and should be addressed under the long-term strategy. (50)
Response	a) <i>DEQ agrees that area sources of sulfates are significant, and describes in Section 8.2.2 of the plan that off-shore marine shipping emissions may be a major contributor of sulfates to haze in Oregon. Section 9.2.1 shows that PSAT results show pacific offshore area emissions are likely much greater than any other area source of sulfates. For this reason, Section 12.6.5 of the long-term strategy describes efforts DEQ will take to address this source.</i>

IV. Other Comments and Issues Raised during this proposed Rulemaking

46. Address more than regional haze	a) This rulemaking needs to be more comprehensive than regional haze. It should also address public health, acid rain, and/or other environmental Impacts. (6)(7)(8)(9)(10)(15)(16)(70)(75)(77)(82)(145)(165)
Response	a) <i>DEQ recognizes these concerns. The primary purpose of this rulemaking is to meet the requirements of the federal Regional Haze Rule, related to improving visibility in Class I areas. As such, the regulatory scope of this rulemaking is narrow by design. DEQ's Air Quality Division conducts other rulemakings directed at protecting public health and meeting the requirements of the Clean Air Act. However, it should be noted that as a secondary benefit of this rulemaking, DEQ expects that the reduction of approximately 21,000 tons per year from PGE Boardman will have public health benefits, and reduce acid deposition and other environmental degradation.</i>
47. Columbia River Gorge	a) This rulemaking should address visibility problems in the Columbia River Gorge National Scenic Area. (7)(8)(11)(17)(19)(21)(81)(82)(87)(96)(118)(147)(163)(168) b) PGE Boardman is the largest single polluter of the Columbia Gorge Scenic Area. (17)

	<p>(19)(21)(18)(50)(86)(87)(88)(98)(100)(101)(161)</p> <p>c) Air pollution from this power plant significantly degrades the views in the Gorge that bring local residents and tourists to the area to enjoy its beauty.(80)(81)(88)</p> <p>d) It is hard to believe that PGE Boardman, being more than 60 miles east of the east end of the Gorge, could have any effect on the haze in the Gorge. Increasing vehicular traffic, trains, and barges are more likely contributors. (102)</p> <p>e) Steps should be taken to reduce PGE Boardman impacts on tribal cultural resources in the Columbia River Gorge. (1)(2)(3)(72)(88)</p> <p>f) As a resident of the Columbia River Gorge, visible haze within the Gorge is noticeable about 90% of the time. (146)</p>
Response	<ul style="list-style-type: none"> As stated above, the primary purpose of this proposed rulemaking is to meet the federal Regional Haze Rule, related to improving visibility in national parks and wilderness areas designated as "Class I areas" by Congress in 1977. Oregon has 12 Class I areas. The Columbia River Gorge is not a designated Class I area. However, DEQ modeling analysis shows that the visibility benefits to Oregon's Class I areas will also benefit the Columbia River Gorge. The Mt. Hood Class I Area, which is 25 miles south of the Gorge, will see significant visibility benefits as a result of the controls for the PGE Boardman plant proposed under this proposed rulemaking. These controls will reduce Boardman's emissions by 21,000 tons per year. This will not only provide visibility benefits for the Gorge, but will reduce air pollution and acid deposition, and provide other benefits to the environment and public health.
48. PGE Boardman mercury emissions	<p>a) PGE Boardman is major source of mercury emissions and as such a health threat. (15)(17)(19)(20)(21)(73)</p> <p>b) The Boardman plant is the second largest mercury emitter in the state and PGE needs to take steps to control mercury emissions (88)(155)</p> <p>c) PGE Boardman's annual mercury release is enough to contaminate 2.6 million acres of lakes, four times the surface area of all the lakes in Oregon. This is unacceptable.(97)(142)</p> <p>d) DEQ should insist that already planned and required mercury pollution reductions occur on schedule. (10)(96)(97)(98)(104)(109)(113)(118)(125)(126)(132)(142)(155)(161)(167)(168)(169)</p> <p>e) If PGE chooses to shut down rather than clean up, DEQ must require PGE to reduce mercury pollution by 90% by - or before the regulatory deadline of 2012. (135)</p>
Response	<ul style="list-style-type: none"> In 2006, DEQ adopted mercury rules that require PGE Boardman to reduce mercury emissions by 90% in 2012. The regional haze controls that are proposed for the Boardman plant does not change that compliance date. However, DEQ is proposing to change the compliance extension contingency in the Mercury rule from 1 to 2 years, to align with the installation of SO₂ controls. See DEQ response #14.
49. Close PGE Boardman	<p>a) Close the Boardman coal plant now. (14)(15)(70)(73)(87)(89)(90)(101)(109)(110)(131)(139)(141)(144)(165)(166)</p> <p>b) Close the Boardman plant as soon as possible and replace with cleaner "green" technologies. (67)(68)(73)(112)(145)(160)</p> <p>c) DEQ should close the Boardman coal plant by 2020 or before, and replace with energy from renewable sources such as wind, solar, and wave power. (143)</p>
Response	<ul style="list-style-type: none"> The decision to close the plant, or replace it with a more "green" technology is a decision for PGE to make. Having said that, the emission controls being proposed by DEQ will reduce the plant's emissions by 81 %, or approximately 21,000 tons of air pollution per year. This is a significant reduction in emissions that will have major benefits to the environment.
50. Impacts on	<p>a) PGE Boardman's emissions are a concern due to their impact on cultural resources</p>

cultural resources	(1)(2)(3)(50)(72)
Response	a) <i>As mentioned above, the emission controls being proposed for PGE Boardman will reduce approximately 21,000 tons of air pollution per year, which is expected to provide benefits to cultural resources.</i>
51. PGE Boardman should have installed "BACT" controls	<p>a) The PGE Boardman plant was not "in existence" prior to 1977, and as such is not a BART source, but rather should have been subject to New Source Review requirements that apply after 1977, and should have installed Best Available Control Technology. (17) (145)</p> <p>b) PGE has undergone modifications that should have triggered NSR and installed BACT controls. (17)(19)(21)(145)</p> <p>c) DEQ should take BACT controls into account when deciding on appropriate BART controls. (54)</p> <p>d) On September 30, 2008, Pacific Environmental Advocacy Center filed a lawsuit in the Federal District Court of Oregon against PGE Boardman for violations of the Clean Air Act. (17)(71)</p>
Response	<p>a) <i>DEQ believes PGE Boardman was in existence prior to 1977, and therefore fell under the basic criteria for being evaluated under BART. PGE entered into a contractual obligation to purchase major components of the plant in 1975 and obtained necessary pre-construction permits prior to August 7, 1977. Therefore, the plant was in existence for purposes of the BART rule in accordance with Step 2 of Section II of Appendix Y to 40 CFR, Part 51 (EPA's BART Guidelines).</i></p> <p>b) <i>Although not relevant to this rulemaking, DEQ does not believe that PGE has made modifications to the Boardman plant that would make it subject to New Source Review.</i></p> <p>c) <i>A BACT analysis is required for new or modified sources subject to Prevention of Significant Deterioration (PSD). DEQ believes that if Congress had intended that the BACT analysis be applied to sources in operation between 1962 and 1977 as part of the regional haze program, BACT would have been specified in the Clean Air Act instead of BART. Even though BACT was not specified by the CAA, many of the same types of control technologies that would qualify as BACT were considered in DEQ's BART analysis.</i></p> <p>d) <i>In regards to the lawsuit cited above, DEQ does not believe it appropriate to comment on this legal matter at this time.</i></p>
52. Replacement power	<p>a) Plan does not address replacement power if Boardman were to shutdown. (38)(40)(60)(69)(114)</p> <p>b) DEQ should evaluate how new rules and regulations may impact Oregon's supply of electricity. (60)</p> <p>c) Coordination between DEQ, the Oregon PUC, and Oregon Dept. of Energy should occur prior to adoption of these rules. (60)</p>
Response	<p>a) <i>DEQ is required to conduct a fiscal and economic impact analysis on the costs related to the rulemaking it proposes. Decisions that PGE may make in the future about replacement power, should Boardman close, is beyond the scope of this rulemaking.</i></p> <p>b) <i>Decisions that PGE might make in the future regarding Oregon's energy supply needs is beyond the scope of this proposed rulemaking.</i></p> <p>c) <i>DEQ was involved in discussions with the PUC and PGE during the development of this proposed rulemaking, on the general energy implications associated with the proposed controls for the Boardman plant.</i></p>
53. Data used in the Plan	<p>a) The technical data and work products that DEQ relied upon to develop this plan was from the WRAP, however the public was not consulted or included in the WRAP and therefore did not have an opportunity to formally comment on this information. (17)</p> <p>b) Did DEQ fully consider the contribution to haze from diesel trucks, home woodstoves,</p>

	and wildfire? (164)
Response	<p>a) <i>There is vast amount of data and information that is needed for preparing a regional haze plan. DEQ relied on the Western Regional Air Partnership (WRAP), which is one of several regional planning organizations in the country that is providing assistance to States preparing regional haze plans. Oregon is one of 13 western states participating in the WRAP. Other participants in the WRAP include regulators, industry, environmental groups, scientists, and the general public. The WRAP Technical Support System (TSS) was the source for the majority of technical information used in the Oregon Regional Haze Plan. The TSS summarizes results and consolidates information about air quality monitoring, meteorological and receptor modeling data analyses, emissions inventories and models, and gridded air quality/visibility regional modeling simulations. This information is available and can be reviewed on the WRAP TSS website, and can be evaluated by the public. This approach is similar to other rulemaking where DEQ relies on external data sources, studies, projects, and research.</i></p> <p>b) <i>Yes, DEQ did consider the contribution to haze from these sources, under Section 12.5.1 of the Long-Term Strategy of the Plan. Page 190 discusses state and federal regulations of diesel vehicles. Page 191 discusses DEQ's woodheating regulations and possible benefits to regional haze. In terms of wildfire, there is considerable data presented to support that wildfire is a significant emissions source and major contributor to haze in Oregon. The Long-Term Strategy describes how controlled burning is being used to minimize wildfires, and page 196 describes Enhanced Smoke Management Program requirements to minimize controlled forestry burning impacts on haze.</i></p>
54. Global Warming	<p>a) DEQ should adopt limits on CO2 emissions now for PGE Boardman, as part of this rulemaking. (4)(17)(64)</p> <p>b) Boardman is the largest stationary source of air pollution and greenhouse gases in the state of Oregon yet the plant has no modern pollution control devices. (64)(97)</p> <p>c) PGE Boardman is one of the largest industrial sources of air pollution in the State, including greenhouse gases. (10)(14)(15)(17)(55)(101)(141)</p> <p>d) This plant should be closed down unless it can capture and store carbon dioxide. (141)</p> <p>e) A Harvard study estimates that 180 billion tons/yr of CO2 comes from natural sources, while only 6 billion tons/yr comes from human activity. Even the most aggressive rules for limiting industrial CO2 will have negligible effect on global warming. (164)</p>
Response	<ul style="list-style-type: none"> • <i>As noted above, this rulemaking is intended to meet the requirements of the federal Regional Haze Rule. DEQ will be addressing global warming in the near future, as state and national efforts to develop carbon regulations progress.</i>
55. Comments on coal burning	<p>a) There is no such thing as "clean coal". (10)(15)(164)</p> <p>b) The future of energy is changing and now isn't the time to spend millions of dollars on another coal plant. Take this opportunity to say no to coal. (154)</p> <p>c) There is no real technology that will make coal a viable "clean" option for energy. (83)</p> <p>d) Coal plants like PGE Boardman are out of date. Please make moves to replace it with renewable energy. (137)</p> <p>e) Coal is plentiful and very economical compared to other fuels, and is reliable for base load applications. Emissions from coal burning can be effectively controlled. (99)</p> <p>f) Coal is a low cost energy source that provides a solid economic benefit to all Oregonians. (150)</p> <p>g) Coal is important to our future, as alternative power sources are not enough. (66)(111)</p> <p>h) Wasco County voters rejected a proposal two years to invest in new coal power plants by a whopping 81% "no" vote. (126)</p>

Response	<ul style="list-style-type: none"> • DEQ agrees there are other cleaner sources of electricity than coal, such as natural gas, wind, and solar energy. Decisions regarding the future of coal use, or the continued operation of the PGE Boardman plant, are beyond the scope of this rulemaking.
56. Fly ash bi-product	a) The coal fly ash is an important by-product from PGE Boardman that is beneficial to our concrete production operations. (56)
Response	a) DEQ is aware that coal fly ash is a valuable by-product that is sold for making concrete. Contamination of this fly ash is recognized as a potential issue in this proposed rulemaking. As a result, DEQ has added fly ash contamination as a reason for granting this extension. See DEQ Response #14.

V. Miscellaneous Comments	
	• PGE should pursue more diverse, “greener” technologies for energy production. (4)(5)(7)(67)(68)(73)
	• We can take that money we are using to create pollution and funnel it into alternative energies that will reduce pollution.(89)
	• Time for corporations to do match or exceed our obligation. Prevention is the only cure. (13)
	• Now is the time for real change in energy options that will not endanger the planet any further. (83)
	• Need to look beyond nuclear and coal power at alternatives, and take more comprehensive approach to at energy production and environmental protection. (82)
	• The Boardman plant is old, outdated and does not fit into the future of clean renewable energy. (90)
	• Maintaining a fuel mix that allows one fuel to take up the slack if another fuel is under supply limitations should be a prime consideration. (99)
	• Please consider looking at options to increase the cost of heavily polluting forms of energy generation to help develop alternative, less polluting forms of generation. (107)
	• I support renewable energy like wind and solar power, over coal and oil, even at a fairly high economic cost. Renewable energy has a low cost once the plants or windmills are built.(112)
	• CO2 emissions from coal plants are several times higher than emissions from all other power generating sources, and coal mining is environmentally destructive, and massive rail shipments to the plant from remote mining operations is grossly inefficient. (146)
	• This rulemaking should reflect not only the visibility and air quality, but also the quality of life, the financial impact, the stability of electric transmission in the Northwest, and keep in mind the individual consumer, automobile traffic, and general public involvement in environmental stewardship. (116)
	• The policies of the regulatory agencies should be reviewed and they should be prosecuted for their negligence. (87)
	• Autism rates in the Columbia Gorge autism rates are higher than average, and emissions from PGE Boardman could be why. (75)
	• The economics of electricity production generally need to be predictable and relatively stable.(99)
	• Our air and water has been polluted by this plant and it has had serious health consequences for many in this area.(92)
	• Please force this company to operate legally so that we all might breathe cleaner air and worry a little less about the amount of mercury in our water supply. (152)
	• There are always unknowns and it is hard to predict the future, but when it comes to pollution and its effects on life, we need to do what’s right today and not wait for something better or different to turn up. (86, 125)
	• We have haze now and then, but it is not a problem, and most of the haze is caused by forest fires, not any other predominant source. (121)

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|---|
| <ul style="list-style-type: none">• Please help these guys, a compromise will require a better pollution standard, better filter and converting from coal to wood burning, carbon sustainable. (124) |
| <ul style="list-style-type: none">• PGE is a big asset to Morrow County with a fairly big tax base. I have worked for PGE for 29 years and in those years PGE has continuously upgraded this plant to the newer standards. (153) |
| <ul style="list-style-type: none">• If PGE can't see their way clear to do the right thing, then it's time to get serious about a CUB.(135) |
| <ul style="list-style-type: none">• This kind of blatant and excessive pollution belongs in our past. There is no reason, other than greed for profit, to be dumping this much coal smoke into our air. (136) |
| <ul style="list-style-type: none">• Operating with no pollution control devices because of its construction prior to the Clean Air Act, I resent the plant's detrimental impact on the air I breathe. (146) |
| <ul style="list-style-type: none">• DEQ has not adequately assessed or provided the public with the complete picture of PGE Boardman's compliance history. (145) |
| <ul style="list-style-type: none">• DEQ has a fiduciary obligation to all Oregonians to protect this airshed. DEQ should begin regulating the plant pursuant to the Mass. v. EPA authority.(141) |
| <ul style="list-style-type: none">• It does not make sense to wait to clean up the biggest source of air pollution in the state of Oregon. Do the biggest first and then do the rest successively from largest to smallest until the process is complete. (149) |
| <ul style="list-style-type: none">• Our family supports tough environmental laws regarding the Boardman coal-fired plant owned by PGE. I write this as both a concerned citizen and as a stockholder of PGE.(151) |

List of People and Organizations Submitting Comments (by Commenter Number)

Letters

Letters includes written comments received by mail, at public hearings, and attached to emails.

Ref. No.	Name	Location	Affiliation or Organization	Submit Date
1.	Ralph Sampson, Jr. Tribal Council Chairman	Pendleton	Confederated Tribes and Bands of the Yakima Nation	1/30/2009
2.	Samuel N. Penney Chairman	Lapwai, ID	Nez Perce Tribal Executive Committee	1/30/2009
3.	Antone Minthorn John Cox	Toppenish, WA	Confederated Tribes of the Umatilla Indian Nation	1/30/2009
4.	Jurgen A. Hess	Hood River		1/13/2009
5.	Tom Garefalo	(not stated)		1/26/2009
6.	Emily S. St. John	Lake Oswego		1/07/2009
7.	Cynthia Hovezak	Carson, WA		1/23/2009
8.	Tom Wood	The Dalles		1/23/2009
9.	Tassy Mack	Hood River		1/23/2009
10.	Robin Bloomgarden	Portland		1/07/2009
11.	Susan Gabay	Mosier		1/26/2009
12.	Arlen L. Sheldrake	Portland		1/27/2009
13.	John Wood	Hood River		1/26/2009
14.	Hugh B. McMahan	Mount Hood		1/29/2009
15.	Judith Werner	Lake Oswego		1/30/2009
16.	Phil Swaim & Sheila Dooley	The Dalles		1/28/2009
17.	Aubrey E. Baldwin ² Allison LaPlante Tom Buchele	Portland	Pacific Environmental Advocacy Group	1/30/2009
18.	Joyce Reinig, Chair	White Salmon, WA	Columbia River Gorge Commission	1/29/2009
19.	Peter Cornelison, President	Hood River	Hood River Valley Residents Committee	1/13/2009
20.	Maye Thompson	Portland	Oregon Physicians for Social Responsibility	1/26/2009
21.	Michael Lang	Portland	Friends of the Columbia Gorge	1/6/2009
22.	Arya Behbehani-Divers ² Ray Hendricks	Portland	Portland General Electric Company	12/17/2008 1/30/2009
23.	Sandra McDonough President & CEO	Portland	Portland Business Alliance	1/26/2009
24.	John Ledger Vice President	Salem	Associated Oregon Industries	1/29/2009
25.	Ted Ferrioli State Senator	Salem	Oregon State Senate	1/22/2009
26.	David Nelson State Senator	Salem	Oregon State Senate	1/26/2009
27.	Gary Neal General Manager	Boardman	Port of Morrow	1/12/2009
28.	Lee Beyer, Chairman John Savage, Commissioner Ray Baum, Commissioner	Salem	Public Utilities Commission	1/27/2009

29.	Jean DeMaster Executive Director	Portland	Human Solutions, Inc.	1/30/2009
30.	Jack Scott General Manager	Portland	Eagle Foundry Company	1/23/2009
31.	Raymond Burstedt President	Portland	SEDCOR	1/21/2009
32.	Travis Eri Business Manager	Portland	International Brotherhood of Electrical Workers, Local 125	1/26/2009
33.	Robert Ford President & CEO	Portland	Solaicx	1/26/2009
34.	Corky Collier Executive Director	Portland	Columbia Corridor Association	1/28/2009
35.	Brian Konen Plant Manager	West Linn	West Linn Paper Company	1/28/2009
36.	John M. Endicott President	Portland	Building & Construction Trades Council	1/29/2009
37.	Clif Davis Business Manager	Portland	International Brotherhood of Electrical Workers, Local 48	1/29/2009
38.	Carla McLane Planning Director	Irrigon	Morrow County Planning Department	1/30/2009
39.	Tom Chamberlain President	Salem	Oregon AFL-CIO	1/29/2009
40.	Matt Felton President	Portland	Westside Economic Alliance	1/28/2009
41.	Ryan Deckert President	Tigard	Oregon Business Association	1/29/2009
42.	Bob Jenks Executive Director	Portland	Citizen's Utility Board of Oregon	1/30/2009
43.	Michael T. McLaran CEO	Salem	Salem Chamber of Commerce	1/29/2009
44.	Michael B. Early Executive Director	Portland	Industrial Customers of Northwest Utilities	1/30/2009
45.	Jim Trost	Salem	Oregon Department of Forestry	1/28/2009
46.	Mike Dykzeul Director Forest. Protection	Salem	Oregon Forest Industries Council	1/27/2009
47.	Richard Albright Director Mahbubul Islam Director	Seattle, WA	EPA Region 10	12/11/2008 1/30/2009
48.	Jean M. Hadley	Mosier	City of Mosier	1/25/2009
49.	Arthur Babitz Mayor	Hood River	City of Hood River	1/27/2009
50.	Mary Wagner Regional Forester	Portland	U.S. Forest Service Pacific Northwest Region	1/29/2009
51.	Robert D. Elliot Executive Director	Vancouver, WA	Southwest Clean Air Agency	1/6/2009
52.	John Bunyak ² Chief, Policy, Planning and Permit Review Branch	Denver, CO	National Park Service	1/30/2009
53.	Christine L. Shaver ² Chief, Air Resources Division Sandra V. Silva Chief, Branch of Air Quality	Denver, CO	National Park Service U.S. Fish & Wildlife Service	1/30/2009
54.	Kevin Lynch ²	Boulder, CO	Environmental Defense Fund	1/30/2009

	Stephanie Kodish	Knoxville, TN	National Parks Conservation Association	
55.	Sallie Schullinger-Krause Program Director	Portland	Oregon Environmental Council	1/30/2009
56.	Keith Peal	Beaverton	Baker Rock Resources	1/27/2009
57.	Lee Elwood	(not stated)		1/12/2009
58.	Scott Starr	Wilsonville	Wilsonville Chamber of Commerce	1/27/2009
59.	Deanna Palm	Hillsboro	Greater Hillsboro Area Chamber of Commerce	1/27/2009
60.	Tamra J. Mabbott	Hermiston		1/29/2009
61.	Roger W. Rees Executive Director	Tualatin	Oregon Home Energy Assistance Team (HEAT)	1/29/2009

Oral Testimony

Location represents the site of the public hearing. Those who provided written and oral testimony are listed under Letters. For complete list of all who testified, see Attachment C *DEQ Hearing Officer's Report on Public Hearings*.

62.	Tom Wood	Portland	Associated Oregon Industries	1/6/2009
63.	Andrew Hawley	Portland	Northwest Environmental Defense Council	1/6/2009
64.	Brian Pasko	Portland	Sierra Club	1/6/2009
65.	Alan T. Edwards	Portland		1/6/2009
66.	Gordon Fulks	Portland		1/6/2009
67.	Jan Groh	Portland		1/6/2009
68.	David Rugar	Portland		1/6/2009
69.	Terry Tallman	Hermiston	Morrow County Judge	1/12/2009
70.	Joseph Kelsey	The Dalles		1/13/2009
71.	Lauren Goldberg	The Dalles	Columbia Riverkeeper	1/13/2009
72.	Rachael Pecore	The Dalles	Columbia Riverkeeper	1/13/2009
73.	David Berger	The Dalles	Oregon Conservancy Foundation	1/13/2009
74.	Dan Richardson	The Dalles		1/13/2009
75.	Jodi Tepoel	The Dalles		1/13/2009
76.	John Carstensen	The Dalles	Idaho Power Company	1/13/2009
77.	Jules Burton	The Dalles		1/13/2009
78.	Mark Nelson	The Dalles		1/13/2009
79.	Jessica Kinder	The Dalles		1/13/2009
80.	Rosemary Ross	The Dalles		1/13/2009
81.	John Nelson	The Dalles		1/13/2009
82.	Joel Kabakov	The Dalles		1/13/2009

Emails

Those who provided written testimony along with an email are listed above under Letters.

83.	Aleita Hass-Holcombe			12/26/2008
84.	Anne Moore			1/30/2009
85.	Brent Brelje			1/6/2009
86.	Carol Crawford			1/20/2009
87.	Carole L. Myers			1/25/2009
88.	Chris Carvalho			1/12/2009
89.	Cindy Allen			1/23/2009
90.	Colleen O'Donnell			1/21/2009
91.	Daniel Curtis			1/20/2009
92.	Darlene Wood			1/23/2009
93.	Darryl Usher			1/20/2009

94.	Dave Bronson		1/19/2009
95.	David Breen		1/4/2009
96.	Dr. David Farrell		1/20/2009
97.	David Mildrexler		1/19/2009
98.	David Shapiro		1/20/2009
99.	Dean Mason		1/29/2009
100.	Dean Myerson		1/28/2009
101.	Dinda Evans		1/5/2009
102.	Don Coats		1/13/2009
103.	Don Hall		1/19/2009
104.	Don Hill		1/4/2009
105.	Elke Geiger		1/26/2009
106.	Eric Swehla		12/23/2008
107.	Erik Westerholm		1/6/2009
108.	Gary J. Imbrie		1/23/2009
109.	Geert Aerts		1/19/2009
110.	George W. & Margo Earley		1/23/2009
111.	Granelia Thompson		1/13/2009
112.	Heather Moore		1/22/2009
113.	Jack and Cindy Williams		1/10/2009
114.	James Wells		1/19/2009
115.	Jason Cheek		1/29/2009
116.	Jason Stillman		1/29/2009
117.	Jay W. Russell		1/6/2009
118.	Jeffrey Block		1/19/2009
119.	Jennifer Sturm		1/29/2009
120.	Jerry & Diane Cheek		1/24/2009
121.	Jerry Waters		12/23/2008
122.	Jim Minick		1/28/2009
123.	John E. McCann		12/25/2008
124.	John Gogol		1/28/2009
125.	Judith Arcana		1/19/2009
126.	Kathleen Fitzpatrick		1/3/2009
127.	Kent Buhl		1/29/2009
128.	Kris Gann		1/13/2009
129.	Kristin Anderson		1/21/2009
130.	Larry Bartlemay		1/30/2009
131.	Levin Nock		12/23/2008
132.	Louise Squire		1/12/2009
133.	Lynn Bergeron		1/27/2009
134.	Margaret Murdock		12/23/2008
135.	Marion Hansen		1/19/2009
136.	Mark Mason		1/28/2009
137.	Mary McCracken		1/9/2009
138.	Melody Shapiro		1/28/2009
139.	Michael D. Holcomb		1/29/2009
140.	Mildred Estrin		12/23/2008
141.	Mimsi Fox		1/19/2009
142.	Natalie Arndt		1/10/2009
143.	Nick Engelfried		12/26/2008
144.	Nick Kraemer		1/15/2009
145.	Nick Littlejohn		1/27/2009
146.	North Cheatham		1/29/2009

147.	Paul Woolery		1/17/2009
148.	Pat Hazlett		1/13/2009
149.	R. Moulton		1/28/2009
150.	Randy Curtis		1/29/2009
151.	Robert Hamm		1/3/2009
152.	Ron Mager		1/9/2009
153.	Ronald S Bray		1/29/2009
154.	Rose Engelfried		12/24/2008
155.	Sandra Coulson		1/14/2009
156.	Sandra Lilligren		1/8/2009
157.	Shelley Oates		1/24/2009
158.	Steve Amy		1/28/2009
159.	Steve Locke		1/6/2009
160.	Steve Snyder		1/5/2009
161.	Susan Drew		1/29/2009
162.	Teri Miller		1/8/2009
163.	Tiffany Brown		1/20/2009
164.	Tim Davidson		1/25/2009
165.	Tina Castañares		1/17/2009
166.	Tina Engelfried		12/23/2008
167.	Tony Veldhuizen		1/9/2009
168.	Group 1 - (1028 form letters) ³		-
169.	Group 2 - (7 form letters) ³		-
170.	Group 3 - (15 form letters) ³		-

² Commenters who provided attachments (available upon request)

³ For the list of commenters in this group, see Attachment 1 (available upon request). Numbers in **bold** reflect more than one commenter.