Ecology’s Response to Comments on 6 Draft BART Technical Support Documents and Compliance Orders

Comments received on the proposed BART documents are provided below. There is an index table for written comments received. You can find the responses to each comment by going to the page numbers referenced in the table.

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**Response to general comments:**

**General comments:**
1. **James C. Langford**
   
   I believe in emission controls but your group has no business in keeping on pushing for lower and lower limits when you are ignoring China and India and their air pollution that travels here. Seems like the only public you are interested in is destroying the US economy. I am told to test for fraud actions like your group would engender is to follow the money and how much are you asking? Come on!!

   **Response:**
   
   Protecting the air quality in Washington State is an important component of air pollution control. As you correctly indicate, air pollution has been demonstrated to travel from Asia to North America. While this may be an important source of pollutants, the State of Washington is unable to affect those emissions. As part of the State’s Regional Haze State Implementation Plan (RH SIP) we demonstrate that a portion of the visibility impairment on the worst days is due to air pollutants crossing the Pacific Ocean and from Canada. Control of those pollutants is the responsibility of the US National Government. Washington State is required to work to reduce the impacts from those sources of air pollution that we can control and identify the impacts that are out of our control.

   A review of our proposed BART decisions would indicate that we have rejected costly emission controls that could be imposed on the various companies if cost were not a factor in the decision process.

2. **US Forest Service and National Park Service**
   
   In general both agencies are concerned with the lack of visibility improvement resulting from the BART process in Washington. The USFS recognizes that the federal guidance gives the state latitude in the importance given to the 5 BART decision factors; they are concerned that visibility improvement is not given enough importance. Instead of relying solely on a cost effectiveness
based on $/ ton of pollutants reduced, Ecology should use a measure such as $/dv improved as outlined in a Sept. 2008 memorandum from Scott Copeland of the USFS or as proposed by EPA Region 9 for use in their BART decision process for power plants located on Indian Reservations in Region 9.

For the National Park Service, this concern about evaluating visibility improvement is especially important when multiple Class I areas are affected by a single facility. Their opinion is that the visibility improvement at all affected Class I areas needs to be included in a cost effectiveness evaluation using a method similar to the ones included in the Sept. 2008 memorandum. They advocate for BART determinations to be based on a $/cumulative dv of improvement. Their compilation of proposed BART determinations indicates that the proposed decisions all result in a maximum cost effectiveness of $12 – 19 million/cumulative dv improved (with one exception at $50 million/cumulative dv).

Response:
Ecology is also concerned over the minimal improvement in visibility resulting from the BART process in Washington. We do note that evaluations performed in developing the Regional Haze Implementation Plan indicate that significant amounts of the visibility impairment at Washington’s mandatory Class I Areas comes from Asian and Pacific Offshore sources and for some mandatory Class I Areas, Canada.

Ecology has utilized all 5 factors in the BART process in making its proposed BART decisions including the degree of visibility improvement factor. As noted, the state has latitude in determining the relative importance of the various factors. The EPA BART guidance only requires an evaluation of the degree of visibility improvement anticipated by the proposed emission controls\(^1\). The guidance does not suggest that the state set a minimum visibility improvement criteria or any other measure of visibility improvement as a determining factor in acceptability of any BART decision. Equivalently the guidance document does not suggest or require that visibility impacts and improvements beyond the nearest mandatory Class I Area to be modeled in great detail, indicating EPA expected states to focus modeling resources on the closest mandatory Class I Areas\(^2\).

For cost effectiveness we are relying on a measure that we know and understand, the $/ton reduced. Between July, 2005 when EPA issued the final BART guidelines until the fall of 2008 when the first proposal from the FLMs was developed on how to do a $/dv measure, no state was using this measure and EPA provided no guidance in how to perform the calculation. Ecology has chosen to follow the lead of essentially all other states in evaluating BART control costs on a $/ton reduced.

To complicate matters more, the Sept. 2008 memorandum referenced by the Forest and Park Services proposes 2 variant methods to calculate cumulative deciviews, noting problems with each approach. An

\(^1\) EPA comments to S. Dakota DENR, Nov. 13, 2009, on the Big Stone I BART determination states in Comment #7, “The net visibility change between the pre-control and post-control emission control scenarios is the principal visibility related factor to be considered in determining BART limits.” See also 40 CFR Part 51, Appendix Y, Section IV.D, Step 5 How should I determine visibility impacts in the BART determination?

\(^2\) See 40 CFR Part 51, Appendix Y, Section III.A.3 Option 1 Individual source Attribution Approach (Dispersion Modeling) and, Section IV.D, Step 5 How should I determine visibility impacts in the BART determination? In both locations EPA advises to have a dense grid of receptors in the nearest Class I areas and for other Class I areas in close proximity to the source, model a few strategic receptors to determine whether affects may be greater than the nearest Class I area. This approach to modeling does not fit with the cumulative visibility improvement approach advocated by the Park and Forest Services.
EPA Region 9 Federal Register Notice concerning how Region 9 would evaluate visibility impacts from 2 power plants located on Navajo Tribal lands, proposed 2 more very different methods to implement a $/dv improved metric.

National Park Service documents appear to utilize variations on the approaches proposed in the Sept. 2008 memorandum. Which is the correct method to use to determine $/dv improved? What is the cost effectiveness threshold when using this approach? What is the basis for a $/dv cost effectiveness threshold? The approaches proposed by the FLMs and EPA Region 9 do not supply the answers or indicate where they lie. The only source of information on what might be an appropriate $/cumulative dv improved cost value is a compilation of proposed BART determinations by Mr. Shepherd of the National Park Service. While informative, the compilation contains information from BART proposals, not the final determinations by individual states.

Separately, Ecology undertook a review of BART determinations included in SIPs submitted to EPA by Western US states. This review indicates no state has relied on the $/dv improved measure to make a BART determination. The RH SIPs that have been submitted and reviewed by Ecology all utilize the $/ton reduced metric for BART. Two of the SIPs reviewed seem to utilize a $/dv measure to support additional further progress emission reductions volunteered by or imposed on individual plants.

**Response to comments on Port Townsend Paper Company BART:**

1. **Trinity Consultants on behalf of Port Townsend Paper Company**
   The consultant indicates that footnote ‘a’ to Table 2.6 in the Technical Support Document is inconsistent with the text on Page 28 and the company’s BART analysis regarding the cost effectiveness of adding or converting the existing dry ESP on the No. 10 boiler to a wet ESP and requests that the footnote be corrected.

   **Response:**
   Thank you for pointing out the inconsistency. The document will be corrected.

2. **National Park Service**
   Ecology should consider the visibility improvements that would occur at all of the Class I areas within 300 km of the BART source.

   Ecology should have included evaluations of upgrading and improving operations of existing control equipment, especially the ESP on the recovery furnace and wet scrubber on the power boiler.

   Ecology should expand its evaluation of the cost effectiveness of switching to a lower sulfur fuel oil as a means to reduce SO$_2$ emissions. Ecology inappropriately rejected the use of lower sulfur fuel oil on a cost basis without also evaluating the visibility benefit from the resulting lower SO$_2$ emissions. Since the Massachusetts Department of Environmental Protection has proposed that all residual fuel oil be limited to 0.5% sulfur, we believe that this should become the default presumption for SO$_2$ BART at PTPC.
Ecology evaluated the visibility impacts of only two options—reductions of PM$_{10}$ from the No. 10 Power Boiler and the Smelt Dissolving Tank. Therefore, the remaining BART determinations are incomplete.

Addition of a wet ESP to control PM$_{10}$ emissions from the Power Boiler #10 is cost-effective and represents BART.

Response:
The initial modeling of the facility covered all Class I Areas within 300 km of the plant. That modeling showed that emissions from the plant exceeded the contribute threshold only at the Olympic National Park. In order to save resources, we focused all subsequent modeling data analyses only on the effects at Olympic National Park, though the modeling domain still contained all the other Class I areas.

Ecology and Port Townsend Paper Company evaluated upgrades and improvements to the existing emission control equipment on the power boiler and recovery furnace as part of the project.

Ecology evaluated the costs of switching to lower sulfur fuel oil in addition to the work done by the company in its analysis. The evaluation is documented in the Technical Support Document and in supporting materials from the company posted on our BART web page, specifically BART Analysis, 2$^{nd}$ Addendum. As demonstrated in our Technical Support Document, the cost of switching to a lower sulfur fuel oil is excessive on a $/ton basis. Since the SO$_2$ reduction option was not cost effective, we determined that it did not need to have the visibility benefits from using it evaluated.

Based on the lack of information available publically about the Massachusetts Regional Haze SIP, we have reviewed information from Northeast States for Coordinated Air Use Management (NESCAUM) and Mid-Atlantic/Northwest Visibility Union (MANE-VU) about the low sulfur residual fuel proposal and The New Hampshire Regional Haze SIP. This oil sulfur content reduction is not proposed as BART but as a further progress element to achieve SO$_2$ reductions from all oil combustion (residential, commercial and industrial) sources in the NESCAUM area. There is a schedule of dates to phase in this oil fuel sulfur limitation, with the residual oil limit proposed to be met in 2018. As a result, Ecology cannot accept the NPS proposal that fuel oil with 0.5% sulfur content is presumptive BART for fuel oil used by PT Paper.

Ecology evaluated the visibility of only the 2 options that were possibly cost effective for implementation at the facility. As such, the evaluation is complete in accordance with our understanding of the requirements of the BART guidance.

Ecology respectfully disagrees with the National Park Service that adding a wet electrostatic precipitator to Power Boiler #10 is cost effective.

Response to comments on INTALCO Aluminum Corporation - Ferndale BART:

1. National Park Service
   Sodium based scrubbing systems have been evaluated by Canada and in the US for installation on primary aluminum smelters, including one in Washington. The technology is technically feasible for use, and needs further evaluation here. Ecology notes in its support document that sodium based
scrubbing systems are technically infeasible due to the inability to discharge wastewater. The cost to treat the resulting wastewater is part of the cost analysis step, not the technical feasibility step.

The cost analysis for limestone wet scrubbing appears to overestimate costs. One example is a doubling of the erection costs for the scrubbing system, a cost element present in all BART analyses the NPS has reviewed from Intalco. Other examples are the cost of operating labor and the cost for maintenance materials. Ecology needs to evaluate a one absorber tower configuration for the plant such as was done in Tennessee, but not presented to Ecology by Intalco.

Costs that deviate from the EPA Control Cost Manual approach and factors should be documented and justified by Ecology.

Based on a Rio Tinto–Alcon PSD application in Kentucky and the analysis presented, we believe that a sodium based scrubbing system is cost effective at $4,387/ton SO2 removed. Ecology should perform a full 5 factor evaluation of the use of a single vessel sodium based scrubbing system.

Intalco and Ecology should provide modeling results for all Class I areas within 300 km for the base case as well as the 95% potline SO2 removal case. Ecology should explain how it objectively evaluated the resulting visibility benefits to all of those Class I areas. We believe that, when Ecology does so, it will conclude that 95% SO2 scrubbing of potline emissions is BART at Intalco.

Response:
Ecology does agree that any wet scrubbing system to control SO2 at INTALCO Aluminum Corporation - Ferndale (INTALCO) is technically feasible. What is in question is the ability to discharge treated wastewater to Puget Sound. The language of the Technical Support Document was in error or unclear in its statement that a sodium based scrubbing system is technically infeasible due to the inability to discharge wastewater. The cost and difficulty in discharging treated wastewater is however a significant cost impediment that exists at this site. The Technical Support Document will be corrected.

The portion of Puget Sound/Strait of Georgia where the INTALCO plant is located is part of an Aquatic Reserve that was established in 2000. The construction of any new intake and/or discharge structures within the Cherry Point Aquatic Reserve would require an impact analysis, assessment, and Washington Department of Natural Resources authorization of any environmental impacts from the new discharge. The Department of Ecology would have to issue a new National Pollutant Discharge Elimination System (NPDES) permit after the environmental impacts of the new discharge were evaluated. Due to issues with protection of spawning and rearing areas for herring (a primary forage fish for salmon) a new wastewater discharge to the Strait of Georgia/Puget Sound in the area of the INTALCO Smelter are effectively impossible to get. This would apply to the ability to discharge wastewater from any wet scrubbing system, sodium or calcium based. Similarly a land discharge of treated wastewater is difficult to get permitted as a result of wetlands issues.

As noted in the BART analysis from the company and reiterated in the Ecology Technical Support Document, there are regulatory hurdles that would need to be overcome to allow discharge of treated scrubber wastewater to the Georgia Strait at the location of the smelter.

The Park Service notes that four aluminum smelters, including the Goldendale Aluminum smelter, in Washington use a sodium based wet scrubbing system. For the Goldendale smelter, the wet scrubber was located after the fluoride and particulate control system. The primary system wet scrubber was
designed to provide a 70% SO₂ reduction and at time of plant closure provided about 80% reduction in SO₂ but the permitting documents in our possession are inadequate to define this as a sodium based wet scrubbing system, only that sodium hydroxide is used for pH control. A clear water scrubber was utilized in the secondary control system, using recirculated water and pH control as needed to keep the pH above 6.0. The addition of the scrubbers to the plant halted its ability to discharge wastewater to the Columbia River. Fortunately, the higher temperatures of the Soderburg smelting process and the plant’s location in Eastern Washington allowed it to develop a ‘no discharge’ wastewater handling system. The plant is currently not operating with 2 of the potlines already dismantled and the last potline is in the process of being dismantled. As a result there is little likelihood of this plant ever operating again. Similarly, another of the facilities identified by the National Park Service, a smelter in The Dalles Oregon, has been converted to a secondary aluminum facility. Based on the available public information on the smelters identified, most are Soderberg facilities, which have a higher gas stream temperature than a prebake facility like INTALCO.

Previously Ecology has evaluated SO₂ controls for the INTALCO facility as part of a PSD permitting exercise that the company abandoned. During that BACT review a number of SO₂ controls were evaluated, including dry and wet scrubbing options utilizing both calcium and sodium based scrubbing systems. These controls were not found to be cost effective at that time either, on both a capital and an annualized basis.

In our analysis of the costs of calcium based wet scrubbing of the potline emissions, INTALCO provided the information on a single vessel option and we did evaluate the effect of all the fine tunings of the cost model advocated by the Park Service. A synopsis of our evaluation of the single vessel option is included in the Technical Support Document. While our costs differ from those presented by the National Park Service, we find that the cost effectiveness of single vessel SO₂ control was higher than what we would require for a new facility, let alone an existing facility. The costs were higher on a $/ton basis than was applied to the coal-fired power plant in Centralia for its limestone based wet scrubbing system. The costs are also higher than what other states have been accepting as cost effective for BART for control of SO₂.

A review of Regional Haze SIPs for states with aluminum smelters and the BART determinations for other aluminum smelters indicates that states have found most smelters are not Subject to BART. Of those that are Subject to BART, the states have determined that the existing emission controls meet the requirements of BART.

We will amend the Technical Support Document to indicate the results of our ‘fine tuning’ of the LSFO cost effectiveness evaluation.

The applicability of the Rio Tinto-Alcan’s analysis of a sodium based scrubbing system on a portion of that facility can only compare the air quality aspects of the installation. However, we have been able to acquire very little information from the State of Kentucky about the project other than to confirm that sodium based scrubbing is being evaluated as one of the SO₂ control options and that BACT has not yet been determined. A sodium based scrubbing system (along with a lime/limestone system) was evaluated as part of a proposed 1998 PSD project at this facility. Based on costs at that time, all wet scrubbing technologies were proposed by INTALCO to not be cost effective. Ecology did not make a BACT decision on this PSD application as the company withdrew their proposal.
The BART process is not focused solely on the air quality benefits of a particular emission control. We are also required under the BART guidelines to look at the non-air quality impacts of the proposed control technology. This is not required of a BACT determination for PSD permitting. As indicated above and in our Technical Support Document\(^3\), Department of Ecology wastewater discharge policies and environmental protection for herring spawning and rearing areas reduces the opportunity for a new or expanded discharge of pollutants into Puget Sound at the INTALCO location. As a result, a no-discharge option for the scrubber wastewater is required. This area is also unable to provide for adequate evaporation to develop a no-discharge system to handle the scrubber wastewater and there are no existing POTWs near and large enough to send the excess scrubber water for treatment.

The visibility impacts at all Class I Areas within 300 km of the INTALCO facility have been modeled and are included in the modeling files. As for the cumulative visibility assessment the National Park Service indicates we should perform, see the general response to this issue given above.

2. The US Forest Service

We are particularly concerned about the frequency in which this facility is modeled to cause or contribute to visibility impairment at eight Federal Class I areas, primarily due to SO\(_2\) emissions from its pot lines. While we recognize that Ecology has evaluated several control technologies and has concluded that none are appropriate to implement as BART, we remain concerned about the lack of improvement in reducing haze caused from this source.

Response:

Thank you for the comment. We have been involved with evaluating SO\(_2\) controls for primary aluminum smelters for a number of years and continue to be concerned with the lack of viable controls for this location and industry as a whole.

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Response to comments on Weyerhaeuser Company - Longview BART:

1. The US Forest Service

The No. 11 Power Boiler at Weyerhaeuser has existing controls (i.e., dry sorbent injection) to reduce SO\(_2\) emissions. However that system was originally designed to achieve a 25% reduction in emissions to avoid New Source Review. Dry sorbent injection systems commonly achieve 50 to 90 percent removal. Improved SO\(_2\) removal efficiency may be accomplished through use of dry sorbent materials other than Trona, modifications to increase flue gas contact time, or through fine tuning of operational methods.

Response:

The application of dry sorbent injection using Trona at this facility reduces SO\(_2\) at approximately the same level as dry sorbent injection (lime) is anticipated to provide at the Lafarge North America cement plant in Seattle. Alternative approaches were evaluated by the company for SO\(_2\) control; including the use of calcium based sorbents rather than the sodium based Trona. Based on the information submitted by the company and an on-site evaluation of the Trona injection system and the electrostatic precipitator, we believe that there is little opportunity in the current configuration to improve the SO\(_2\) removal efficiency.

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\(^3\) INTALCO BART Analysis Technical Support Document, Appendix A, Discussion of sea water scrubbing.
Response to comments on Tesoro Refining and Marketing Company BART:

1. Tesoro Refining and Marketing Company
   The company provided numerous detailed comments related to the internal consistency of the Support Document and one comment to edit proposed emission limitation in the proposed BART Order to be consistent with the requirements of the Order of Approval issued by NWCAA.

Response:
Ecology appreciates the inconsistencies being pointed out and will revise them as appropriate and necessary. The other edits and suggested changes to the Technical Support Document will be evaluated and revised as appropriate.

We also will make the requested correction to the proposed order to be consistent with the underlying regulatory requirement.

Where there are conflicts between the BART Technical Support Document, the comments from the company, and the recently issued (Jan. 26, 2010) Air Operating Permit for the facility, the information in the Air Operating permit will be used to resolve the differences. One example of this is the total heat input rate for heater F6650/6651.

2. National Park Service
   In general, the analyses presented appeared to be reasonable. However, Ecology should have adjusted the costs of plant-wide SO₂ control to account for the values of the additional sulfur recovered from the refinery gas.

   Ecology did not evaluate the visibility improvements that would result from any specific control option. This is especially problematic with respect to Ecology’s rejection of plant-wide SO₂ reductions through reductions in the sulfur content of refinery gas.

   We have a fundamental concern with Ecology’s decision to not consider the visibility improvements that would occur at all of the Class I areas within 300 km of the BART source.

   We agree that scheduling issues may make it more appropriate to implement the proposed controls under the Reasonable Progress provisions of the WA Regional Haze SIP.

Response:
The value of sulfur is low and the inclusion of an economic benefit from the additional sulfur available for sale is low. Ecology does not consider that its exclusion changes the overall cost effectiveness for implementing a lower refinery fuel gas sulfur level.

Ecology recognized the cost of modeling potentially 3 or 4 control scenarios at between 15 and 30 individual emission units at the 2 Subject-to-BART oil refineries. As a result, we directed the companies to focus modeling resources on the effects of control scenarios that were likely to be implemented.
The visibility impacts at all Class I areas within 300 km of the Tesoro refinery have been modeled and are included in the modeling files and the Support Document. As for a cumulative visibility assessment, see the general response to this issue given above.

**Response to comments on Lafarge North America BART:**

1. **Lou Kings**
   Lou Kings submitted a comment in support of the Proposed BART Determination.
   
   **Response:**
   Thank you.

2. **Thea Levkotitz**
   Request from Thea Levkovitz on behalf of the Duwamish River Cleanup Coalition that the BART hearing covering the Lafarge facility be held closer to the Duwamish Community which is located near the plant.
   
   **Response:**
   The Department held a single public hearing for 6 of the 7 BART determinations that have been proposed. This single hearing was held in Olympia due to the large geographic spread of the facilities involved. The hearing was held at the time and place in the public notice and no one showed up to talk in favor or against the proposals.

3. **Bill Pease**
   Bill Pease was concerned with holding a single public hearing in Olympia. He was also concerned with the BART process in general focusing on a select few industrial sources while many more are not being evaluated. His BART process concerns specifically are about the focus on the 6 facilities included in the public hearing that included the proposed BART determination for the Lafarge facility and why this made any sense.
   
   **Response:**
   See above response to the single hearing in Olympia comment.

The Best Available Retrofit Technology process is a component of the Regional Haze Program contained in Environmental Protection Agency rules. Those rules require a state to develop a plan for the state to meet the federal goals for visibility in 156 National Parks and large Wilderness areas (mandatory Class I Areas). The BART process is circumscribed in the federal Clean Air Act and Environmental Protection Agency rules to apply to a specific subset of all industrial plants in the country.

There are 7 industrial facilities in Washington that meet all the criteria to be in that group of industrial plants. These facilities all meet 4 criteria to be subject to the BART process. These criteria are:

- One or more sources of emissions initially started operation or began construction between Aug. 7, 1962 and Aug. 7, 1977,
- Is one of 26 specific source types listed in the federal Clean Air Act and EPA regulation,
- Has a potential to emit any visibility causing air pollutant at a rate above 250 tons per year, and
- Has a modeled visibility impact at a mandatory Class I Area that causes or contributes to
  visibility impairment.

The Lafarge North America facility in Seattle is one of the 7 industrial plants in Washington that meet all of these criteria.