

**ECOLOGY'S RESPONSE TO COMMENTS ON THE DRAFT TRANSALTA BART  
TECHNICAL SUPPORT DOCUMENT AND COMPLIANCE ORDER**

Comments received on the proposed TransAlta Best Available Retrofit Technology (BART) determination are provided below. There is a separate index table for written comments and for verbal testimony received. You can find the responses to each comment by going to the page numbers referenced in the tables.

Two versions of form letters were received by e-mail from multiple stakeholders through Sierra Club's web site. The total number of e-mails for both form letters received prior to the close of the comment period was 1,896. This number does not account for duplicate e-mails that were sent by the same stakeholders. Ecology has consolidated responses to both versions of these form letters below.

Written comments and the content of the form letters can be accessed at <http://www.ecy.wa.gov/programs/air/TransAlta/TransAltaAgreement.html>.

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## **Response to comments from Dr. Ranajit Sahu:**

1. One overall comment on the BART determination for this facility: a proper top-down BART analysis was not completed due to an inadequate analysis of the Selective Catalytic Reduction (SCR) alternative. The reviewer has specific issues with:

- SCR cost analysis submitted by TransAlta.
- Lack of Ecology investigation of combustion system modifications to reduce Nitrogen Oxides (NO<sub>x</sub>) and subsequent size of SCR system required.
- No evaluation of alternative locations to install SCR unit such as after the Electrostatic Precipitators (ESPs) or wet scrubbers.
- Inadequate schematics provided to facilitate 3rd party review—unable to determine scale and subsequently distances between objects on the plot and profile drawings.
- No documentation of source for venter quote(s) in CH2MHill reports.
- SCR cost analysis not scrutinized for extraneous costs such as a 16% cost surcharge, the basis of balance of plant charges, why the cost of two SCRs simply double one SCR, since only one reagent system is needed, etc.
- How much catalyst is assumed in the SCR cost analysis? How many layers, etc.?
- Basis for assuming the NO<sub>x</sub> emission rate of 0.07lb/MMBtu when a 90% reduction from 0.30 lb/MMBtu would result in a 0.03 lb/MMBtu emission rate, thus increasing the quantity of emissions used in determining cost-effectiveness.
- Additional similar questions related to details of the Selective Non-Catalytic Reduction (SNCR) control alternative.

### **Response:**

Ecology briefly reviewed the SCR option during our review of the January and July BART analyses submitted by TransAlta. The information presented by TransAlta was consistent with information included in references reviewed in preparation for reviewing all BART analysis submitted in Washington. Familiarity of the Ecology staff and local permitting authority with the physical constraints on adding additional emission controls or reconfiguring exhaust gas flow paths to accommodate new add on emission controls lead us to agree that the costs for inclusion of SCR would have high installation costs.

As a result, we did not investigate the details of the cost analysis. We did use an alternative Environmental Protection Agency (EPA) cost model (CUECost) that EPA issued to replace the use of the Control Cost Manual for coal-fired power plants. The cost estimates from the CUECost model indicate that the SCR costs estimated by TransAlta are in the range expected for that type of facility. Experience in doing BACT cost analyses lead us to the opinion that even the fine tuning of the cost analysis presented by the company would not substantially change the total capital cost, the annual operating cost, or the annualized costs of the project.

At our request after the public hearing, TransAlta submitted more readily readable drawings and information on the basis of its SCR cost estimates (see Draft Support Document for BART Determination for TransAlta Centralia Generation, LLC Power Plant, Centralia, Washington, Washington State Department of Ecology, revised April 2010, p. 15).

We also did not delve into the actual emission limit that would reflect the use of SCR on the boilers at this plant. Such an evaluation might result in a different emission limitation, though a review of most power plant BART determinations in western states indicate that for the few facilities required (or volunteering) to install SCR for BART, none have an emission limitation below 0.07 lb/MMBtu.

Alternately, we did review the costs for SNCR in greater detail. The duplication of some costs such as those for reagent tanks might be reasonable to eliminate, but are not the significant cost for the use of SNCR. At our request after the public hearing, TransAlta supplied more information on the basis of its SNCR cost estimates (see Draft Support Document, p. 15)

**2. Improved combustion control not evaluated.**

- Literature review of combustion control effectiveness not obviously reviewed.
- No evaluation of why this installation if Low NO<sub>x</sub> Combustion, Level 3 (LNC3) combustion controls are unable to meet the presumptive BART emission limitation EPA proposed in the BART guidance for this control on this type of boiler.
- Installation of neural net control/combustion optimization not required as part of BART.

**Response:**

The literature on combustion control effectiveness was reviewed in the context of all BART analyses performed by Washington. The review was not called out specifically in regard to this facility.

A review of the emission record for this facility indicates that since the combustion controls were first installed and before the company's decision to suspend mining coal at Centralia, the units had been subject to fine tuning for improved effectiveness of the combustion controls.

The change from Centralia to Powder River Basin (PRB) coals results in an immediate decrease in NO<sub>x</sub> emissions resulting from a combination of factors including the reduced fuel nitrogen content and the higher heat net content of the PRB coals compared to the Centralia coal.

The neural net process could be installed and might actually result in a decrease in NO<sub>x</sub> emissions. However, without the ability to quantify any potential for NO<sub>x</sub> reductions, the cost-effectiveness of the installation cannot be evaluated. We do encourage the company to implement the process if their additional analyses indicate that it may provide positive benefits.

**3. Numerous unexplained changes between the January 2008, the June 2008, and December 2008 submittals. Changes not explained or obvious to the reviewer. Vendor cost changes for SCR. Baseline emissions change in each of these submittals.**

**Response:**

The June 2008 submittal was intended to replace the January 2008 submittal. Changes in vendor costs reflected new information acquired by TransAlta's emission control analysis consultant.

TransAlta's consultant was involved in a number of additional BART analyses in the western U.S. during this period and used information collected for one project in others. At Ecology's request after the public hearing, TransAlta supplied additional information related to the basis of its SCR cost estimates.

We agree the baseline emissions changes between the submittals is troubling and not explained in the company submittals, but analysis of the emissions against data submitted to EPA's Clean Air Markets Division indicate the bases of these changes.

4. The Flex Fuels project might be subject to a New Source Review (NSR) permit as a major modification. Has this been investigated? It is not portrayed as an emission control technique. Not obvious how the use of Flex Fuels results in a 20% decrease in NO<sub>x</sub> emissions.

**Response:**

Ecology has previously analyzed the Flex Fuels project for Prevention of Significant Deterioration (PSD) permit applicability. The review indicated that the project did not qualify as a major modification of a major stationary source.

The Black and Veatch analysis submitted as part of the PSD applicability analysis evaluated methods to restore steam generation capacity lost due to the slagging issues and reduced heat transfer resulting from the use of 100% PRB coals. As the report and the project's minor NSR permitting materials indicate the PRB coal's sodium content changed the fly ash/slag on the boiler tubes from a "light and flakey" ash very amenable to standard soot blowing techniques, to a glassy material requiring a different method of "soot blowing." We agree the Black and Veatch report does not portray this project as an emission control project.

The Flex Fuels project results in a 20% decrease in NO<sub>x</sub> as a result of a number of factors including the reduction in fuel bound nitrogen in the coal reduced quantity of coal combusted due to the higher new heat content, and reduced firing rate to accommodate the coal slagging characteristics.

5. The focus of EPA on SNCR in its comments on a preliminary version of the BART determination and support document is premature. Ecology has not defeated SCR as BART for this facility.

**Response:**

Ecology's view is that EPA's focus on SNCR indicates that they agree with Ecology that SCR is not a feasible control technology for this power plant. The EPA staff involved with the comments was involved in the 1997 Reasonably Available Control Technology (RACT) process and is familiar with the configuration of the facility, difficulty of construction on the site, and the cost analysis methods used in Best Available Control Technology (BACT) determinations.

6. Due to the large visibility impact of the emissions from this facility, SCR cannot be ruled out as BART for the plant.

**Response:**

We recognize that this plant has a large impact on visibility at a number of mandatory Class I areas in Washington and Oregon. The proposed BART emission limitations will result in substantial reductions in visibility impacts at all mandatory Class I areas within 300 km modeling radius of the plant. The proximity of the plant to numerous mandatory Class I areas magnifies the impacts compared to other power plants of similar size in the U.S.

The Regional Haze program guidance from EPA allows the states to evaluate and balance all benefits and impacts of the installation of emission controls on a particular facility. Visibility impact and potential visibility improvement are only two of the factors to be considered in that determination. As such, the fact that this particular facility has a large visibility impact is not sufficient by itself to justify SCR as BART.

**Response to comments from Earthjustice:**

Earthjustice provided comment on the proposed settlement agreement on behalf of the National Parks Conservation Association, the Sierra Club, and Northwest Environmental Defense Center (collectively the “Conservation Organizations”). The comments are 17 pages in length. Below, Ecology has attempted to summarize the key points from this comment letter and respond to them instead of engaging in legal argument. The full comment letter from Earthjustice is available on line at <http://www.ecy.wa.gov/programs/air/TransAlta/TransAltaAgreement.html>.

1. It is extremely unfortunate and puzzling why Ecology feels compelled to reach this lopsided Agreement with TransAlta. This Agreement is not a compromise between two ends of a spectrum, but rather a capitulation. Ecology and the citizens of Washington get nothing from this “bargain” that TransAlta wasn’t already going to give them. TransAlta gets exactly everything it wants: it is not subject to BART for NO<sub>x</sub>; it is not required to do anything to control NO<sub>x</sub> pollution that it’s not already doing, and would do regardless of this Agreement; it can do minimal mercury control, well below industry standards, at its sole option with no repercussions if it does not achieve the reductions agreed to. In return, Ecology agrees to “hands-off” treatment for the next 10 years or more for the TransAlta coal plant on a number of pollution issues; the state agrees to become TransAlta’s partner in seeking accommodation and/or positive treatment from the EPA on a number of pollution issues; and the state agrees to look kindly on a wide-ranging list of potential TransAlta proposals for dealing with coal ash waste. Conservation Organizations find that the Agreement provides nothing of benefit for the citizens and natural resources of this state and strongly urge the State to reject this Agreement and engage in a full-scale, thorough BART analysis for NO<sub>x</sub>, and aggressive case-by-case mercury control in line with industry achievements of over 90% reduction.

**Response:**

Ecology disagrees with the commenter's characterization of the agreement. The agreement reached a quick and effective resolution of issues related to NO<sub>x</sub> and mercury controls without the delay that would otherwise be caused through the regulatory process or potential litigation. Instead of litigating the question of whether TransAlta is subject to BART, Ecology and TransAlta were able to agree and move forward on a BART determination for NO<sub>x</sub> that meet the requirements of the federal Regional Haze Rule. Instead of expending much time and resource in establishing a mercury rule for a single facility, Ecology secured an agreement to use state-of-the-art technology to reduce mercury emissions by at least 200 lbs per year beginning in 2012. This achieves substantial mercury reductions well in advance of the EPA action. Regarding ash handling, all Ecology has agreed to do is work with TransAlta to find solutions to potential future ash handling problems (which would be as a result of the new control technology) within the constraints of Ecology's solid waste rules. These results are all at tremendous benefit to Ecology, the state of Washington, and to the environment.

2. The proposed agreement and consent decree include various clauses and constraints that further weaken the agreement.

**Response:**

Ecology believes that the commenter's have misconstrued these clauses. To implement the mercury reductions, TransAlta is agreeing to install the controls and undergo substantial expenditures to make them work. In fact, TransAlta has already taken major steps in this direction by proceeding with testing and design of the controls. While Ecology has agreed to not require additional NO<sub>x</sub> reductions until after 2018, Ecology believes this agreement is reasonable as stated in response to Earthjustice comment 4 below. Finally, Ecology is puzzled by the comment regarding "beneficial uses" of ash. "Beneficial use" is a term clearly defined in Ecology's solid waste rules, WAC 173-350 et seq., and is a well-known term of art. Further, the inference that TransAlta's ash handling could result in a coal ash spill such as that by the Tennessee Valley Authority (TVA) in December 2008 is misleading. TransAlta does not have ash ponds of this nature and its coal ash handling system is disposed in accordance with Ecology's solid waste rules, so such an outcome is not possible.

3. NO<sub>x</sub> pollutants from the TransAlta coal plant negatively affect the air quality of at least one Class I area.

**Response:**

We agree and recognize that this plant has a large impact on visibility at a number of mandatory Class I areas in Washington and Oregon. The proximity of the plant to numerous mandatory Class I areas magnifies the impacts compared to other power plants of similar size in the U.S. The TransAlta coal plant is subject to BART for NO<sub>x</sub> emissions.

4. The Flex Fuels project cannot properly be considered BART.

- Flex Fuels is not a NO<sub>x</sub> reduction technology or project.
- There is no support in the record for the claimed NO<sub>x</sub> reduction from the Flex Fuels boiler efficiency project.
- Even after the application of Flex Fuels, the TransAlta coal plant will cause visibility impairment in 12 Class I areas.

**Response:**

Ecology does not agree with the commenter's characterization of the Flex Fuels project. The Flex Fuels project required the installation of boiler modifications to TransAlta's boilers so that they could burn low sulfur coal full-time. The lower sulfur content PRB coals also contains less fuel bound nitrogen and higher net energy content compared to coal from the Centralia coal field. TransAlta's boilers were originally designed to burn coal mined from Centralia, which has lower energy content than low sulfur coal from the PRB. Because the low sulfur coal provides more energy per pound burned, it also generates lower NO<sub>x</sub> emissions. Less coal is burned to meet the same boiler energy input requirements, so less NO<sub>x</sub> is emitted. As Ecology has explained, the Flex Fuel project will provide at least a 20% reduction in NO<sub>x</sub> emissions from currently permitted levels at the facility. The Flex Fuel project is already installed, and Ecology has observed the reduction in NO<sub>x</sub> emissions. In combination with the existing combustion controls, the average NO<sub>x</sub> emissions for calendar 2008 from the TransAlta facility are approximately 0.21 lbs NO<sub>x</sub>/MMBtu, a rate that is more than a 25% reduction from the currently permitted level of 0.30 lb/MMBtu.

TransAlta will still impact visibility at Class I areas from its NO<sub>x</sub> emissions even with the Flex Fuel project. In fact, TransAlta will impact these Class I areas from its Sulfur Dioxide (SO<sub>2</sub>) and Particulate Matter (PM) emissions, even though TransAlta has been determined by EPA to meet BART for those pollutants due to its existing controls. The evaluation and application of BART under the federal Regional Haze Rule (RHR) does not require that a facility have no residual impact on visibility at Class I areas. BART instead requires a multiple factor analysis of a facility and its attributes as further described in Response 6 below.

**5. SCR technology is BART:**

- SCR is technically feasible.
- There is no support in the record for the claims regarding physical space limitations.
- The record has no explanation for TransAlta's failure to control the unusually high boiler-out NO<sub>x</sub> emissions at the TransAlta coal plant, a fundamental component of considering feasible BART technologies.
- There is no support in the record for TransAlta's high cost claims for the SCR technology.

**Response:**

Ecology strongly disagrees that SCR technology is BART for the TransAlta Centralia facility. Ecology acknowledges that SCR may represent BART for a different facility. However, the

facts of the TransAlta facility show that SCR is far too expensive for the benefit achieved considering the controls that have already been installed.

It is important to remember that a BART determination is a multi-factor, fact-specific analysis. It does not require that a specific type of control technology be installed for all facilities. To be selected as BART, a control technology has to be available, technically feasible, and cost-effective, provide a visibility benefit, and have minimal potential for adverse non-air quality impacts. All of these factors have to be considered; no single factor is dominant.

As Ecology has more fully explained in the Technical Support Document for its draft BART determination for the TransAlta facility, when SCR is evaluated through the five factor BART analysis, it doesn't fall within acceptable limits for BART. Ecology agrees that SCR technology is available, technically feasible, and if implemented would provide a significant visibility benefit. However, there are several complicating circumstances that impede its application for the TransAlta facility.

First, there is inadequate physical space to locate a SCR control unit. As explained in the Technical Support Document for the TransAlta BART determination, "[t]he short distance between the boiler economizer and the entrance to the first ESP does not provide the room required for a catalyst bed with reasonable velocities to be inserted in the existing flue gas duct." (Draft Support Document for BART Determination for TransAlta Centralia Generation, LLC Power Plant, Centralia, Washington, revised April 2010, p. 15). This conclusion is based on the best professional judgment of the Ecology Air Quality Program's senior engineer, evaluating the space available and the velocities present in the boiler ducts. The modifications, duct rerouting, and structural support work required to install SCR in such a restricted footprint greatly increase the cost of the SCR controls, far exceeding the range of what is considered cost-effective under standard metrics. Ecology investigated these claimed costs for SCR in detail. The costs for the actual SCR equipment, catalyst beds, ammonia storage, injection systems, and operating controls, all fall within the costs expected for an installation on a boiler of this size. Based on this plus our knowledge of the construction difficulties at this facility that do not exist at other power plants, we concluded the costs identified by TransAlta appeared accurate.

As noted above, Ecology received more readily readable site drawings at larger scales for the administrative record. The larger scale allows easier analysis of the layout issues by non-engineers. In addition, in response to several comments, Ecology requested TransAlta to evaluate locating an SCR after the ESPs in the duct from the ESP to the Flue Gas Desulfurization (FGD) scrubber (a cold, clean location) and include the impacts of reheat. We have also requested the company to evaluate the installation of an SCR system in the duct between the boiler and the ESP inlet. The information supplied by TransAlta is discussed in the April 2010 revised draft Technical Support Document.

Section 3 of TransAlta's July 2008 BART analysis discusses the reasons for the higher than normal construction costs to install SCR at the Centralia plant. The discussion in the Company submittal starts on page 3-9. The TransAlta discussion doesn't indicate dimensions, but using the provided drawings in the report and information in the modeling report, indicates that the distance from the boiler outlet to the inlet of the first ESP is approximately 42 feet. This whole

distance is used to evenly distribute the flow from the boilers to the ESP inlet to allow for proper operation of the ESP. The diverging ducts from the boilers to the ESPs are also located between 70 and 100 feet off the ground.

As TransAlta has proposed, the only location to install an SCR unit without having to reheat the flue gas is on top of the first ESP. What is obvious from the proposal drawings (Figures 3-3 and 3-4) is that TransAlta's consultant did not fully consider how to get the boiler exhaust to the SCR units and back into the ESP and still provide for even flow distribution to the ESP. A quick review of Figure 3-3 also indicates other issues of the tight construction site.

Capital costs for SCR systems reflect more than the costs of catalyst, ammonia storage, ammonia supply, and injection control systems. These equipment costs vary based on the flue gas volume and NO<sub>x</sub> concentration. As a result, these equipment costs are relatively uniform between installations. The most significant cost factors for this facility are the result of the density of existing emissions controls immediately adjacent to the boilers resulting in:

- The tight construction site.
- Potential difficulty in finding a location for ammonia storage that is safe, does not impede access to other components, or interfere with underground or above ground utilities and ducting.
- Elevated construction location.
- Difficulty in ducting exhaust gas from the boiler through the SCR units to the ESPs while achieving even flue gas distribution across the SCR catalyst beds and within the ESP.

The potential to remove first of the two series ESPs on each boiler and replace it with an SCR unit has been suggested as an alternative method to install SCR. While this seems to be an attractive option, the cost of destroying the existing ESP is part of the capital costs to install a new SCR system. Revising the ductwork for the remaining ESP, potentially having to relocate the induced draft fans, are other cost considerations. Equally, the lost revenue from sales of fly ash from the first ESP is a negative cost in the cost analysis.

Removal of the first ESP coupled with the history of the installation of the two series ESPs also brings into question the ability of the facility to meet its PM emission limitation.<sup>1</sup> Achieving the current PM emission limit is based on both ESPs in operation and does not anticipate any removal through the FGD system. The second ESP was not anticipated to accept the full particulate load from the boiler, only to remove enough of the remaining particulate from the exhaust of the first ESP to meet the particulate limit of 0.010 grain/dscf<sup>2</sup> (filterable PM only).

The lack of the two ESPs removing particulate is anticipated to contaminate the gypsum produced for sale to a level that prevents its resale, resulting in a cost to landfill the gypsum rather than receive compensation for the gypsum as a raw material. The lack of gypsum supply

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<sup>1</sup> See Section 1 of the Technical Support Document for the 1997 RACT order for information on the history of the ESPs.

<sup>2</sup> As referenced in the 1997 RACT analysis support document, the series ESPs comply with the permit limit, but neither alone can meet the limit.

to the wall board maker that purchases the gypsum will also adversely affect the price of that company's primary raw material.

Weighing the above factors, Ecology determined that SCR is not BART for the TransAlta facility.

The commenter's further question "the unusually high boiler-out NO<sub>x</sub> emissions at the TransAlta coal plant." Ecology disputes this characterization of TransAlta's emissions. TransAlta currently has installed LNC3 low NO<sub>x</sub> burners for NO<sub>x</sub> control; this technology is the presumptive BART control technology for NO<sub>x</sub> designated by EPA. These combustion controls meet their anticipated emission reduction of 0.30 lb/MMBtu, about 1/3 reduction from the pre-installation actual emission rate of 0.45 lb/MMBtu. The emission limitation presumed by EPA for these controls is 0.15 lb NO<sub>x</sub>/MMBTU. While the TransAlta facility's permitted emissions are double this amount, it is not an unusually high level. When EPA set the presumptive BART emission level for NO<sub>x</sub>, there were relatively few data points. A review of BART determinations in the western U.S. indicate that the TransAlta facility's current emission rate and our BART determination is not out of line with what is being determined to be BART by other states for their coal-fired power plants (see table following the response to Earthjustice Comment 6).

6. Step 5 of the required BART analysis appears almost entirely absent from Ecology's process.
  - Ecology did not question TransAlta's calculations that dilute the visibility improvement expected from SCR.
  - The record is devoid of evidence describing how Ecology balanced cost and visibility improvement, or any support indicating that Ecology necessarily struck the correct balance.

**Response:**

Here are the five steps in a BART analysis as outlined by EPA in Appendix Y of 40 CFR Part 51:

Step 1 – Identify All Available Retrofit Control Technologies

Step 2 – Eliminate Technically Infeasible Options

- The identification of available and technically feasible retrofit control options.
- Consideration of any pollution-control equipment in use at the source (which affects the applicability of options and their impacts).

Step 3 – Evaluate Control Effectiveness and Costs of Remaining Control Technologies

Step 4 – Evaluate Energy and Non-Air Quality Impacts

- The remaining useful life of the facility.
- The energy and non-air quality environmental impacts of compliance.

Step 5 – Evaluate Visibility Impacts

- The degree of visibility improvement that may reasonably be anticipated from feasible control options.

Step 5 in the EPA guidance document requires a determination of the visibility improvement that could accrue from the imposition of a control technology. The definition of BART in the regulation lists the 5th factor in determining BART as:

“The degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.” 40 CFR 51.301, definition of Best Available Retrofit Technology.

The analysis of the 5th factor is provided in Section 3 of the Technical Support Document, and the modeling analysis portion of TransAlta’s BART analysis submittals. These analyses indicate that all control technologies evaluated in detail would provide a reduction in visibility impacts if installed and operated.

Under both the definition and the guidance from EPA, Ecology has a great deal of latitude to determine how to address the question of visibility improvement. In Section IV.5 of the BART Guidance Document, the state has “discretion to determine the order in which you should evaluate control options for BART. You should provide a justification for adopting the technology that you select as the “best” level of control, including an explanation of the CAA factors that led you to choose that option over the other control levels.” Section 4 Ecology’s Technical Support Document includes our analysis and rationale for selecting BART for this facility.

The costs of controls, energy impacts, non-air quality environmental impacts, and the visibility improvement were given equal weight in our analysis. Neither cost nor visibility improvement were given paramount importance in balancing the various factors in determining BART.

The cost calculations are not part of determining the degree of visibility improvement that might result from use of a particular control technology.

**COAL-FIRED POWER PLANT BART DETERMINATIONS FOR NO<sub>x</sub> IN PUBLICALLY AVAILABLE REGIONAL HAZE SIPS\***

\*Most states able to utilize CAIR are not represented on this list because they are mostly using CAIR as BART for those power plants.

<b>State</b>	<b>Unit</b>	<b>NO<sub>x</sub> Technology</b>	<b>lb/MMBtu 30-day average</b>	<b>Comments</b>
EPA Region 8, Montana	Colstrip			No final decision publicly available
EPA Region 9, Navajo Reservation	Navajo			No final decision publicly available
	Four Corners			No final decision publicly available

State	Unit	NO <sub>x</sub> Technology	lb/MMBtu 30-day average	Comments
Arkansas	Enbtergy Arkansas, Inc. White Bluff, Units 1 and 1		0.28 on bituminous coal 0.15 on sub-bituminous coal	Controls not given. Limits in State Regulation 19.1505
	SWEPCO Flint Creek Power Plant Unit 1		0.23	Controls not given. Limits in State Regulation 19.1505
California	No coal fired units subject to BART			
Colorado	Martin Drake Units 5 - 7	Install overfire air systems	0.39	Also limited to 0.35 lb/MMBtu, annual average
	CENC (Trigen) Unit 4	Limited by rule to combustion controls, LNC3	115 lb/hr	
	CENC (Trigen) Unit 5	Limited by rule to combustion controls, LNC3	182 lb/hr	
	Craig Unit 1	Limited by rule to combustion controls, LNC3	0.39	Also limited to 0.30 lb/MMBtu, annual average
	Craig Unit 2	Limited by rule to combustion controls, LNC3	0.39	Also limited to 0.30 lb/MMBtu, annual average
	Public Service of Colorado, Comanche Units 1 and 2	Low NO <sub>x</sub> Burners	0.2	Also limited to 0.15 lb/MMBtu, annual average both units combined
	Public Service of Colorado, Cherokee Unit 4	Modify existing low NO <sub>x</sub> burner and over fire air or install new burners	0.28	
	Public Service of Colorado, Hayden Unit 1	Modify existing low NO <sub>x</sub> burner and over fire air or install new burners	0.39	
	Public Service of Colorado, Hayden Unit 2	Modify existing low NO <sub>x</sub> burner and over fire air or install new burners	0.028	

State	Unit	NO <sub>x</sub> Technology	lb/MMBtu 30-day average	Comments
Colorado (cont.)	Public Service of Colorado, Pawnee Unit 1	Modify existing low NO <sub>x</sub> burner and over fire air or install new burners	0.23	
	Public Service of Colorado, Valemont Unit 5	Modify existing low NO <sub>x</sub> burner and over fire air or install new burners	0.28	
Idaho	No coal-fired units			
Kansas	La Cynge Generating Station, Unit 1 and 2	SCR on Unit 1, Controls as needed on Unit 2	0.13, both units averaged together	
	Jeffrey Energy Center, Unit 1 and 2	Low NO <sub>x</sub> Burners	0.15	
Minnesota	MN Power, Taconite Harbor Boiler No. 3	ROFA/Rotamix (Mobotec)	0.13	
	MN Power, Boswell Boiler No. 3	LNB + OFA, SCR	0.07	
	Rochester Public Utilities, Silver Lake, Unit #3 boiler	No additional controls	No Limit	
	Rochester Public Utilities, Silver Lake, Unit #4 boiler	ROFA/Rotamix (existing controls)	0.25	
	Xcel Energy, Sherco, Boiler 1	LNB + SOFA + Combustion Optimization	0.15	
	Xcel Energy, Sherco, Boiler 2	Combustion Optimization	0.15	
	Xcel Energy, Allen S. King, Boiler 1	SCR (existing controls)	0.1	
	Northshore Mining, Silver Bay, Boiler 1	LNB + OFA	0.4	
Minnesota (cont.)	Northshore Mining, Silver Bay, Boiler 2	LNB + OFA	0.4	

State	Unit	NO <sub>x</sub> Technology	lb/MMBtu 30-day average	Comments
Iowa	Used CAIR for BART			
Louisiana	Used CAIR for BART			
Nebraska	Gerald Gentleman, Unit 1 and 2	Existing LNC3 on Unit 2, New LNC3 on Unit 1	0.23, both units averaged together	
	Nebraska City Station, Unit 1	LNC3	0.23	
Nevada	No coal-fired BART units			
New Mexico	San Juan Generating Station	No final decision publicly available		
North Dakota	Olds Unit 1	SNCR plus overfire air	0.19	
(All Lignite units)	Olds Unit 2	SNCR plus overfire air	0.35	
	Coal Creek Unit 1 and 2	Additional overfire air plus LNB	0.19	
	Stanton Unit 1	LNC3 plus SNCR for a 1/3 reduction	0.29	A 1/3 reduction
	Milton Young Station Unit 1	Advanced overfire air plus SNCR for a 58% reduction	0.36	
	Milton Young Station Unit 2	Advanced overfire air plus SNCR for a 58% reduction	0.35	
Oregon	Boardman	LNC3	0.28	Note SNCR to be installed by July 2014 @ 0.23 lb/MMBtu and SCR @ 0.07 lb/MMBtu required later. Neither is required as BART.
Oklahoma	OG&E Muskogee Generating Station Unit 4 and 5		0.15	
	OG&E Sooner		0.15	

State	Unit	NO <sub>x</sub> Technology	lb/MMBtu 30-day average	Comments
	Generating Station Unit 1 and 2			
	AEP/PSO Northeastern Power Station Unit 3 and 4		0.15	
Texas	No coal-fired BART units subject to BART			
Utah	Hunter Power Plant, Unit 1 and 2	LNC3	0.26	Replacing LNC1 burners and add 2 levels of overfire air under minor NSR program.
	Huntington Power Plants, Unit 1 and 2	LNC3	0.26	Replacing LNC1 burners and add 2 levels of overfire air under minor NSR program.
Wyoming	Naughton Unit 1	LNC3	0.26	Wyoming Long-term Strategy requires SCR @ 0.07 lb/MMBtu by 2018.
	Naughton Unit 2	LNC3	0.26	
	Naughton Unit 3	LNC3 plus SCR	0.07	
	Jim Bridger Units 1-4	LNC3	0.26	
	Dave Johnston Unit 3	LNC3	0.26	
	Dave Johnston Unit 4	LNC3	0.15	
	Wyodak Unit 1	LNC3	0.23	
	Basin Electric Units 1-3	LNC3	0.23	

**Responses to comments from the United States Department of the Interior, National Parks Service:**

1. TransAlta and Ecology did not evaluate alternative locations where SCR system could be installed such as between the ESPs and the wet scrubbers. That location will require reheating the gas stream, though fuel may not be significant as waste heat can be used to reheat the gas stream after the ESPs.

**Response:**

As part of the initial review of this BART analysis, Ecology did not consider, or request TransAlta to consider, alternative locations to install an SCR system other than the cold, dirty location evaluated. An alternate location requested to be evaluated previously was in the duct between the boiler and the ESP inlet. To respond to several commenters who wanted this evaluation, Ecology requested TransAlta to evaluate locating an SCR after the ESPs in the duct from the ESP to the FGD scrubber (a cold, clean location) and include the impacts of reheat. The Technical Support Document has been revised to reflect the information supplied by TransAlta.

2. The emission limitation evaluated for SCR is not reflective of the capabilities of the control system. Ninety percent reduction easily accomplished, the emission rate used for cost-effectiveness does not reflect the 90% reduction achievable or the actual seasonal emission rates achieved by eastern power plants subject to seasonal NO<sub>x</sub> reduction requirements for the ozone National Ambient Air Quality Standard (NAAQS). Suggest reasonable SCR emission limitations are applicable to this plant.

**Response:**

See response to Dr. Ranajit Sahu's Comment 1.

3. The SCR costs are overestimated and unsubstantiated. The EPA Control Cost manual has not been used as advised by EPA in the BART guidance. No information on source of vendor quotes. Did not use the methods and default factors included in the EPA Control Cost Manual to estimate costs. Instead used a model based on EPA's CUE Cost model. The NPS version of EPA's Control Cost Manual SCR cost method is provided to Ecology. No explanation of extra expenses and how the estimates were derived.

**Response:**

See responses to Dr. Ranajit Sahu Comment 1 and Earthjustice Comment 5.

4. Ecology should consider the cumulative effects of improving visibility at all 12 Class I areas affected within 300 km of the plant. Using cumulative visibility improvement results in a cost-effectiveness in line with other BART determinations made in the country.

**Response:**

The use of cumulative visibility effects is not reflected in the BART guidelines in 40 CFR Part 51, Appendix Y. EPA did not describe a method to utilize cumulative visibility changes as part of a BART determination process. Cost-effectiveness analysis using a metric like \$/Deciviews (dv) is only a suggestion to consider in addition to standard \$/ton pollutant reduced cost-effectiveness.

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 Federal Land Managers (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 September 2008 memorandum referenced by the USFS and the NPS proposes two variant methods to calculate cumulative dv, noting problems with each approach. An EPA Region 9 Federal Register notice concerning how Region 9 would evaluate visibility impacts from two power plants located on Navajo Tribal lands, proposed two more very different methods to implement a \$/dv improved metric.

NPS documents appear to utilize variations on the approaches proposed in the September 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. Don Shepherd of the NPS. 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 regional haze State Implementation Plans (SIPs) submitted to EPA by western states. This review indicates no state has relied on the \$/dv improved measure to make a BART determination. The 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.

As a result of our review of the determinations by other states, Ecology is being consistent in using \$/ton of pollutant reduced as the primary cost analysis measure to determine BART.

5. Ecology should evaluate cumulative visibility improvement from a control technology. Specifically, EPA Region 9 proposed two methods to consider cumulative visibility improvement methods. Wyoming evaluated cumulative visibility improvement for BART and reasonable progress determinations. Oregon considered cumulative benefits for the Boardman Power Plant SCR addition for reasonable progress.

**Response:**

See response to NPS Comment 4.

The Wyoming and Oregon SIP submittals do not reflect the use of cumulative visibility improvement as the determining factor for their BART determinations, only for determining reasonable progress. Oregon's BART determination is clearly based on a \$/ton pollutant removed analysis.

## **Response to comments from the United States Department of Agriculture, National Forest Service:**

1. Post combustion controls can do a better job of NO<sub>x</sub> reduction and visibility improvement than what is proposed. Need to reconsider the value of visibility improvement and require additional controls through SCR or SNCR.

### **Response:**

See responses to comments to NPS and Dr. Ranajit Sahu given above.

2. The proposed BART control does little to improve visibility at USFS Class I areas.

### **Response:**

The proposed controls provide essentially the same degree of visibility improvement at the nearby USFS Class I areas as the adjacent NPS Class I areas. As noted in the Technical Support Document and in the BART analysis by the company, visibility improvements accrue at all Class I areas within 300 km of the plant as a result of implementing the proposed BART emission limits. One of the largest reductions from the proposed BART controls at TransAlta occurs at the Goat Rocks Wilderness, a USFS Class I Area.

3. Actual SO<sub>2</sub> emissions are far less than the permitted emissions. In 2008 reported to be 2318 tons per year compared to the permitted rate of 10,000 tons per year. While 2008 the plant operated only at 80% capacity, if a limit based on the 2008 actual emissions and 100% capacity, an emission limit reflecting 100% capacity would be approximately 2918 ton SO<sub>2</sub> per year. Ecology should establish a new emission limit for SO<sub>2</sub> from this plant.

### **Response:**

The SO<sub>2</sub> emission limit of 10,000 tons per year has been determined by EPA to be BART for SO<sub>2</sub> from this facility. To reduce the SO<sub>2</sub> emission limitation below this level will have to be accomplished outside of the BART Compliance Order.

4. Ecology determined SCR to be technically feasible, but did not select it as BART due to costs on a \$/ton removed basis. The SCR cost presented is accurate at a -20% / +50% level in contrast to the expected accuracy of ±30% in the EPA Control Cost Manual.

### **Response:**

Ecology considers the EPA Control Cost Manual, EPA's newer control technology cost analysis software (CUECost), and the cost analysis produced by TransAlta's consultant to be equivalent in level of accuracy. The consultant's cost analysis tool is used on a routine basis by the consultant for other clients and in producing BACT determinations.

5. SCR Costs evaluated on a 15-year period contrasted with the 20-year lifetime in the Control Cost Manual and TransAlta's May 2008 response to comments.

**Response:**

The 6th edition of the Control Cost manual uses a 20-year lifetime for an SCR system. The 15-year period is reasonable for other reasons and the difference in annual cost from the 5-year difference is small.

State actions outside of the Regional Haze process will have an effect on the expected lifetime of this facility. Most notable is a Governor's Executive Order that requires Ecology to work with TransAlta on an agreed order that would reduce the emissions of greenhouse gases from the plant to meet the requirements of the Greenhouse Gas Emission Performance Standard in Chapter 173-407 WAC by 2025. In order to meet that standard, the plant will have to be functionally replaced by another generation source, have installed ad-on carbon dioxide capture technology, and have started sequestering that collected carbon dioxide. In either case, the lifetime of the facility and any new add-on emission controls are anticipated to be limited.

Since the agreed order required by the Governor's Executive Order has not been developed and signed, we have to assume that the lifetime of the plant is not a consideration in the calculation of cost-effectiveness for this facility.

6. Using \$/ton of pollutant reduced offers no consideration of visibility improvement, let alone cumulative impacts at multiple Class I areas. While the BART guideline does not offer specific guidance on how to consider visibility in assessing cost-effectiveness, the guideline does mention the use of a metric such as \$/dv. The FLMS developed draft guidance in Sept. 2008 and provided it to Ecology for its consideration. In addition, EPA region 9 developed a different methodology on proposed for consideration of visibility improvement in cost-effectiveness. The NPS has compiled proposed and final BART determinations that they have received. The cumulative cost-effectiveness from those proposed and final BART determinations show cumulative cost-effectiveness of \$0.6 million/dv to \$15.3 million/dv. Using this background, the cost-effectiveness of SCR is \$8.5 million/ dv (sum of 98th percentile across all affected Class I areas) is reasonable and SCR is cost-effective. We advocate that Ecology reconsider the cost-effectiveness of SCR and the potential benefits.

**Response:**

See our responses to the NPS Comment 4.

7. Ecology should quantify the visibility improvement likely to occur from implementation of the Flex Fuels project both the SO<sub>2</sub> and the NO<sub>x</sub> reductions that are proposed. Using only the visibility reductions from the NO<sub>x</sub> reduction underestimates the actual visibility improvements anticipated.

**Response:**

After the public hearing, we requested that TransAlta analyze the expected visibility benefits from use of the Flex Fuels project using both the NO<sub>x</sub> reduction and the anticipated SO<sub>2</sub> reduction resulting from use of the Flex Fuels project and PRB low sulfur coals. The use of PRB coals is anticipated to result in a reduction of 1,287 tons/yr from baseline SO<sub>2</sub> emissions rates. With the effect of the SO<sub>2</sub> reduction included in the modeling analysis, the minimum visibility improvement at a mandatory Class I Area is projected to be 0.067 dv. The modeling is discussed in Draft Support Document for BART Determination for TransAlta Centralia Generation, LLC Power Plant, Centralia, Washington, revised April 2010, p. 19.

8. Provisions associated with the BART determination (in the mediation agreement) should be separated from the voluntary mercury reductions to remove the non-enforceability provisions intended to cover the voluntary mercury reductions.

**Response:**

The BART determination language in the mediation agreement will be superseded by the BART regulatory order to be issued to the facility. As a result, the “non-enforceability” considerations of the BART portions of the mediation agreement go away.

9. Ecology should not limit itself from opportunities to reduce haze-causing emissions at the TransAlta Centralia plant for the next 20 years.

**Response:**

The mediation agreement does not limit our ability to come back to TransAlta for additional reductions in the context of reasonable progress toward meeting the visibility goal. The agreement only provides that through 2018 we will not impose any new requirements as a result of regional haze requirements. Such requirements could be imposed as part of the long-term strategy included in the 2018 regional haze SIP.

**Response to consolidated comments in Form Letter #1, Sierra Club Members:**

1. The Clean Air Act requires power plants to reduce haze-causing pollutants, including nitrogen oxides, and toxic chemicals like mercury. Washington should require the most effective pollution controls to reduce TransAlta's nitrogen oxide and mercury emissions. Without these controls, the Centralia coal plant will continue to unnecessarily obscure views and contaminate water and wildlife in our national parks and wilderness areas for decades to come.

**Response:**

Thank you for your comments on the proposed Settlement Agreement and Consent Decree between the Washington State Department of Ecology and TransAlta regarding the company's coal-fired power plant near Centralia.

Staff members with Ecology's Air Quality Program reviewed your comments and offer these responses:

**Sufficiency of nitrogen oxide controls:** Staff analysis of the TransAlta facility near Centralia concludes that the terms of the Settlement Agreement satisfy requirements for Best Available Retrofit Technology (BART). BART is the standard that applies to this facility. Under BART, the selection of an emission control technology is based on a multi-factor analysis. These factors include non-air quality impacts, visibility impacts, cost of the equipment, and remaining expected plant life.

It is important to note that many of coal-fired power plants that are reporting 80 to 90 percent emission reductions did not have emission controls prior to the installation of this technology.

In addition, many of the 80 to 90 percent mercury reductions required by jurisdictions outside Washington only apply to new facilities, with lower or no requirements for existing facilities.

Thank you again for your comments and for your interest in helping to protect Washington's air quality and environment.

### **Response to consolidated comments in Form Letter #2, Sierra Club Members:**

1. From health care professionals to park rangers to fishermen, the Washington public has grave concerns about what this plant generates in our communities. As the State's largest polluter for global warming, mercury and haze (from nitrogen oxide pollution), the cumulative impact of this plant affects Washingtonians from every walk of life. The State should not move forward with the Settlement Agreement as proposed until a more substantive review can take place.

There are three main problems with this Settlement Agreement with regard to haze as it now stands:

1. This agreement is insufficient in controlling nitrogen oxide, the main cause of haze in our national parks and wilderness areas.
2. The pollutant-by-pollutant process has distorted the pollution impacts of this plant on public health.
3. The public process has been insufficient.

**Response:**

Thank you for your comments on the proposed Settlement Agreement and Consent Decree between the Washington State Department of Ecology and TransAlta regarding the company's coal-fired power plant near Centralia.

Staff members with Ecology's Air Quality Program reviewed your comments and offer these responses:

1. **Sufficiency of nitrogen oxide controls:** Staff analysis of the TransAlta facility near Centralia concludes that the terms of the Settlement Agreement satisfy requirements for Best Available Retrofit Technology (BART). BART is the standard that applies to this facility. Under BART, the selection of an emission control technology is based on a multi-factor analysis. These factors include non-air quality impacts, visibility impacts, cost of the equipment, and remaining expected plant life.
2. **Plant impacts on public health:** A pollutant-by-pollutant approach is the only applicable scientific standard. At this point, no scientific method has been developed to measure combined pollutants' interactions and effects.
3. **Sufficiency of public process:** The State of Washington entered into confidential mediation on these issues at TransAlta's request. Mediation enabled the State to avoid potentially lengthy and costly litigation over these issues. Once the proposed Settlement Agreement was near completion and announced publicly, Ecology began its normal public participation process, which included a formal public comment period and a public hearing.

Thank you again for your comments and for your interest in helping to protect Washington's air quality and environment.

**Response to testimony from October 14, 2009, Public Hearing on proposed TransAlta mediation agreement:**

Mark Quinn, Washington Wildlife Federation:

Thank you for your views. The Governor's Executive Order, 09-05 plus the program in Chapter 70.235 sets up an approach to reducing our states greenhouse emissions and promoting 'greener' energy sources. One element of the Executive order directs the Department of Ecology to work with TransAlta to establish an agreed order for the company to reduce its emissions to meet the greenhouse gas emission requirement in Chapter 80.80 RCW by 2025.

Randy King, Superintendent Mt. Rainier Natl. Park:

Thank you for your views. As noted in our presentation at the hearing, Ecology is concerned with the mercury emissions from the facility and has worked with the company on a voluntary approach to reduce the emissions on a schedule that is faster than would be accomplished by

waiting for EPA to complete new rules. We have addressed the concerns about the level of NO<sub>x</sub> control more thoroughly in our response to written comments.

Johnathan Smith, Maia Face, Adam Fleisher:

We acknowledge your views that the mediation agreement doesn't result in enough mercury control, and that the nitrogen oxides reduction proposal in the BART order is inadequate. Ecology respectfully disagrees with your assessments, as more fully described in the responses to written comments.

Shane Macover:

When issued as final documents, the mediation agreement and BART order will be legally binding and enforceable documents, not listings of voluntary actions.

Janette Brimmer, Earth Justice:

Thank you for your views on nitrogen deposition, and climate change. Your oral comments on the BART determination and mercury control and other aspects of the Mediation Agreement are covered by our responses to written comments.

Donna Albert:

We appreciate your thoughtful views on the subject of coal free electric power and stopping the ongoing climate change.

Doug Howell, Sierra Club:

Thank you for your views on the Confidential Mediation process and your views of what would constitute adequate public involvement. Your direct questions and concerns about the Mediation Agreement and its content and process are covered in response to Earth Justice's written comments.

Your concerns about the Air Operating Permit process are outside of the scope of this hearing. Your concerns about greenhouse gas emissions from the TransAlta facility are outside the scope of this hearing, but are being addressed through the process included in the Governor's Executive Order 09-05.

**Ecology's Response to Comments on the Draft TransAlta BART  
Technical Support Document and Compliance Order**

**Appendix**

**Written Comments and Hearing Transcript**

**Comments on**  
**TransAlta Coal-fired Power Plant, Centralia, Washington**  
**Preliminary BART Determinations for NO<sub>x</sub> and Proposed Voluntary Mercury Reduction**

By  
Dr. Ranajit (Ron) Sahu

1. I have been asked by the Sierra Club to review the ongoing assessment of the Washington Department of Ecology of existing and proposed controls of Nitrogen Oxide (“NO<sub>x</sub>”) emissions from the coal-fired power plant located in Centralia, Washington and owned by TransAlta Centralia Generation, L.L.C. (“TransAlta”). I have also provided comments on the proposed voluntary mercury reduction program at Centralia.

2. My background and qualifications are as follows: I have a Bachelor of Technology Degree with Honors from the Indian Institute of Technology, and a Masters of Science in Mechanical Engineering and Ph.D. in Philosophy, both from the California Institute of Technology. I have over 18 years of experience in the fields of environmental, mechanical, and chemical engineering including program and project management services as well as design and specification of pollution control equipment. In that time I have successfully managed and executed numerous projects. This includes basic and applied research projects, design projects, regulatory compliance projects, permitting projects, energy studies, risk assessment projects, and projects involved the communication of environmental and technical data to the public. I have provided and continue to provide consulting services to numerous private sector, public sector, and public interest clients. My clients over the past 18 years have included steel mills, petroleum refineries, cement companies, aerospace companies, power generation facilities, various manufacturers of equipment, chemical distribution facilities and various public sector entities such as the Environmental Protection Agency, U.S. Department of Justice, California Toxic Substances Control, municipalities etc. I have performed projects in 45 states. In addition to my consulting work, I have taught and teach numerous courses at several Southern California universities, including University of California at Los Angeles (air pollution), University of California at

Riverside (air pollution and process hazard analysis), and Loyola Marymount University (air pollution, risk assessment, hazardous waste management).

3. I have reviewed a number of documents from TransAlta, consultants retained by TransAlta, and from the Department of Ecology, including analysis and reports by CH2M Hill and Black and Veatch. I have also had one telephone conversation with Mr. Al Newman of Ecology. Unfortunately, it appears that a number of documents that are relevant to the consideration of NOx controls have been withheld by the Department of Ecology which has hampered my ability to be sure that I have all the relevant information and it has hampered my ability to fully analyze emissions and control technologies for the TransAlta Centralia facility (the “Plant”).

### **NOx BART**

4. The electrical output of each of the two boiler units at the TransAlta coal-fired power plant located in Centralia, Washington, is 702.5 MW net.<sup>1</sup> The units are tangentially fired and currently use Powder River Basin (“PRB”) coals. They are anticipated to use PRB coals for the foreseeable future. TransAlta and the Department of Ecology claim that Best Available Retrofit Technology (“BART”) for NOx emissions from each boiler is the current set of combustion controls (called the “LNC3” combustion controls) along with the completion of the “Flex Fuels” project (so characterized by TransAlta) and the full use of PRB coals.<sup>2</sup> The expected NOx emissions reduction is around 20% of current (0.3 lb/MMBtu) emissions based on modeling conducted by the applicant. Thus, the expected post-Flex Fuels NOx levels are expected to be approximately 0.24 lb/MMBtu. Since the units already have the set of combustion controls (low NOx burners, close-coupled and separated OFA installed during 2000-2002) and already fire PRB coals, the expected 20% reduction is to accrue from the Flex Fuels project, which appears

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<sup>1</sup> While there is no discussion of reduction of the Unit ratings in this matter, the applicant notes in its December 2008 submittal that it evaluated NOx emission rates for the “...maximum potential sustainable load (663 MW)...” It is not clear why the Vista modeling would be limited to this lower net load, nor it is clear if the imputed NOx reductions of 20% would be sustained at the higher and current maximum load of 702 MW. Ecology or the permitting entity should clarify this issue and analyze whether the 20% would actually be sustained at the higher load of 702 MW.

<sup>2</sup> It appears that the facility has been using PRB coal for quite some time and almost exclusively since late 2007.

to be something the Plant already wants to do for other reasons and which appears to have been a project the Plant was working toward since closing the Centralia mine around 2006. Thus, BART is to be met with no additional incremental effort at NO<sub>x</sub> reduction by TransAlta. Not surprisingly, the Plant collectively has significant visibility impacts for a number of Class I areas, even after implementation of the NO<sub>x</sub> BART option proposed by TransAlta that Ecology appears ready to accept.

5. From the description provided, it does not appear that the Flex Fuel project is geared towards NO<sub>x</sub> controls, per se. While combustion modeling may indicate that there may be a 20% reduction in NO<sub>x</sub> from Flex Fuels, this is incidental to the overall goals of what is essentially an efficiency improvement project. Unfortunately, no technical details for this combustion modeling are available on the record in order to determine the appropriateness of the assumptions made, and the overall usefulness or accuracy of the analysis.<sup>3</sup> It is therefore clear that Ecology has not reviewed the combustion modeling analysis. Even if, contrary to what appears in the file (see detailed discussion of NO<sub>x</sub> analysis below), the Flex Fuels project could be regarded as a NO<sub>x</sub>-reduction project, the record is wholly insufficient to know and understand whether a 20% reduction is at all realistic or meaningful.

6. The major error in the BART analysis is the rejection of Selective Catalytic Reduction (“SCR”) as the NO<sub>x</sub> control option for the boilers. Although Ecology erroneously declares SCR to be technically infeasible, it is clear from the applicant’s analysis and Ecology’s own summary (see Table 2-1) that SCR is a technically feasible option.<sup>4</sup> The only impediment to its installation seems to be “...the lack of room...” at the boilers for an easy SCR installation. Although TransAlta claims that the configuration is tight, there is scant engineering detail regarding the congestion. In response to Ecology’s questions regarding SCR as discussed in the initial BART application, the applicant provided three figures (3-3 through 3-5) in its revised BART application purporting to support its contention that space was unavailable for the SCRs. Specifically, see question 14 in Ecology’s April 25, 2008 letter to TransAlta. In response, on

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<sup>3</sup> Personal communication with Mr. Newman of Ecology, October 2009.

<sup>4</sup> Ecology notes in Section 4.1 of its January 9, 2009 document that “...the Flex Fuels project and SNCR are the only technically feasible controls....”

May 23, 2008, CH2M Hill notes that “the revised BART analysis will provide a more detailed explanation.” The additional detail was apparently the three figures 3-3 through 3-5 in the revised July 2008 application, which figures are inadequate to support or assess the assertions regarding physical limitations. Simple examination shows that these figures do not contain anywhere near the level of detail that Ecology asked for or would be needed to make a proper engineering assessment of the space or retrofit difficulty for SCR. These figures, at the scales provided, simply do not make the case that space may or may not be available for SCR. They certainly do not make the case for an engineering assessment of the degree of difficulty of the retrofit. Figure 3-3 is a plan view of the entire facility in which the scale and distances are barely legible. Figure 3-4 is an elevation with illegible details and a SCR box pasted onto the figure. Figure 3-5 is a photograph showing one single side view perspective of the connection between Unit 1 and its ESP. Collectively, they do not provide any details as to where the applicant assumed the one-SCR or two-SCR options would be located, the length of piping runs in the modified configuration, etc. In addition, the application does not discuss the potential for moving or re-configuring existing equipment (such as the ESPs) or piping runs that would render the retrofit less problematic. In order to do a proper evaluation of the SCR option, several details need to be provided as discussed below.

7. A fundamental question is the level of NO<sub>x</sub> emissions from the boilers themselves, prior to any control. As noted earlier, the current boiler NO<sub>x</sub> emissions are approximately 0.3 lb/MMBtu, dropping to 0.24 lb/MMBtu or so with the implementation of the Flex Fuels project. However, these emissions are still too high given what we know is happening elsewhere in the industry. Numerous existing PRB-fired coal boilers, currently operating (and operating for at least the last 5 years or more) have much lower boiler out NO<sub>x</sub> emission rates – generally well below 0.15 lb/MMBtu. A survey of the EPA’s acid rain database<sup>5</sup> shows, for example, lower NO<sub>x</sub> levels from pulverized coal boilers, including Scherer Units 1-4 (Georgia), Labadie Units 1-4 (Missouri), Rush Island Units 1-2 (Missouri), Meramec Units 1-2 (Missouri), Newton Units 1-2 (Illinois), and Deely Units 1-2 (Texas). Each of these older units burns PRB coals, from

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<sup>5</sup> [www.epa.gov/airmarkets](http://www.epa.gov/airmarkets)

various mines in the PRB with likely considerable variability in the coal nitrogen content,<sup>6</sup> and none of these units uses SCR or SNCR so their NOx emission levels reflect the use of low NOx burners and other strategies (such as OFA) in the boiler itself – strategies that TranAlta claims it uses effectively at the boilers in question. Tables 1-6 provide the data.

8. It should also be kept in mind that the units referenced above are not subject to stringent NOx permit limits and are therefore not carefully maintaining NOx performance. In other words, likely even lower NOx emissions from the boiler are possible, with careful control or with the use of adaptive combustion controls such as NeuCo. Nonetheless, it is obvious from Tables 1-6 that boiler-out NOx emissions from a well controlled and operated PRB coal combustion unit should be no more than 0.10 to 0.15 lb/MMBtu. Within this range, as the data shows, it should be possible to achieve levels closer to or lower than 0.10 lb/MMBtu.

9. Further support for these levels of boiler-out NOx levels is provided in many recent technical papers that were not discussed in the record and in the development of the BART limits. Examples of these include:

- G.T. Bielawski, et. al., “How Low Can We Go? Controlling Emissions in New Coal Fired Power Plants,” U.S. EPA/DOE/EPRI Combined Power Plant Air Pollutant Control Symposium: “The Mega Symposium,” August 20-23, 2001 Chicago, Illinois, U.S.A. This paper states that “For PRB coal, emission levels down to 0.008 lb/MMBtu NOx , 0.04 lb/MMBtu SO<sub>2</sub>, and 0.006 lb/MMBtu particulate with a high level of mercury capture can be achieved.”
- A. Kokkinos et al., “Which is Easier: Reducing NOx from PRB or Bituminous Coal, Power 2003.” This paper discusses retrofits at Georgia Power Company’s Plant R.W. Scherer Units 3 and 4 (which burn PRB coal) with separated over fire air. The paper shows that Units 3 and 4 achieved 0.13 lb/MMBtu of NOx after the retrofit.
- Robert Lewis, et al., Summary of Recent Achievements with Low NOx Firing Systems and Highly Reactive PRB and Lignite Coal: as Low as 0.10 lb NOx/MMBtu

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<sup>6</sup> As such, these NOx levels should also be achievable using the 50:50 blend coals that may be used as the alternate fuel in the proposed unit.

- Patrick L. Jennings, Low NOx Firing Systems and PRB Fuel; Achieving as Low as 0.12 LB NOx/MMBtu, ICAC Forum 2002.
- T. Whitfield, et al., Comparison of NOx Emissions Reductions with PRB and Bituminous Coals in 900 MW Tangentially Fired Boilers, 2003 Mega Symposium.
- Galen Richards, et al., Development of an Ultra Low NOx Integrated System for Pulverized Coal Fired Power Plants. This paper noted that use of the TFS 2000™ firing system achieved NOx emissions of 0.11 for PRB coals or approximately 70-75% reduction over the baseline NOx emissions. Additional NOx reduction of approximately 0.03 lb/MMBtu over the optimized TFS 2000™ levels was achieved using the Ultra-Low NOx firing system technology.

10. None of this was discussed or compared in the development of the BART analysis. It is striking that the Ecology did not review the technical literature above or the performance of other comparable PRB-fired units in assessing the NOx BART emissions levels. It would also appear that when Ecology asked TransAlta as to why their NOx emissions from the boilers was so high (i.e., 0.3 lb/MMBtu), that TransAlta had no technical answer or response.<sup>7</sup> In any case, there is no support for the contention that the boiler out NOx emissions levels should be as high as even 0.24 lb/MMBtu when using the supposed controls that the boilers have, along with firing PRB coals. Rather, it should be closer to 0.10 lb/MMBtu, especially for a well-run, baseload unit. This is a crucial component of NOx control and BART analysis that this plant and Ecology simply have not done.

11. The issue of boiler-out NOx emissions is crucial, not just for understanding and requiring best controls for NOx with existing technology, but also because minimizing boiler NOx emissions will require less NOx control after the boiler using add-on approaches such as SNCR or SCR. In particular, the impact on SCR will be considerable. For example, at a minimum, if the boiler-out NOx emissions are kept to the levels outlined above, it will mean that the subsequent SCR could be smaller in size, obviating or greatly reducing any of the space constraints that are claimed to be a problem at the Centralia facility. For example, there is no

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<sup>7</sup> Personal communication with Mr. Newman of Ecology, October 2009.

analysis of how much SCR catalyst would be needed for various levels of NO<sub>x</sub> reductions, for example 90%, 80%, 70%, or even just 50% more than achieved with the boiler-out control levels discussed above. Even at 50% reduction, which would require the least amount of catalyst, the combined boiler-out NO<sub>x</sub> level of 0.10 lb/MMBtu and 50% reduction would result in a NO<sub>x</sub> emissions level of 0.05 lb/MMBtu, which is approximately a fifth of the current BART proposed limit of 0.24 lb/MMBtu. Such a reduction will also reduce NO<sub>x</sub>-related visibility impacts from Centralia by approximately 80%. The space and weight requirements for a 50% reduction SCR would be far smaller than a 90% or 80% reduction SCR. Yet, this crucial aspect and interconnectivity between boiler-out NO<sub>x</sub> emissions and SCR size seems to be entirely absent in TransAlta's analysis or Ecology's review. For this reason alone, it is premature to disregard and set aside SCR as has been done in TransAlta's BART analysis and Ecology's approval of it.

12. In fact, all of the arguments or rationales regarding physical space configurations at the existing Plant against a properly-sized SCR are not actually issues associated with the technical feasibility of SCR, but rather issues of how much TransAlta is willing to spend to adequately control NO<sub>x</sub> emissions. Further, on the issue of cost effectiveness of SCR for the Plant, the cost assumptions in TransAlta's materials do not appear to be tied to the supposed retrofit difficulty, since there is no supporting documentation for the size of the SCR, the physical limitations at the plant, or associated costs. The assertions are unsupported and the connections are not transparent. Yet, Ecology seems to have accepted the applicant's initial and revised cost assessments without question, a failure of Ecology's obligations relative to BART determinations. Numerous questions remain that must be answered and examined in order for Ecology, the permitting entity, and importantly, the public, to assess TransAlta's claims that SCR control technology is not BART, including:

(i) what was the boiler-out NO<sub>x</sub> emissions and why (especially in view of the discussion presented above)?

(ii) what was the basis for the SCR size used in the analysis?

(iii) what was the basis for the SCR cost estimates in the initial application, where the costs were ascribed to “vendor”?<sup>8</sup>

(iv) Who or what vendors provided data? What type of data were provided by the vendors? Were the vendors provided with engineering drawings (as opposed to Figures 3-3 through 3-5) in order to develop costs estimates?

(v) Why was the capital cost of two SCRs double that of one SCR? Two SCRs would or could share several components such as the reagent storage system, etc., making a simple “doubling” highly unlikely (further demonstrating cursory, as opposed to analytical, review by Ecology.)

(vi) What is the basis of assuming that construction costs and balance-of-plant (items not defined) costs are each an additional 50% of the SCR capital cost?<sup>9</sup>

(vii) What is the basis of the 16% surcharge?<sup>10</sup>

(viii) Finally, what was the basis for assuming that the NO<sub>x</sub> level with SCR would be 0.07 lb/MMBtu. Even with the current (or pre-Flex Fuel) NO<sub>x</sub> level of 0.30 lb/MMBtu and an SCR efficiency of 90%, the outlet NO<sub>x</sub> level would be 0.03 lb/MMBtu. Or, as discussed above, the combination of a boiler-out NO<sub>x</sub> emissions level to 0.1 lb/MMBtu and use of a 50% reduction SCR would result in a NO<sub>x</sub> emission level of 0.05 lb/MMBtu. Just dropping the NO<sub>x</sub> level from 0.07 lb/MMBtu to 0.03 lb/MMBtu or 0.05 lb/MMBtu would lower the calculated cost effectiveness, bringing it down to the range of acceptable cost-effectiveness, all other factors kept constant. Yet, this final NO<sub>x</sub> level was not examined critically by Ecology. Based upon what is readily known regarding SCR or combined SCR and boiler-out controls, NO<sub>x</sub> should be lower and therefore visibility more improved, than indicated by TransAlta’s analysis, accepted by Ecology. Further, there is no detail or support for why the baseline NO<sub>x</sub> emissions level of 0.30 lb/MMBtu could not be significantly lower. It appears from what is known, to be wholly inaccurate and/or inflated.

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<sup>8</sup> January 2008 BART Analysis for Centralia Power Plant, pp 43/80 (.pdf version). The SCR capital cost is noted as 204 million dollars and the Factor/Source is listed as ‘Vendor,’ with no further explanation or detail that can be verified.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

(ix) While cost is one factor in the BART determination, it must be weighed against visibility and the importance of preserving Class I resources. Ecology should give a detailed explanation of how it balanced these factors, and how it arrived at the final balance of these factors specific for the TransAlta facility at Centralia. In particular Ecology or the permitting entity should also clarify what the acceptable cost-effectiveness limit is for NO<sub>x</sub>.

(x) Why did the “vendor” basis change in the revised July 2008 application to CH2M Hill? How did the consultant CH2M Hill obtain its base cost estimates for SCR? Why are the form of the costs different than how costs were presented in the January 2008 analysis? Why are the SCR costs higher in the July 2008 analysis? What was or what were the retrofit factors that may have been applied to inflate the base costs for SCR? What was the basis for the retrofit factors? How were they supported by actual field conditions? What was the geometry and location for the single SCR (on one boiler) and two SCR configurations? Also, all of the questions posed earlier regarding the level of NO<sub>x</sub> after SCR (i.e., 0.07 lb/MMBtu) are also applicable.

(xi) What was the size or sizes of the SCRs assumed in the analysis? How many catalyst layers were assumed to be present? What are the details regarding the reagent and reagent processing or handling? Answers to these and related types of questions affect the physical layout, the degree of retrofit ease, and the costs of the project.

13. There seems to have been much confusion regarding the choice of baseline periods. Even though TransAlta initially accepted 2006-2007 as the proper baseline for cost effectiveness, in its December 2008 submittal, the applicant seems to have backtracked. While noting that the 2006-2007 period was “not representative” because “...emissions....were lower on average...than more representative periods...” and that there was “...emissions variability...” the applicant provides nothing factual or specific. It simply selects 0.30 lb/MMBtu as the baseline. While the actual impact of this may be small, Ecology should provide a thorough discussion regarding baseline in its Determination Document. The January 9, 2009 document does not discuss this issue in any detail.

14. Ecology notes that Transalta “continues to investigate” the use of neural net controls such as by NeuCo or others as a “potential supplementary or polishing” technology. It is not clear if such technologies will be implemented or not. Utilities have routinely expected and obtained 10-15% additional NO<sub>x</sub> reduction by implementing such techniques. It is not clear why these technologies are any less reliable in predicting NO<sub>x</sub> reduction than the Flex Fuel project. In the latter, the imputed NO<sub>x</sub> emissions derive from computational modeling of the project modifications – and do not appear to result from any specific changes to hardware. As such, it is not clear why Ecology would not expect and assume a further 10-15% NO<sub>x</sub> reduction from the implementation of neural net technology implementation.

15. Without answers to the above and related questions, it is simply impossible to verify the applicant’s cost (and resulting cost-effectiveness) assumptions, and it appears that Ecology did not do so. As a result, without much greater detail in the record, it is entirely premature and incorrect to reject SCR as the BART choice for these two units. In combination with the expected 0.24 lb/MMBtu that would result from the existing controls and Flex Fuel, SCR at even 90% efficiency would imply a NO<sub>x</sub> emission rate of 0.024 lb/MMBtu. Or, in combination with a boiler NO<sub>x</sub> emissions level of 0.1 lb/MMBtu, a far smaller SCR would still provide a NO<sub>x</sub> emission level in the same range. These vastly reduced emissions would significantly lessen the adverse visibility impacts of the plant on numerous Class I areas, a key component of BART. As noted earlier, all NO<sub>x</sub> related visibility impacts from Centralia should be reduced by 80% or so.

16. From my analysis of the file, it is my opinion that SCR cannot be ruled out as BART for the Plant. Given the current very large, adverse impacts from the Plant to numerous Class I areas, Ecology’s review and acceptance of the applicant’s meager and unsupported analysis regarding SCR is puzzling, and not in keeping with BART and visibility requirements.

17. In view of the fact that SCR has not been properly analyzed, it is premature to focus any significant attention on the next lower control, namely SNCR. While EPA has provided extensive comments to Ecology relating to SNCR, it is improper to focus the control discussion on SNCR as opposed to SCR. Plainly, SNCR will cause greater emissions of ammonia as

opposed to SCR resulting in additional production of secondary nitrate aerosols with attendant visibility impacts. Also, SNCR NO<sub>x</sub> reduction levels will be far smaller than those which can be obtained from the use of SCR.

18. Ecology acknowledges a 5-step BART process (see January 9, 2009 BART Determination Support Document, Section 1.1). As can be seen above, Ecology has not properly completed that process. Also, as part of the 5-step BART process, Ecology notes that the state can consider additional controls beyond those that are available, but is not required to do so. This one plant has a significant impact on many Class I areas, and therefore Ecology must consider using its authority to consider additional controls. If Ecology does not do so for this Plant, it raises serious question regarding whether Ecology will consider adequate controls to address visibility impacts from any emissions in Washington state.

19. There is a question regarding whether the Flex Fuel project might trigger New Source Review (“NSR”) that must be examined by either or both the permitting entity and Ecology. Ecology’s summary contains contradictory statements. On page 10 of 25 of the January 9, 2009 document, it states that “[T]he Flex Fuel project....does not increase the boilers’ potential steam generating capacity.” Yet, later on the same page, it also states that “[T]he lower nitrogen content of the PRB coals combined with the lower total quantity of fuel required to produce the same heat input to the boilers along with the potential for additional steam production after the project has been completed....” TransAlta, the permitting entity and Ecology should clarify whether the Flex Fuel project is a purely efficiency driven project in which heat input and emissions will not increase or if it involves debottlenecking the boiler island in any manner. If the latter is possible, Ecology must examine the NSR aspects of this project.

### **Proposed Voluntary Mercury Reduction**

20. It appears that TransAlta has committed to a voluntary emissions reduction effort with regards to mercury. The entirely voluntary effort also includes significant constraints, such as aiming for a goal of only 50% mercury reduction and a constraint of TransAlta not spending

more than 3 million dollars per year to achieve mercury reductions, regardless of whether the 50% is ultimately achieved.<sup>11</sup>

21. Based on conversations with Ecology,<sup>12</sup> it appears that TransAlta has completed and is in the midst of completing pilot and additional tests involving a variety of sorbents, boiler injection chemicals, and injection strategies in order to determine its path forward with regards to mercury reduction. Since none of the details, including results, of such tests are available, either to the public or to Ecology,<sup>13</sup> comments cannot be provided on any of these aspects.

22. However, it is clear that the stated goal of 50% mercury reduction, to be achieved at TransAlta's "sole discretion"<sup>14</sup> is a travesty. Far greater mercury reduction (over 90%) has been and can be obtained from PRB coals, as discussed below. It is not clear why Ecology feels that a goal of only 50% mercury reduction is acceptable.

23. Greater than 90% mercury removal has been achieved on a long term basis at PRB coal-fired power plants with activated carbon injection. For example, the Holcomb Unit 1 power plant, which burns PRB coal, achieved 93% mercury control in long term testing.<sup>15</sup> In addition, over a year of continuous mercury CEMS data is available for the WE Energies Presque Isle facility in Michigan, which burns PRB coal, and these data demonstrate that over 90% mercury control has been achieved on a continuous basis. This site is a Department of Energy test site, and the data is thus publicly available. Some of this data has been summarized in presentations and published articles<sup>16</sup>. Furthermore, at least two other full-scale, long-term mercury control demonstrations have been reported to continuously achieve 90%+ mercury control: at Rocky Mountain Power (Hardin) in Montana,<sup>17</sup> and at the Comanche Station in Colorado,<sup>18</sup> both of which burn PRB

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<sup>11</sup> See Ecology/TransAlta Settlement Agreement, Section B.4.

<sup>12</sup> Personal communication with Mr. Newman, October 2009.

<sup>13</sup> Ibid.

<sup>14</sup> Settlement Agreement, Section B.7.c.

<sup>15</sup> Sjostrom, Sharon, Evaluation of Sorbent Injection for Mercury Control, DoE Report Number 42307R27, December 2008.

<sup>16</sup> TOXECON™ Tests at PIPP Continue Successfully, PRECIP Newsletter No. 397, February 2009.

<sup>17</sup> Amrhein, J., Results of a Long-Term Mercury Control Project for a PRB Unit with an SCR, Spray Dryer and Fabric Filter, 11th Annual EUEC Conference and Expo Tucson, Arizona, January 30, 2008.

<sup>18</sup> Colorado Air Toxics Meeting Comanche 3 Project Update, Pueblo, CO, May 2009.

coal. It would also appear that Ecology was well aware that 90% mercury reduction is being obtained at numerous locations at US coal-fired power plants based on documents obtained from Ecology.<sup>19</sup>

24. The record does not appear to contain details of the current mercury levels in the PRB coal that is burned at the TransAlta boilers. Therefore, there is no discussion of what the expected mercury levels will be after TransAlta's voluntary effort (assuming, given its wholly-voluntary nature, that any reductions occur.) Providing this information (in lb/GW-hr or lb/TBtu) would allow for a direct comparison of the mercury emissions levels at other comparable PRB burning facilities.

25. For comparison purposes, we provide the mercury levels, tested back in 1999, as part of EPA's Information Collection Request (ICR), at various coal-fired power plants.

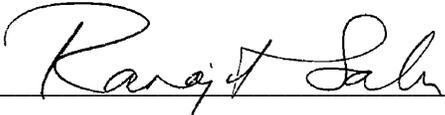
<b>Unit</b>	<b>1999 ICR Mercury Emission Rate, lb/TBtu<sup>20</sup></b>
Kline Township Cogen, Unit 1	0.0816
Scrubgrass Generating Company, Unit 1	0.0936
Mecklenburg Cogeneration Facility, Unit 1	0.1062
Dwayne Collier Battle Cogen Facility, Unit 2B	0.1074
Valmont, Unit 5	0.1268
Stockton, Unit 1	0.1316
SEI Birchwood Facility – Unit 1	0.2379
Intermountain Power Plant, Unit 2	0.2466
Logan Generating Plant, Unit 1	0.2801
Salem Harbor, Unit 3	0.3348
Clover Power Station, Unit 2	0.3529
AES Hawaii, Unit A	0.4606
Clay Boswell, Unit 2	0.6633
Craig, Unit 3	0.7248
W.H. Sammis, Unit 1	0.8291

<sup>19</sup> See letter from Ms. Carolyn Slaughter, ICAC, to Mr. Jay Manning, Director, Ecology, March 30, 2009. See also the possibility of obtaining 90% mercury reduction at Minnesota Power's Boswell Unit 3, as noted in the excerpt from the Boswell Unit 3 Environmental Improvement Plan. See also the technical paper Cost Effective Mercury Emissions Control at the Newmont TS Power Plant, by Seeliger, J., August 2008.

<sup>20</sup> A copy of the spreadsheet of mercury emission rates measured at these and other electrical generating units as part of the 1999 ICR is available for download at <http://www.epa.gov/ttnatw01/combust/utiltox/utoxpg.html>.

Charles R. Lowman, Unit 2	0.9706
Shawnee Fossil Plant, Unit 3	1.0507
Cholla, Unit 3	1.2066
Presque Isle, Unit 6	1.2217
Presque Isle, Unit 5	1.2622
Widows Creek Fossil Plant, Unit 6	1.3986

Dated: \_\_\_November 4, 2009\_\_\_\_\_



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Ranajit Sahu, Ph.D.



November 9, 2009

*Via Electronic Mail*

Sarah Rees  
Washington Department of Ecology  
Air Quality Program  
P.O. Box 47600  
Lacey, WA 98504-7600

Re: Proposed Ecology/TransAlta Settlement Agreement and Consent Decree  
TransAlta Centralia Generation, L.L.C., Centralia, Washington

Dear Ms. Rees:

Earthjustice submits these comments on the proposed Settlement Agreement and Consent Decree regarding the coal-fired power plant in Centralia, Washington, between the State of Washington, Department of Ecology (“Ecology”) and TransAlta Centralia Generation, L.L.C. (“TransAlta”). These comments are submitted on behalf of the National Parks Conservation Association, the Sierra Club, and Northwest Environmental Defense Center (collectively the “Conservation Organizations”).<sup>1</sup>

The National Parks Conservation Association (“NPCA”) is a national organization whose mission is to protect and enhance America's National Parks for present and future generations. NPCA performs its work through advocacy and education. NPCA has over 310,000 members nationwide with its main office in Washington, D.C. and 24 regional and field offices. NPCA’s regional Northwest office is located in Seattle, where it works on a variety of issues affecting Northwest National Parks such as Mt. Rainier, Olympic, and North Cascades National Parks. NPCA is active in advocating for strong air quality requirements in our parks, including submission of petitions and comments relating to visibility issues, regional haze State Implementation Plans, global warming and mercury impacts on parks, and emissions from individual power plants and other sources of pollutants affecting National Parks. NPCA’s members live, work, and recreate in all the National Parks of the Northwest, including those directly affected by the TransAlta coal-fired power plant in Centralia, Washington.

The Sierra Club is a national organization founded in 1892, with more than 60 chapters throughout the U.S., including the Cascade Chapter located in Seattle, Washington. The Cascade Chapter’s membership resides and recreates throughout the state. Sierra Club is devoted to the

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<sup>1</sup> The Conservation Organizations, with the Washington Wildlife Federation, also filed a Petition to the U.S. Department of Interior, National Park Service, requesting certification to Ecology that visibility impairment in Mt. Rainier and Olympic National Parks is reasonably attributable to nitrogen oxide emissions from the TransAlta Centralia coal plant. The petition is pending.

study and protection of the earth's scenic and ecological resources—mountains, wetlands, woodlands, wild shores and rivers, deserts, plains, and their wild flora and fauna. An important part of Sierra Club's current work at both the national and chapter level, is its Beyond Coal campaign which, among other things, focuses on retiring and reforming old coal-fired power plants that are significant contributors to health-harming soot and smog pollution, global warming pollutants, and hazardous pollutants such as mercury.

The Northwest Environmental Defense Center ("NEDC") is a regional non-profit organization, based in Portland, Oregon. NEDC works to protect the environment and natural resources of the Pacific Northwest, by providing legal support to individuals and grassroots organizations with environmental concerns, and engaging in litigation independently or in conjunction with other environmental groups. NEDC also provides hands-on experience for students to enhance their education in environmental law. NEDC is regularly involved in efforts to maintain or enhance the air quality of the Pacific Northwest by serving as a watchdog over Oregon's Department of Environmental Quality, Washington's Department of Ecology, and each state's respective permitting processes. Student volunteers regularly comment on proposals for new air permits and permit modifications, monitor current permits in search of violations, and monitor major air quality issues, such as changes in administrative regulations.

The Conservation Organizations object to the Settlement Agreement and Consent Decree (the "Agreement") as contrary to the law, not supported by the record or established engineering and science, and because the Agreement is contrary to the public interest.

I. THE NITROGEN OXIDE PROVISIONS OF THE AGREEMENT DO NOT COMPLY WITH THE REQUIREMENTS OF THE CLEAN AIR ACT AND ARE INADEQUATE TO CLEAN UP AND PROTECT THE AIR QUALITY OF WASHINGTON'S NATIONAL PARKS AND WILDERNESS AREAS.

A. Nitrogen Oxide Pollutants From The TransAlta Coal Plant Negatively Affect the Air Quality Of at Least Twelve Class I Areas

On an annual basis, the TransAlta Coal Plant in Centralia, Washington (hereinafter the "TransAlta coal plant") discharges approximately 12,000-16,000 tons of nitrogen oxides ("NO<sub>x</sub>").<sup>2</sup> NO<sub>x</sub> is a primary contributor to haze pollution. Haze pollution is adversely affecting the air quality in many of the region's national parks and wilderness areas.<sup>3</sup> The Clean Air Act

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<sup>2</sup> EPA emissions database <http://camddataandmaps.epa.gov/gdm/index.cfm>.

<sup>3</sup> See enclosed extinction analyses and conclusions from National Park Service demonstrating TransAlta coal plant's NO<sub>x</sub> emissions will be an increasing source of haze pollution in Washington's Class I areas and which provide: "NO<sub>x</sub> emissions from Centralia in 2002 were approximately 15,470 tons or approximately 36 percent of all point source NO<sub>x</sub> emissions in the State. Based on [Western Regional Air Partnership] WRAP projections, Centralia will be approximately 10 percent of ALL mobile and point source emissions in the State by 2018. 2018 Projections: Nitrate will become more important than sulfate for extinction at Olympic and

(“CAA”) requires that national parks and wilderness areas, identified in the CAA as “Class I areas,” must receive the highest degree of protection from all air pollution. 42 U.S.C. § 7472.

Almost twenty-five years ago, in 1985, the Department of the Interior (“Interior”) certified to the Environmental Protection Agency (“EPA”) that visibility in Mt. Rainier and Olympic National Parks, as well as all other Class I areas in the region, was impaired. Almost fifteen years ago, in 1995, the National Park Service (“NPS”) formally notified the Southwest Air Pollution Control Authority (now known as the Southwest Clean Air Agency or “SWCAA”) and Ecology that the impairment of visibility in Class I areas in Washington could reasonably be attributable to sulfur dioxide emissions from the coal plant in Centralia.<sup>4</sup>

The TransAlta coal plant currently employs a combustion control technology commonly-referred to as “Lo-Nox burners” (or “LNC3”) to control haze-causing NOx pollutants.<sup>5</sup> At this level of control, the TransAlta coal plant is impairing visibility in at least twelve Class I areas in the region, the second largest cumulative impact of any coal-fired power plant in the nation.<sup>6</sup> According to EPA’s Clean Air Markets Database, in 2007, the TransAlta coal plant was in the top 10 percent of worst polluters for NOx.

The CAA requires the clean-up of visibility pollution at Mt. Rainier and Olympic National Parks (as well as all other Class I areas in the region). 42 U.S.C. § 7491(a)(1). Despite some improvements in the TransAlta coal plant’s emissions, the air quality at Mt. Rainier and Olympic National Parks, and other Class I areas remains impaired, with haze pollution still primarily caused by the TransAlta coal plant.<sup>7</sup> As part of the requirements to clean-up and protect Class I areas, the CAA and EPA regulations and guidance require states to develop a State Implementation Plan (“SIP”) for addressing visibility impairment, 42 U.S.C. § 7491(b)(2) and 40 C.F.R. § 51.302, and as part of that SIP, to ensure that certain major sources of air pollutants, such as the TransAlta coal plant, employ Best Available Retrofit Technology (“BART”) to control pollutants that cause or contribute to haze pollution, including NOx. *Id.* The critical aspect of the visibility protection program is the requirement for each applicable implementation plan in which Class I areas are located to contain “emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal. The SIP and the BART determinations within it are subject to public process and the states must consult with the Federal Land Managers (“FLMs”) as part of the process. 42 U.S.C. §§ 7410 and 7491.

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Mount Rainier according to the WRAP projections.”

<sup>4</sup> See letters dated August 2, 1995 and October 16, 1995, enclosed with these comments.

<sup>5</sup> See Report of Dr. Ranajit Sahu, November 4, 2009, enclosed and incorporated herein.

<sup>6</sup> See enclosed graphs and material from NPS and TransAlta’s own extinction analyses in Ecology’s files.

<sup>7</sup> See Testimony of Mt. Rainier Acting Superintendent Randy King, October 13, 2009, copy enclosed.

To determine what constitutes BART for a source, Washington must employ a five-step process:

1. Identify all available retrofit control technologies;
2. Eliminate technically infeasible control technologies;
3. Evaluate the control effectiveness of remaining control technologies;
4. Evaluate impacts and document the results;
5. Evaluate visibility impacts.

Appendix Y to C.F.R. Part 51, Guidelines for BART Determinations Under the Regional Haze Rule, Section IV. See also 40 C.F.R. § 51.301 and 42 U.S.C. § 7491(g)(2).<sup>8</sup>

The proposed Agreement fails to conform to these BART requirements and processes.

**B. The Flex Fuels Project Can Not Properly Be Considered BART.**

The Agreement suggests that the TransAlta Coal Plant will be implementing “additional” NOx controls through the “Flex Fuels” project. Conservation Organizations disagree that the Flex Fuels project is an additional NOx control, or a NOx control that can be considered BART.

*1. Flex Fuels is not a NOx reduction technology or project.*

It is clear from the record that TransAlta has planned and implemented (and would have implemented regardless of any mediated agreement with Ecology), the Flex Fuels project over the course of the last several years.<sup>9</sup> It has been TransAlta’s plan and intent for years to move away from burning Centralia coal to the exclusive use of Powder River Basin (“PRB”) coal. Flex Fuels is a boiler efficiency project associated with the shift to PRB coal. Specifically, TransAlta, contrary to earlier representations and agreements with the state<sup>10</sup>, closed the Centralia mine in late 2006. From that time to the present, TransAlta has been shifting away from Centralia coal to PRB coal. TransAlta’s own website noted that the shift was complete at the end of 2007.<sup>11</sup> Any reduction in NOx emissions is entirely incidental to a project that has been proposed for non-NOx reduction reasons. Therefore, as noted in Dr. Sahu’s report, the Agreement attempts to satisfy BART requirements with the Flex Fuels project, yet with no

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<sup>8</sup> Visibility and BART requirements have also been incorporated into Washington and SWCAA regulations. See e.g. WAC 173-400-030, 173-400-151, SWCAA 400-030, 400-151.

<sup>9</sup> See e.g. information from Ecology in response to questions by the Conservation Organizations (hereafter “Ecology Answers”), that in September 2007, TransAlta was already referring to the Boiler Efficiency Project. TransAlta later renamed the project “Flex Fuels” in January 2008 BART submissions. <http://www.ecy.wa.gov/programs/air/TransAlta/Earthjustice.pdf>.

<sup>10</sup> Including agreements that TransAlta would, in exchange for generous tax treatment from the state, keep the mine operating and the jobs associated with it. TransAlta has continued to receive the tax benefits, even after the mine closure.

<sup>11</sup> See also Ecology Answers.

additional incremental effort at NO<sub>x</sub> reduction by TransAlta beyond what it would be doing anyway.

2. *There is no support in the record for the claimed NO<sub>x</sub> reduction from the Flex Fuels boiler efficiency project.*

Even if Flex Fuels were appropriately in the running as a BART technology intended to address NO<sub>x</sub> and haze pollution in Class I areas, Ecology has not properly analyzed the Flex Fuels project and cannot rely on the claimed 20% NO<sub>x</sub> reduction. As set forth in Dr. Sahu's report, there are no technical details regarding combustion modeling in Ecology's record and therefore no way for the public to determine the appropriateness of the assumptions made, or the overall usefulness or accuracy of the analysis by either TransAlta or Ecology regarding the NO<sub>x</sub> reductions that may occur as an incidental benefit of the Flex Fuels boiler efficiency project. It appears that the information was not requested by, or provided to, Ecology.<sup>12</sup> Therefore, it also appears that Ecology did not actually analyze NO<sub>x</sub> reductions from the Flex Fuel project. Instead, Ecology has relied on a bare assertion by TransAlta. There is no way for Ecology or the public to determine whether a 20% incidental benefit is realistic or even meaningful. Flex Fuels cannot be considered as BART, because Ecology has failed to actually engage in at least steps 3 and 4 of the analysis and as a result, cannot have properly engaged in step 5. See 40 C.F.R. § 51.301.

3. *Even after the application of Flex Fuels, the TransAlta coal plant will cause visibility impairments in twelve Class I areas.*

Even after implementation of the Flex Fuels boiler efficiency project, the TransAlta coal plant will continue to cause significant visibility impairments at Mt. Rainier and Olympic National Parks as well as other Class I areas in the region and the Columbia River Gorge. As noted above, the TransAlta coal plant's NO<sub>x</sub> pollution impairs visibility in 12 Class I areas, including Mt. Rainier and Olympic National Parks. Even after application of the Flex Fuels project, the cumulative negative impact is 33 deciviews.<sup>13</sup> EPA considers a 1 deciview impact to be a cause of an impairment (and anything over .5 deciviews to be a contribution to impairment.) The TransAlta coal plant's impact on Mt. Rainier National Park alone will be 5 deciviews even after implementation of the boiler efficiency project—five times the level EPA considers a cause of a negative impact.<sup>14</sup> This indicates that even if Ecology were considering the boiler efficiency project as BART, Ecology has failed to adequately apply Step 5 of the BART analysis regarding improvements to visibility. See 40 C.F.R. § 51.301.

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<sup>12</sup> Sahu Report at paragraph 5.

<sup>13</sup> A deciview is a measure of visibility impairment.

<sup>14</sup> See generally enclosed information and extinction graphs from NPS.

C. Selective Catalytic Reduction Technology Is BART.

The CAA, EPA regulations and guidance, state law, and the record all support Selective Catalytic Reduction technology (“SCR”) as BART. As pointed out by Dr. Sahu, rejection of SCR is a “major error” in TransAlta and Ecology’s determination of BART for the TransAlta coal plant.

1. *SCR is technically feasible.*

SCR is technically feasible, despite Ecology’s unsupported statement to the contrary. Dr. Sahu notes that while Ecology makes a bald statement that SCR is technically infeasible, such a claim is not actually made in TransAlta’s analysis or Ecology’s own summary.<sup>15</sup> The only impediment listed is the “lack of room” (i.e. physical space limitations), for easy SCR installation. This does not mean that SCR cannot be installed, but only that it could potentially be costly. Therefore, under the 5-step BART analysis, SCR is technically feasible.

2. *There is no support in the record for the claims regarding physical space limitations.*

Even if the physical space limitation were to be considered a technical as opposed to cost issue, the record contains no evidence to support TransAlta’s assertion. Dr. Sahu notes there is little to no engineering detail regarding the congestion.<sup>16</sup> While Ecology asked questions on this issue early in the process, TransAlta failed to provide information adequate to the task and Ecology apparently never followed up.<sup>17</sup> The figures that TransAlta did provide are barely legible and do not contain the level of engineering detail requested by Ecology or that is necessary to assess the claimed space limitations.<sup>18</sup> The figures provide no support for the claim of physical limitation for SCR and according to Dr. Sahu “certainly do not make the case for an engineering assessment of the degree of difficulty of the [SCR] retrofit.”<sup>19</sup> Finally, the information from TransAlta is incomplete in that it contains no discussion of the potential for moving or re-configuring existing equipment, or how that factors into the physical limitation and cost discussions. For example, TransAlta fails to provide any information regarding moving or replacing the electro-static precipitators (“ESPs”) or reconfiguring piping runs that would render

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<sup>15</sup> In fact, it appears that Ecology has been imprecise in its language regarding BART and SCR. It appears that Ecology believes that SCR would be technologically feasible at the TransAlta coal plant, but accepts TransAlta’s rejection of it based upon cost reasons. See also Ecology’s answers to Conservation Organizations’ questions that the cost of SCR is “extreme” yet providing no support or detail regarding the claimed cost.

<sup>16</sup> Sahu Report, paragraph 6.

<sup>17</sup> Id.

<sup>18</sup> Id.

<sup>19</sup> Id.

an SCR retrofit less problematic.<sup>20</sup> Therefore, even if cost due to space limitations is properly considered a technical issue for installation of SCR, the analysis and information provided is inadequate to actually assess the problem.

3. *The record has no explanation for TransAlta's failure to control the unusually high boiler-out NOx emissions at the TransAlta coal plant, a fundamental component of considering feasible BART technologies.*

TransAlta and Ecology have failed to analyze all potential, technically feasible, control technologies because TransAlta and Ecology have not adequately assessed the situation with NOx emissions from the boilers themselves and possible improvements at the boilers. The current boiler-out NOx emissions are approximately 0.3 lb/MMBtu. The emissions are predicted to drop to 0.24 lb/MMBtu with the Flex Fuels project. Dr. Sahu finds that these emissions are very high given operations elsewhere in the industry. Numerous existing PRB-fired boilers are operating with NOx emissions much lower than those reported by the TransAlta coal plant, generally well below 0.15 lb/MMBtu.<sup>21</sup> None of the scientific and engineering literature that is widely-available on the subject nor any of the boiler emissions information available from the EPA database was discussed, compared, or analyzed relative to the BART analysis for the TransAlta coal plant. While Ecology appears to have inquired into why TransAlta's boiler NOx emissions are so high, according to Ecology TransAlta had no technical response.<sup>22</sup> There is no reason that TransAlta's boiler-out NOx emissions should be as high as 0.24 lb/MMBtu when using the claimed controls for the boilers along with PRB coals. Given known information from the industry and the literature, the NOx emissions should be closer to 0.10 lb/MMBtu for a well-run, baseload unit.<sup>23</sup>

The issue with the boiler emissions is fundamental to Ecology's BART analysis and determination. Minimizing boiler-out NOx will require less NOx control from add-on technologies such as SCR. For example, if NOx emissions from the boiler were kept within the industry levels outlined in Dr. Sahu's report, SCR technology could be smaller in size, reducing or obviating physical constraint concerns at the plant. The attendant improvements in visibility in the national parks and wilderness areas of such a combined approach would be huge.<sup>24</sup> TransAlta and Ecology have failed to assess this crucial connection between improved boiler-out

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<sup>20</sup> Id. It should also be noted that the NPS believes there are benefits for both NOx and mercury reductions with the removal of one or both ESPs and the use of baghouses for mercury control. Removal of the ESPs then makes room for the SCR. See King testimony and enclosed email from Bruce Polkowsky, NPS.

<sup>21</sup> See, paragraphs 7-9, Sahu Report and Table 1-6 therein.

<sup>22</sup> See also Ecology Answers where Ecology said it does not know why the boilers and Lo-NOx burners do not meet the level of performance usually attained by this technology.

<sup>23</sup> Sahu report, paragraph 10.

<sup>24</sup> Sahu Report, paragraph 11.

NOx emissions and appropriately-sized SCR. As a result, Ecology has failed to properly complete Steps 1 through 3 of the BART analysis.

4. *There is no support in the record for TransAlta's high cost claims for the SCR technology.*

Ecology has also not examined TransAlta's arguments regarding cost of SCR technology. The cost assumptions submitted by TransAlta do not appear tied to the claimed physical difficulties as there is no supporting documentation for the size of the SCR (which can vary), the physical limitations at the plant, or how either of those things specifically affect the cost of the retrofit. For example, there is no information regarding cost estimates other than costs ascribed to "vendor". The "vendor" identification is not even disclosed. Further, it is unclear what the vendors might have had at their disposal when the "vendor" rendered the opinion; it is conceivable that the vendor was simply offering something rough and off the cuff.<sup>25</sup> There are also items such as a "surcharge" of 16% with no explanation of what that is or what it's for or why 16% is the proper amount. Or, there is the straight doubling of the cost estimate from one SCR unit to two. As pointed out by Dr. Sahu, that makes no sense on its face as two SCRs would share several components.<sup>26</sup> Overall, the cost assertions are entirely unsupported and opaque. Unfortunately, Ecology appears to have nonetheless accepted them wholesale.

If Ecology is going to reject SCR as BART because it costs "too much", TransAlta and Ecology must produce much more information regarding those costs and consider costs as one step within the context of the five-step BART process. On the current record, there is no support for the rejection of SCR based on "cost".

D. Step 5 Of The Required BART Analysis Appears Almost Entirely Absent From Ecology's Process.

While it is unclear under which step Ecology is actually rejecting SCR, if it is Step 5 of the BART process and based on a claim that the improvement in visibility is not "worth" the cost, far more information and analysis is required before that conclusion can be drawn. Step 5 requires an assessment of the visibility improvement from technically-feasible control technologies. Ecology has given no indication of how it has addressed Step 5 in the BART analysis and it appears that it has not adequately assessed TransAlta's characterization of visibility improvements from SCR. As part of that, Ecology may weigh cost against improvement, but it must document how and why it reaches a particular decision.

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<sup>25</sup> See Sahu Report, paragraph 12. It is also unclear whether and to what extent TransAlta or Ecology used the Control Cost Manual recommended by the EPA BART guidelines in analyzing the cost of SCR at the TransAlta coal plant. EPA recommends use of the Manual in order that cost estimates are transparent and consistent across the nation. The NPS also recommends use of the Manual.

<sup>26</sup> Id.

1. *Ecology did not question TransAlta's calculations that dilute the visibility improvement expected from SCR.*

TransAlta's assessment of visibility improvement is unsupported and appears to be too small by virtue of two mistakes (or at least questions) in their calculation. First, Dr. Sahu notes an unexplained change in the baseline for calculation of cost-effectiveness of SCR NO<sub>x</sub> controls. Initially, TransAlta and Ecology were using a 2006-2007 baseline for emissions in order to calculate improvements in NO<sub>x</sub> emissions and the attendant improvement in visibility in Class I areas. However, later in the process, with the unsupported explanation that the period was "not representative" or "lower than average," TransAlta unilaterally and apparently arbitrarily selected 0.30 lb/MMBtu as the baseline. Ecology provides no discussion regarding the shift in baseline in the proposed Agreement or supporting documents. There is nothing in the record to support the assertions that 2006-2007 was somehow out of the ordinary or otherwise not appropriate for use as the baseline.<sup>27</sup> The shift had the potential effect of making SCR controls look less promising for visibility improvement.

The National Park Service has also identified a way in which TransAlta's accounting of visibility improvement underestimates the potential gains for the Class I areas. TransAlta's assessment focuses solely on improvement in Mt. Rainier National Park. While Mt. Rainier is the most-impacted of the many Class I areas the TransAlta coal plant affects, it is not the only one. TransAlta must take into account its cumulative negative impacts on a large number of Class I areas, all of which must attain and maintain pristine air quality. The cumulative improvement to the many Class I areas negatively affected by TransAlta's coal plant, is significantly larger, improving the cost-effectiveness of the SCR technology option. Again, there is no indication in the record or Ecology's decision document or the Agreement itself that Ecology recognized these issues, assessed them, or what Ecology might have decided about them. Ecology has failed to properly apply Step 5 of the BART analysis.

2. *The record is devoid of evidence describing how Ecology balanced cost and visibility improvement, or any support indicating that Ecology necessarily struck the correct balance.*

Ecology has provided no explanation of how it balanced the factors in its cost-effectiveness determination. As noted above, Ecology accepted TransAlta's cost figures at face value with no support. Then, Ecology accepted TransAlta's visibility improvement estimates at face value without inquiring into the dilution of the numbers from a changed baselines and/or failure to count all Class I areas. Even accepting these figures, Ecology fails in Step 5 because Ecology does not explain where it strikes the balance between costs and visibility improvement and why. If, in fact, Ecology has disregarded or failed to give sufficient weight to visibility improvements from SCR technology, Ecology has failed to properly apply Step 5 in the BART process. Ecology, in accepting TransAlta's approach, failed to explain its reason for finding that

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<sup>27</sup> Sahu Report, paragraph 13.

approach reasonable and consistent with its CAA BART obligations.

The rejection of SCR technology and the apparently unquestioning acceptance of the cost effectiveness argument demonstrates a house of cards in Ecology's decision-making for the TransAlta coal plant. Ecology's decision regarding NOx controls is built upon unsupported assumptions resting on more unsupported assumptions. Even the simplest, most apparent questions do not appear to have been asked or answered. Therefore, the claimed BART determinations set forth in the Agreement are unfinished, unsupported, and inadequate. The Conservation Organizations object to the Agreement and strongly urge Ecology to reexamine the decision based upon the matters raised herein.

## II. THE TRANSALTA COAL PLANT IS SUBJECT TO BART FOR NOX EMISSIONS.

Conservation Organizations disagree with Ecology's rationale for entering into an agreement that provides less protection for the State of Washington and the region's Class I areas than is required by federal law. TransAlta's expectation that it is not subject to BART is contrived and contrary to fact. Simple examination of the documents from the negotiations in the late 1990s demonstrates the flaws in TransAlta's position.<sup>28</sup>

First, the February 1998 order issued by SWCAA's predecessor agency is a RACT order, not BART. It says it is a RACT order on its face and each aspect of it provides that SWCAA is setting RACT for various pollutants at the TransAlta coal plant.

Second, also clear on the face of the RACT order, is the fact that the parties to the negotiation did not go through the BART process and did not meet all BART requirements for public process, consultations, and BART determinations. In fact the order itself pointedly states the parties' intentions to avoid the BART process by entering into the agreement and that the process was much more streamlined than a BART process would have been. Therefore, in keeping with its (or its predecessor's) own desired outcome at the time, TransAlta has not been subject to BART.<sup>29</sup>

Third, in approving the RACT order, EPA clearly and unequivocally found that the RACT order was not BART for NOx and that TransAlta would be subject to BART for NOx at

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<sup>28</sup> The Conservation Organizations understand that TransAlta argues it is not subject to BART because it and its immediate predecessor participated in a collaborative process in the late 1990s that resulted in changes to the plant. The Conservation Organizations also understand that TransAlta has set forth its arguments in a "White Paper" dated June 2007. While most of the negotiations on that earlier agreement (if not all) were done by TransAlta's predecessor, it appears that TransAlta is the owner that made the changes to the plant that were required by the negotiated agreement and the resulting RACT order.

<sup>29</sup> It actually appears that TransAlta has not been subject to BART for any of the pollutants at issue in the late 1990s, including sulfur dioxide and particulates. Nonetheless, Conservation Organizations' arguments here will remain focused on NOx.

some point in the future.

Fourth, the NPS was an important and active participant in the negotiations that led up to SWCAA's RACT order for the TransAlta coal plant. It is plain from its submissions in this process, that the NPS did not consider the agreements and the resulting RACT order to constitute a BART process and that the TransAlta plant had not been subject to BART, at least as to NOx pollutants.

TransAlta cannot, based upon these statements and the content of the order, believe that it is not subject to BART for NOx.

### III. ECOLOGY SHOULD RETAIN ITS AUTHORITY TO REQUIRE FURTHER NOX REDUCTIONS REGARDLESS OF TRANSALTA'S ARGUMENTS.

Finally, regardless of whether TransAlta is subject to BART, the State, as recognized by Ecology, has the continuing authority and obligation to make reasonable further progress on improving visibility in Class I areas. See e.g. 42 U.S.C. § 7491(b). With TransAlta being the largest source of emissions and cumulative effects in the region, Ecology can and should impose additional controls in order to ensure reasonable further progress by 2018—something that clearly will not happen under the Agreement proposed.

And yet even here, Ecology ties its own hands. The Agreement provides that Ecology will affirmatively waive its reasonable further progress authority, in TransAlta's favor, until 2018.<sup>30</sup> And even then, Ecology has agreed that it will not impose additional controls on TransAlta if, between now and 2018, SWCAA imposes some very minimal additional NOx standards on the coal plant. Those additional NOx standards are truly minimal—they are less than presumptive BART and less than what other plants are achieving with better boiler-out performance as discussed by Dr. Sahu. Ecology fails to use any of the tools at its disposal to address this second largest negative impact on Class I areas in the nation. As a result, the Agreement should be rejected as contrary to the CAA and contrary to the public interest.

### IV. THE MERCURY PORTIONS OF THE PROPOSED AGREEMENT AND CONSENT DECREE ARE INADEQUATE AND NOT IN THE PUBLIC INTEREST.

#### A. The TransAlta Coal Plant Is Washington's Largest Source of Toxic Mercury Emissions.

Reports for 2007 at the TransAlta coal plant show a combined mercury emission (just for the coal-fired units) of a little over 372 pounds for the year, making it the largest emitter of mercury in the state.<sup>31</sup> Mercury is a toxic pollutant which, when released into the atmosphere from coal plants and other sources, deposits into lakes, rivers, streams and the ocean where it

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<sup>30</sup> Agreement at III (A)(2).

<sup>31</sup> Mercury Summary for 2007 and Air emissions Inventory for 2007, emissions units 1 and 2. Documents from SWCAA file for TransAlta Centralia Generation, L.L.C Centralia coal plant.

bioaccumulates in fish.<sup>32</sup> Ingestion of fish by humans leads to a variety of health problems, particularly for fetuses or children (whose nervous systems are still developing, making them particularly vulnerable to neurotoxins like mercury).<sup>33</sup> Nationwide, approximately 6-8% of women of childbearing age are at risk of having mercury blood levels that exceed levels associated with a variety of health risks and as a result, hundreds of children are born each year at risk of mercury-caused learning disabilities and other developmental problems.<sup>34</sup>

Recently, the NPS reported that Olympic and Mt. Rainier National Parks show high levels of mercury contamination in snow and in fish in mountain lakes. Some fish sampled exceeded health thresholds for human consumption while all fish from both parks exceeded health thresholds for one or more species of fish-eating wildlife.<sup>35</sup>

Ecology has claimed in public meetings and in their answers to Conservation Organizations' questions, that most of TransAlta's mercury enters the atmosphere, circles the world, and deposits over a large area.<sup>36</sup> Although Ecology summarily claims there is little local deposition, recent studies have shown that some types of mercury can deposit locally.<sup>37</sup> Ecology has not provided adequate analysis in the settlement agreement or supporting documentation that demonstrates that TransAlta mercury emissions do not have a local effect. It takes only a gram

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<sup>32</sup> See generally EPA information regarding mercury, e.g. [http://publicaccess.custhelp.com/cgi-bin/publicaccess.cfg/php/enduser/std\\_adp.php?p\\_faqid=1824&p\\_created=1106159090&p\\_sid=zTcbbuLj&p\\_accessibility=0&p\\_redirect=&p\\_lva=&p\\_sp=cF9zcmNoPTEmcF9zb3J0X2J5PSZwX2dyaWRzb3J0PSZwX3Jvd19jbnQ9OSw5JnBfcHJvZHM9MjMzJnBfY2F0cz0mcF9wdj0xLjIzMyZwX2N2PSZwX3BhZ2U9MQ\\*\\*&p\\_li=&p\\_topview=1](http://publicaccess.custhelp.com/cgi-bin/publicaccess.cfg/php/enduser/std_adp.php?p_faqid=1824&p_created=1106159090&p_sid=zTcbbuLj&p_accessibility=0&p_redirect=&p_lva=&p_sp=cF9zcmNoPTEmcF9zb3J0X2J5PSZwX2dyaWRzb3J0PSZwX3Jvd19jbnQ9OSw5JnBfcHJvZHM9MjMzJnBfY2F0cz0mcF9wdj0xLjIzMyZwX2N2PSZwX3BhZ2U9MQ**&p_li=&p_topview=1) and <http://www.epa.gov/mercury/advisories.htm>

<sup>33</sup> Id.

<sup>34</sup> Report to Congress; U.S. Centers for Disease Control, Blood Mercury Levels in Young Children and Childbearing-Aged Women – United States, 1999-2002 (Nov. 5, 2004); Trasande, L., Landrigan, P.J., and Schechter, C., *Public Health and Economic Consequences of Methyl Mercury Toxicity to the Developing Brain*. Environmental Health Perspectives, 113(5), 590-596 (May 2005). See also <http://www.epa.gov/ttn/atw/hlthef/mercury.html>.

<sup>35</sup> <http://www.nps.gov/olym/parknews/airborne-contaminants-study-released.htm>. Western Airborne Contaminant Project, Feb. 2008.

<sup>36</sup> As noted by testifiers at the public meeting on October 13, 2009, the fact that a potent neurotoxin will likely affect other countries and their citizens rather than Washington's citizens is a poor reason to decline to strongly regulate the toxin.

<sup>37</sup> See Gerald J. Keeler, M.S. Landis, G.A. Norris, E.M. Christianson, and J.T. Dvonch, "Sources of Mercury Wet Deposition in Eastern Ohio, USA," Environmental Science and Technology (American Chemical Society), Vol. 40 (19), 5874-5881 (2006); Watkins, et al., EPA National Exposure Research Laboratory, Preliminary Results From Steubenville Hg Deposition Source Apportionment Study (April 27, 2005).

of mercury to contaminate a 20 acre lake such that the fish in that lake exceed the consumption standard for human health.<sup>38</sup> Clearly, if even a very small fraction of TransAlta's mercury is being deposited locally, Lewis County's and Washington's citizens are being greatly affected.

B. Contrary To Assertions In The Proposed Agreement, The State Has The Authority And The Obligation To Control Mercury Emissions From the TransAlta Coal Plant.

Ecology incorrectly asserts that it cannot regulate mercury from the TransAlta coal plant because it abandoned its rulemaking effort over a year ago when the federal Clean Air Mercury Rule was overturned by the U.S. Circuit Court of Appeals for the D.C. Circuit.<sup>39</sup> It further claims that now it must sit and wait for EPA to complete a MACT standard for mercury from power plants before Ecology can take any action to limit the large amount of this toxic pollutant from the TransAlta coal plant. Ecology's position on this issue is simply not supported by Washington or federal law.

WAC 173-400-040(5) provides that:

No person shall cause or permit the emission of any air contaminant from any "source" if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business.

An air contaminant is defined to include vapor and gas, and air pollution is the presence of one or more air contaminants in such quantities or characteristics as to be or likely to be injurious to human health, plant, or animal life, or property or that unreasonably interferes with the enjoyment thereof. RCW 70.94.030; WAC 173-400-030. Washington law also requires that all emissions units be required to use RACT to control emissions. WAC 173-400-040. Clearly, Ecology has both the authority and the obligation under Washington law to regulate mercury from the TransAlta coal plant.

Moreover, there is no need for Ecology to engage in formal rulemaking in order to address TransAlta's mercury. Washington law provides that for categories where there are fewer than three sources (the case here as the TransAlta coal plant is Washington's only coal-fired power plant), Ecology may proceed to determine and apply RACT on a case by case basis, without rulemaking. RCW 70.94.154. RCW 70.94.154 further provides that Ecology may make a source-specific RACT determination where such a determination is needed to address specific air quality problems for which the source is a significant contributor. As noted above, TransAlta's coal plant is the single largest source of toxic mercury in the state.

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<sup>38</sup> <http://www.newmoa.org/prevention/mercury/mercurylake.pdf> and <http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/88c64f9ee84a23e4852574240004276d!OpenDocument>

<sup>39</sup> See Agreement at II(17) (citing New Jersey v. EPA, 517 F.3d 574 (D.C. Cir. 2008)).

Nor is there a need to wait for the EPA to regulate mercury before the state takes action to regulate this toxic pollutant. The Clean Air Act clearly provides that states can always regulate air pollutants more stringently than the Clean Air Act and/or federal regulation. 42 U.S.C. § 7416; Exxon Mobil Corp. v. EPA, 217 F.3d 1246, 1255 (9th Cir. 2000) (“Air pollution prevention falls under the broad police powers of the states, which include the power to protect the health of citizens in the state.”). In fact, many states are already leading the way and requiring significant mercury reductions, regardless of the status of rules from EPA.<sup>40</sup>

Ecology cannot argue a lack of authority as a reason for entering into this token Agreement regarding mercury.

C. The Industry Is Currently Achieving 90% And Better Reductions In Mercury Emissions, A Standard To Which TransAlta Should Be Held.

The voluntary 50% reductions in mercury emissions from the TransAlta coal plant fall far short of what is being achieved in the industry. Greater than 90% mercury removal has been achieved on a long-term basis at a number of PRB-coal-fired power plants using activated carbon technology.<sup>41</sup> The Government Accountability Office recently made similar findings: that activated carbon technology is allowing a number of coal-fired power plants to remove over 90% of the mercury in their emissions and to do so at a fairly low cost.<sup>42</sup> Finally, Ecology’s own files on this matter contain scientific and engineering papers about 80%, 90% and even better mercury reduction at various power plants.<sup>43</sup>

Activated carbon injection technology is the very technology currently being tested at the TransAlta coal plant. Clearly, Ecology should receive more than TransAlta’s minimal efforts on this toxic pollutant. It appears TransAlta could achieve much better than the 50% offered in the Agreement and it could do better with fairly minimal additional cost.

Finally, the NPS raised an interesting point, supported by the GAO Report, in Acting

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<sup>40</sup> See Appendix III, U.S. Government Accountability Office, “Mercury Control Technologies at Coal-Fired Power Plants Have Achieved Substantial Emissions Reductions,” GAO-10-47 (October 2009) (“GAO Report”).

<sup>41</sup> See examples discussed in Sahu Report, paragraphs 23-25.

<sup>42</sup> GAO Report generally.

<sup>43</sup> See e.g. R. Chang, et al., Development and Demonstration of Mercury Control by Dry Technologies: 2005 Update, EPRI Document # 1004263 (Feb. 2005). See also March 30, 2009 Letter from the Institute of Clean Air companies to Director Jay Manning, Ecology, regarding mercury removal technologies and Seeliger, J., Brown, J.H., Jankura, B., Redinger, K., “Cost Effective Mercury Emissions Control At the Newmont TS Power Plant” (2008) (presented at Power Plant Air Pollutant Control “Mega” Symposium, August 2008).

Superintendent King's testimony at the public meeting on October 13, 2009. Superintendent King noted that if the TransAlta coal plant were to install BART—SCR technology—for the control of NO<sub>x</sub>, the plant would also obtain increased mercury reduction benefits. This finding is echoed by the GAO Report that notes that plants that have installed technologies for the control of other pollutants, such as NO<sub>x</sub>, have found significant co-benefits for the control of mercury.<sup>44</sup>

Given the state of mercury control technology and the clear authority of the state to regulate mercury, the voluntary 50% mercury reduction at the TransAlta coal plant is far too minimal, not in compliance with Washington's Clean Air Act requirements, and contrary to the public interest.

V. THE PROPOSED AGREEMENT AND CONSENT DECREE INCLUDE VARIOUS CLAUSES AND CONSTRAINTS THAT FURTHER WEAKEN THE AGREEMENT.

In addition to the very weak standards for NO<sub>x</sub> and mercury control in the Agreement, the Agreement contains a number of other constraints on TransAlta's obligations, constraints on Ecology's enforcement of the Agreement terms, and vaguely-stated additional commitments by Ecology. These additional terms further demonstrate that the Agreement is weak and not in the public interest.

First, as noted above, the commitments by TransAlta regarding mercury are wholly voluntary. Therefore, TransAlta could, for a variety of reasons, choose to do nothing with respect to mercury reduction.<sup>45</sup> The Agreement's terms are clear that in that instance, Ecology cannot enforce even the 50% obligation. The Agreement also provides that, at its sole option, TransAlta could simply choose to spend up to a certain amount on mercury-related tasks, but no more, regardless of whether the 50% reductions are achieved. Further, if TransAlta and Ecology wished to reach a meaningful and enforceable agreement to reduce mercury emissions, they could use the legal mechanism that currently exists under Washington law: WAC 173-400-091 ("Voluntary limits on emissions"). That provision would allow Ecology to issue a regulatory order setting the mercury emission limit at the agreed-to level, and, after appropriate notice and comment, establish a federally-enforceable mercury limit. WAC 173-401-091(4)-(5). Therefore, even the 50% reduction, meager though it is, is in question.

As to NO<sub>x</sub>, in addition to requiring no additional NO<sub>x</sub> reduction beyond what the TransAlta coal plant already chooses to do, Ecology agrees to forego any further progress on

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<sup>44</sup> GAO Report, pp. 5-6.

<sup>45</sup> Ecology claims that it could, if TransAlta failed to follow-through on its voluntary commitments, engage in mercury rulemaking to compel mercury reductions. This is curious given Ecology's stated reasons for entering into the Agreement in the first instance. If Ecology has the authority do so, Ecology should exercise that authority to the benefit of the public and the environment and not settle for such a paltry result as represented by TransAlta's commitments in the Agreement. It is unclear at this juncture, just what Ecology believes its authority really is.

NOx reductions from the plant for almost ten years (and possibly longer). Again, Ecology relinquished authority that it could retain in order to ensure that, should the Class I areas remain significantly impaired by the TransAlta coal plant's pollution even after the agreed NOx reductions, it could impose additional reductions to obtain reasonable further progress on the impairment problem. In fact, the Agreement goes a step further in making commitments to TransAlta. Ecology agrees that it will not even require additional reductions in 2018, regardless of the status of the Class I areas, if SWCAA imposes a slightly lower NOx requirement on the TransAlta coal plant than that which is required in the Agreement. Again, the slightly lower NOx requirement would still not achieve the presumptive BART limit of 0.15 lb/MMBtu and would be well above even the boiler-out control of NOx that many PRB-fired plants currently achieve.

The Conservation Organizations further oppose the language of paragraph 11 of the Agreement regarding coal ash waste disposal. Ecology agrees to "support" any future proposal and measures by TransAlta to reduce the cost of dealing with its ash waste or other byproducts that have been contaminated with mercury (or other heavy metals that precipitate out into the ash as a result of pollutant controls.) The Agreement notes that such "support" may include approval of "beneficial uses". Beneficial uses is not defined. Again, this appears to be a provision where Ecology relinquishes regulatory authority for nothing in return. This is particularly troubling in light of recent coal ash disasters such as the TVA coal plant spill in December of 2008, or problems with groundwater contamination in communities that have allowed "beneficial uses" of coal ash in roads and as fill for recreational developments. This kind of advance approval of any and all coal ash projects that might "reduce costs" or be considered "beneficial" by TransAlta is per se arbitrary and capricious decision-making by Ecology. Inadequately disposed coal ash waste may lead to detrimental public health and ecological consequences. It is entirely inappropriate for Ecology to pledge and agree to support proposals without even knowing what those proposals are.

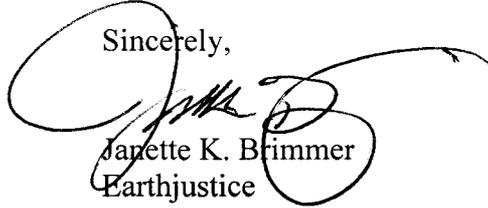
## CONCLUSION

It is extremely unfortunate and puzzling why Ecology feels compelled to reach this lopsided Agreement with TransAlta. This Agreement is not a compromise as between two ends of a spectrum, but rather a capitulation. Ecology and the citizens of Washington get nothing from this "bargain" that TransAlta wasn't already going to give them. TransAlta gets exactly everything it wants: it is not subject to BART for NOx; it is not required to do anything to control NOx pollution that is it not already doing and would do regardless of this Agreement; it can do minimal mercury control, well below industry standards, at its sole option with no repercussions if it does not achieve the reductions agreed to. In return, Ecology agrees to "hands-off" treatment for the next ten years or more for the TransAlta coal plant on a number of pollution issues; the state agrees to become TransAlta's partner in seeking accommodation and/or positive treatment from the EPA on a number of pollution issues; and the state agrees to look kindly on a wide-ranging list of potential TransAlta proposals for dealing with coal ash waste. Conservation Organizations find that the Agreement provides nothing of benefit for the citizens and natural resources of this state and strongly urge the State to reject this Agreement and engage in a full-scale, thorough BART analysis for NOx and aggressive case by case

Ms. Sarah Rees  
Department of Ecology  
November 9, 2009  
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mercury control in line with industry achievements of over 90% reductions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Janette K. Brimmer', is written over the typed name. The signature is fluid and cursive, with a large loop at the end.

Janette K. Brimmer  
Earthjustice

*Counsel for National Parks Conservation Association,  
the Sierra Club, and Northwest Environmental Defense  
Center*

cc: Doug Howell, SC  
Mark Riskedahl, NEDC  
Stephanie Kodish and Sean Smith NPCA  
Don Shepherd, NPS  
Region 10 EPA



IN REPLY REFER TO:

United States Department of the Interior  
NATIONAL PARK SERVICE

Air Resources Division  
P.O. Box 25287  
Denver, CO 80225



November 20, 2009

N3615 (2350)

Mr. Stuart A. Clark  
Air Quality Program Manager  
Department of Ecology  
Air Quality Program  
PO Box 47600  
Lacey, Washington 98504-7600

Dear Mr. Clark:

Thank you for providing information on the Best Available Retrofit Technology (BART) proposals for facilities in Washington that are subject-to-BART. We recognize that much time and effort went into the analyses conducted by the Department of Ecology (Ecology), and we appreciate the time Ecology has taken to discuss the difficult and important issues inherent in this major effort. These comments supplement the statement made by Randy King, Superintendent of Mount Rainier National Park, at the October 13, 2009, public hearing.

In general, we found the Ecology BART analyses to be informative and well-presented. We also recognize that the BART program is relatively new, which presents several challenges to all of us in its implementation. As a national office which conducts BART analyses for all Class I areas in the National Park System, we are able to call upon a growing information base and wish to take this opportunity to make that information available to Ecology. The State of Washington is fortunate to have an extraordinary number of magnificent national parks and wilderness areas within its borders and accessible to its citizens, as well as to numerous visitors. There are many reasons that the law mandates our highest levels of environmental protection for these special areas. National parks and wilderness areas are our natural and cultural heritage. Sociology studies confirm their importance, as do our individual experiences of recreation and renewal. We share your interest in insuring that these magnificent natural areas are protected for the benefit of all. As mentioned in our testimony at the October 13 public hearing, over 1.1 million people visited Mount Rainier National Park in 2008 and visitation as of the end of August of this year is already above the 1 million mark.

Regarding the economic benefits of the national parks, for example, in 2000, when our last visitor surveys were conducted, we learned that visitors to Mount Rainier and Olympic National Parks spent over \$120 million in the area. The total economic impact of visitor spending was \$95 million in direct sales, \$38 million in personal income, \$58 million in direct value-added and 2,530 jobs. With multiplier effects, created by the re-circulation of the money spent by tourists, visitor spending generated about \$135 million in local sales, and an associated \$52 million in personal income, \$82 million in value-added and 3,102 jobs. These figures do not include park admission fees or the impacts of the NPS payroll and operations in the area, nor do they include the economic benefits resulting from visitation to North Cascades National Park or to the nine Class I wilderness areas and the Columbia River Gorge National Scenic Area that are also suffering from visibility impairment as a result of emissions from the Washington BART sources.

Our detailed comments on Ecology's BART proposals are enclosed. Based on our review, we believe the following pollution control technologies are technically feasible, cost-effective, and will substantially improve visibility in one of more of the 12 protected areas (including Mount Rainier and Olympic National Parks) included in Ecology's analyses:

- Selective Catalytic Reduction (SCR) to reduce nitrogen oxides emissions from the Centralia Power Plant
- Sodium-based scrubbing to reduce sulfur dioxide emissions from the potlines at the Intalco primary aluminum smelter
- Additional particulate control on the No. 10 Power Boiler and a limit of 0.5% sulfur on fuel oil burned at the Port Townsend Paper Company
- Low-NO<sub>x</sub> and Ultra-Low-NO<sub>x</sub> Burners proposed by Tesoro (and accepted by Ecology) to reduce nitrogen oxides emissions at its Anacortes refinery. (We recognize the timing issues and suggest that we work together to develop a Reasonable Progress strategy that will achieve the emission reduction goals proposed by Tesoro in a cost-effective, yet expeditious manner.)

Therefore, we ask that you revisit your BART proposals. It appears that that the key issue in these reviews is whether or not to consider the cumulative benefits of reducing emissions for multiple Class I areas. We address that issue below and in our enclosed comments.

### **Cost-Effectiveness Metrics**

BART is not necessarily the most cost-effective solution. Instead, it represents a broad consideration of technical, economic, energy, and environmental (including visibility improvement) factors. We believe that it is appropriate to consider both the degree of visibility improvement in a given Class I area as well as the cumulative effects of improving visibility across all of the Class I areas affected. It simply does not make sense to use the same metric to evaluate the effects of reducing emissions from a BART source that impacts only one Class I area as for a BART source that impacts multiple Class I areas. And, it does not make sense to evaluate impacts at one Class I area, while ignoring

others that are similarly significantly impaired. If we look at only the most-impacted Class I area, we ignore that the other Class I areas are all suffering from impairment to visibility "caused" by the BART source. It follows that, if emissions from the BART source are reduced, the benefits will be spread well beyond only the most-impacted Class I area, and that must be taken into account. <sup>1</sup>

The BART Guidelines represent an attempt to create a workable approach to estimating visibility impairment. As such, they require several assumptions, simplifications, and shortcuts about when visibility is impaired in a Class I area, and how much impairment is occurring. The Guidelines do not attempt to address the geographic extent of the impairment, but assume that all Class I areas are created equal, and that there is no difference between widespread impacts in a large Class I area and isolated impacts in a small Class I area. To address the problem of geographic extent, we have been looking at the cumulative impacts of a source on all Class I areas affected, as well as the cumulative benefits from reducing emissions. While there are certainly more sophisticated approaches to this problem, we believe that this is the most practical, especially when considering the modeling techniques and information available.

One of the options suggested by the BART Guidelines to evaluate cost-effectiveness is cost/deciview. Compared to the typical control cost analysis in which estimates fall into the range of \$2,000 - \$10,000 per ton of pollutant removed, spending millions of dollars per deciview (dv) to improve visibility may appear extraordinarily expensive. However, our compilation<sup>2</sup> of BART analyses across the U.S. reveals that the **average cost per dv proposed by either a state or a BART source is \$12 - \$19 million**,<sup>3</sup> with a maximum of almost \$50 million per dv proposed by Colorado at the Martin Drake power plant in Colorado Springs. For example, considering the 12 Class I areas impacted by Centralia, our calculations show that the cost per dv of installing SCR at Centralia would be \$5 million, which is relatively cost-effective.

Please note that EPA is proposing to consider the cumulative benefits at multiple Class I areas approach in its own BART determinations. For example, in an August 21, 2009, Advance Notice of Proposed Rulemaking regarding BART for the Navajo and Four Corners power plants, EPA Region 9 discusses an approach to assess visibility improvement that considers multiple Class I areas. And, Oregon considered the cumulative benefits of adding SCR at the Boardman power plant in its determination that SCR would be installed there under the reasonable progress provisions of the Regional Haze Rule. Finally, the Wyoming Department of Environmental Quality explicitly cited<sup>4</sup>

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<sup>1</sup> For example, our analysis, which is described in detail in our enclosed comments, indicates that the cumulative benefits of reducing NO<sub>x</sub> emissions from the Centralia power plant are seven times greater than the benefit at Mt. Rainier, the most-impacted Class I area, alone.

<sup>2</sup> Sent to Ecology on 11/13/09 and located at <http://www.wrapair.org/forums/ssjf/bart.html>

<sup>3</sup> For example, PacifiCorp has stated in its BART analysis for its Bridger Unit #2 that "The incremental cost effectiveness for Scenario 1 compared with the baseline for the Bridger WA, for example, is reasonable at \$580,000 per day and \$18.5 million per deciview."

<sup>4</sup> As stated by the Wyoming Department of Environmental Quality, "Tuning the existing LNB with OFA and installing SCR is determined to be BART for Unit 3 for NO<sub>x</sub> based, in part, on the following conclusions: 4. The cumulative 3-year averaged 98th percentile visibility improvement from the baseline

the cumulative benefits to the Bridger and Fitzpatrick Wilderness Areas in its conclusion that adding combustion controls plus SCR to the Naughton Unit #3 is BART.<sup>5</sup>

Over the past several months, we have worked with Ecology staff to evaluate the BART sources under EPA's BART Guidelines, and we are very appreciative of your expertise and assistance. We look forward to continuing this cooperative working relationship as this process advances. We believe that good communication and sharing of information will help expedite this process, and suggest that you contact Don Shepherd at (303) 969-2075 or email him at [don\\_shepherd@nps.gov](mailto:don_shepherd@nps.gov) if you have any questions or comments.

Sincerely,



Christine L. Shaver  
Chief, Air Resources Division

Enclosures

cc:

Janice Peterson  
Air Resource Specialist  
Forest Service  
400 N. 34th Street, Suite 201  
Seattle, Washington 98103

Rick Graw  
Air Resource Management Specialist  
USDA Forest Service  
Pacific Northwest Region  
Natural Resources  
P.O. Box 3623  
Portland, Oregon 97208-3623

Keith Rose  
USEPA Region 10  
1200 Sixth Avenue, OWW-130  
Seattle, Washington 98101

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summed across both Class I areas achieved by tuning the existing LNB with OFA, SCR, wet FGD, and installing a new full-scale fabric filter, Post-Control Scenario B, was 1.849 Adv.”

<sup>5</sup> In addition, the Wyoming Department of Environmental Quality (WY DEQ) explicitly considered “visibility improvement from new [control options] summed across the [multiple] Class I areas” in its BART determinations for the Bridger, Johnston, and WYODAK power plants. WY DEQ also determined that SCR would be installed on Bridger units #3 & #4 under the Reasonable Progress provisions of the Regional Haze Rule.

**National Park Service (NPS) Comments<sup>1</sup> on  
TransAlta Centralia Generation LLC's Proposed  
Best Available Retrofit Technology (BART) Determination for  
TransAlta Centralia Generation  
November 20, 2009**

**Present Unit Operation**

TransAlta Centralia Generation LLC Power Plant (TransAlta) operates a two-unit, pulverized-coal-fired power plant near Centralia Washington, and approximately 70 km from Mount Rainier National Park (NP). The plant is located within 300 km of 12 Class I areas,<sup>2</sup> which also include North Cascades and Olympic National Parks (which are also Class I areas administered by the National Park Service).

**Source Description and Background**

Units 1 and 2 were commissioned in 1971 and 1972, are both tangentially-fired on sub-bituminous coals from the Powder River Basin (PRB), and are each rated at 702.5 MW net output.

Sulfur dioxide (SO<sub>2</sub>) control on the two coal-fired boilers is provided by a limestone-slurry-forced-oxidation wet scrubber system. This system removes over 95% of SO<sub>2</sub> in the flue gas from the boilers. The SO<sub>2</sub> controls were installed in the 1999 – 2002 time period.

Particulate control is provided by two Electrostatic Precipitators (ESPs) in series followed by the wet scrubber system. The first ESPs were part of the original construction of the plant. The second ESPs date from the late 1970's.

Current nitrogen oxides (NO<sub>x</sub>) control is provided by combustion modifications incorporating Low-NO<sub>x</sub> Burners with close-coupled and separated over-fire air. These combustion modifications are collectively known as "LNC3." The controls were installed in the 2000 – 2002 time period. The combustion controls were designed and optimized to suit Centralia mine coal.

For a variety of reasons, TransAlta stopped active mining at the Centralia coal mine and now purchases all coal from PRB coal fields. To accommodate the change, the company has modified the rail car unloading system to handle up to ten coal unit trains per week. Additional modifications are focused on the boilers. The boilers have been and will be modified to reduce temperatures in the flue gas to accommodate the higher Btu coal now being combusted. Additional changes include the reinstallation of specific soot blowers and installation of new soot blowing equipment (steam lances) necessary to accommodate the different ash characteristics of the PRB coals. Improved fire suppression equipment is being installed to accommodate the increased potential of PRB coals to catch fire spontaneously.

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<sup>1</sup> Electronic files are included separately.

<sup>2</sup> Please see the attached map titled "Current Impacts of Centralia PP on Class I Areas."

TransAlta anticipates operating the plant until at least 2030. They acknowledge that operation beyond 2025 will require significant plant upgrades to assure safe and reliable operation into the future.

According to EPA’s Clean Air Markets (CAM) database, Centralia was the 92<sup>nd</sup>-largest stationary source of NO<sub>x</sub> (out of 1,228 plants) in the U.S. in 2008 at 10,839 tons.

TransAlta’s analyses<sup>3</sup> indicate that Centralia’s Baseline emissions **cause**<sup>4</sup> visibility impairment in all 12 Class I areas (and in the Columbia River Gorge National Scenic Area—CRGNSA) within 300 km. TransAlta causes the third-greatest cumulative impact upon Class I area visibility of any single source we have evaluated to date.<sup>5</sup>

**PREDICTED CHANGE TO THE 2003-2005 98TH PERCENTILE DAILY HAZE INDEX (dv)<sup>6</sup>**

Area of Interest	Baseline	Flex- Fuel	
		Imapct	Improvement
Alpine Lakes Wilderness	4.103	<b>2.737</b>	1.367
Glacier Peak Wilderness	2.742	<b>1.700</b>	1.042
Goat Rocks Wilderness	4.336	<b>2.912</b>	1.424
Mt. Adams Wilderness	3.554	<b>2.356</b>	1.198
Mt. Hood Wilderness	2.797	<b>1.730</b>	1.067
Mt. Jefferson Wilderness	1.609	0.987	0.621
Mt. Rainier National Park	5.454	<b>3.899</b>	1.555
Mt. Washington Wilderness	1.446	0.844	0.603
N. Cascades National Park	2.060	<b>1.326</b>	0.734
Olympic National Park	4.037	<b>2.646</b>	1.391
Pasayten Wilderness	1.416	0.854	0.563
Three Sisters Wilderness	1.590	0.880	0.710
CRGNSA	2.228	<b>1.426</b>	0.801
Cumulative	37.373	24.298	13.076
Cumulative-CRGNSA	35.146	22.871	12.274

TransAlta’s analysis indicates that, even after implementation of the Flex-Fuels project, Centralia will **cause** impairment in eight Class I areas (and CRGNSA) and contribute<sup>7</sup> to impairment in four. TransAlta would continue to cause the third-greatest cumulative impact upon Class I area visibility of any single source we have evaluated to date.<sup>8</sup>

<sup>3</sup> From Geomatrix Table 4-3: “YEARLY PREDICTED CHANGE TO THE 98TH PERCENTILE DAILY HAZE INDEX”

<sup>4</sup> A source “causes” visibility impairment if it degrades visibility by one deciview (dv).

<sup>5</sup> The two BART sources with higher cumulative impacts are the Four Corners Power Plant (47 dv) and the Navajo Generating Station (39 dv), both located on the Navajo nation.

<sup>6</sup> Deciview (dv) is a measure of visibility impairment.

<sup>7</sup> A source “contributes to” visibility impairment if it degrades visibility by 0.5 deciview (dv).

<sup>8</sup> However, if the Four Corners Power Plant and the Navajo Generating Station adopt the BART controls we have recommended, their cumulative impacts would drop to 19 dv and 16 dv, respectively, leaving Centralia as the source causing the greatest cumulative visibility impairment.

The BART analysis five steps are:

**Step 1 – Identify all available retrofit control technologies.**

On coal-fired power plants, the most common type of Selective Catalytic Reduction (SCR) installation is known as the hot-side high-dust configuration, where the catalyst reactor is located downstream from the boiler economizer and upstream of the air heater and particulate control equipment. In this location, the SCR is exposed to the full concentration of fly ash in the flue gas that is leaving the boiler. An alternate location for an SCR system is downstream of the air heater or the particulate control device. In many cases, this location is compatible with use of a low temperature SCR catalyst or is within the low end of the temperature range of a conventional catalyst. Because the temperature of the flue gas leaving the air heaters and the ESPs is too cool for the low temperature versions of SCR catalyst to operate, the high-dust configuration was assumed by Ecology and TransAlta for Centralia.

A new installation type SCR was used as the basis for analysis at the Centralia Plant because of the lack of room to install an SCR catalyst in the existing flue duct and the higher removal rate provided by a new, full size catalyst bed. The short distance between the boiler economizer and the entrance to the first ESP does not provide the room required for a catalyst bed with reasonable velocities to be inserted in the existing flue gas duct. The ducts from each boiler to the ESP have a relatively high velocity, such that the amount of catalyst that could fit into the unmodified duct would have minimal effectiveness due to the short residence time through the catalyst bed.

While Ecology reviewed SCR in a high-dust location, it did not evaluate other feasible locations downstream of the ESPs. For example, Basin Electric Power Cooperative evaluated installation of SCR with reheat<sup>9</sup> downstream of the wet scrubbers proposed as BART for its Leland Olds Unit #2.<sup>10</sup> Because of the difficulties and costs associated with a conventional high-dust SCR location, TransAlta and Ecology should have evaluated both a low-dust location downstream of the ESPs and a tail-end location following the scrubbers.

**Step 2 – Eliminate technically infeasible control technologies.**

TransAlta believes that while the Rotating Over-fire Air (ROFA) and Rotamix technology are “available” control technologies as described in the BART guideline, the use of either ROFA as a replacement or addition to the current overfire air injection system or installation of the Rotamix process are not technically feasible technologies due to unknown difficulties with installation on their boilers. Due to perceived risks of scale-up to their unit size, TransAlta believes that these technologies are not applicable to their facility.

**Step 3 – Evaluate the control effectiveness of remaining control technologies.**

TransAlta has underestimated the effectiveness of SCR. While we agree with Ecology that SCR can reduce NO<sub>x</sub> emissions by up to 95%, we disagree with TransAlta’s and Ecology’s estimate that the application of SCR could only achieve 0.07 lb/mmBtu on an

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<sup>9</sup> Basin Electric estimated that, after recovering waste heat, natural gas would be required to increase the gas temperature by about 50 degrees Fahrenheit to achieve the proper SCR operating temperature.

<sup>10</sup> Basin Electric proposed the tail-end location to reduce the possibility of fouling of the SCR catalyst by constituents of the lignite burned at the plant.

annual basis. In estimating the annual cost-effectiveness of adding SCR, TransAlta and Ecology effectively assumed that SCR could only further reduce NO<sub>x</sub> by 71% from the 0.24 lb/mmBtu level to be achieved through combustion controls, down to 0.07 lb/mmBtu. We believe that SCR can achieve lower emissions on an annual basis.

EPA's Clean Air Markets (CAM) data (Appendix A), state/source BART analyses,<sup>11</sup> and vendor guarantees<sup>12</sup> show that SCR retrofit to coal-fired EGUs can typically meet 0.05 lb/mmBtu (or lower) on an annual average basis. We found 34 examples (Please see Table A.1. in Appendix A.) of boilers that have been retrofitted with SCR and are achieving ozone-season emission rates below 0.06 lb/mmBtu. We were able to find 2006 hourly emissions in EPA's CAM database for 11 of those EGUs, and charts showing those emissions, as well as for 11 additional retrofit SCRs, are included in Appendix A. We believe that inspection of these data leads to the conclusions that

- SCRs retrofit to eastern EGUs burning bituminous coal can typically reduce NO<sub>x</sub> emissions by 90%, and
- These units can achieve 0.05 lb/mmBtu (or lower) on a 30-day rolling average basis during the eastern ozone season.

Discussions of this data are also provided in Appendix A.

TransAlta and Ecology have not provided any documentation or justification to support the higher annual emission rates used in their analyses. Our review of operating data (Appendix A) also suggests that a NO<sub>x</sub> limit of 0.06 lb/mmBtu is appropriate for LNB/OFA+SCR for a 30-day rolling average, and 0.07 lb/mmBtu for a 24-hour limit and for modeling purposes, but a lower rate (e.g., 0.05 lb/mmBtu or lower) should be used for annual average and annual cost estimates.

#### **Step 4 – Evaluate impacts and document the results.**

Following are excerpts from reports provided by TransAlta and by Ecology.

As a result of electing to use a full scale, new installation type design, an adjustment was used for SCR cost estimates due to the Centralia Plant's extremely tight boiler outlet ductwork configuration and limited available space for new equipment. Installation of a full-scale SCR system requires reconfiguration of the flue ducts from the boilers, structural modifications of the ESP to accommodate the weight of the SCR catalyst and duct work, and realignment of the duct work from the SCR units to the ESP inlets. The restricted site layout, support structure needs, intricate duct routing, limited construction space, and complexity of erection increases the capital cost.

Each boiler at the Centralia Plant has two exhaust gas ducts to aid in splitting the flow to the ESPs. As a result each boiler would require two smaller, separate catalyst vessels instead of a single large catalyst vessel. The capital cost of installing dual catalyst vessels for each unit is slightly greater than a single catalyst vessel for units of similar size.

Costs for SCR were estimated using CH2M HILL's database. The capital costs are based on cost information gathered by CH2M HILL over the past 3 years for BART analyses developed for a number of utilities in the western U.S. The costs were adjusted upwards to account for the difficult retrofit requirements for the CPP units. EPA has published a

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<sup>11</sup> Basin Electric Power—Leland Olds #2 @ 90%; PacifiCorp Naughton #1 @ 88% & #2 @ 87%; Great River Energy—Coal Creek @ 0.043 lb/mmBtu

<sup>12</sup> Minnesota Power has stated in its Taconite Harbor BART analysis that “The use of an SCR is expected to achieve a NO<sub>x</sub> emission rate of 0.05 lb/mmBtu based on recent emission guarantees offered by SCR system suppliers.”

similar cost analysis model called CUECost that was developed by Raytheon Engineers & Constructors and the Eastern Research Group in 1998. The cost estimates generated by CUECost are based on 10-year-old design and cost data that do not consider the large price increases that have occurred in the industry during this time period or the CPP's difficult retrofit requirements.

The emissions reduction for installation of SCR (at a 95% removal rate) on one unit would be 7,450 tons/year. The capital cost for including SCR on only one unit was estimated to be \$290.1 million with a cost effectiveness of \$8,205/ton NOx reduced.

The emissions reduction for installation of SCR (at a 95% removal rate) on both units would be 14,910 tons/year. The capital cost for including SCR on both units would be double that for one unit with a cost effectiveness of \$9,091/ton NOx reduced.

For new coal fired power plants, SCR is becoming the BACT control technology of choice to reduce NOx emissions. In some cases, the use of SCR is being considered to be the technology to be implemented for BART. There are a number of technical difficulties to implementing SCR at the Centralia plant presented by TransAlta in its reports. The primary difficulties are a lack of space for the catalyst beds and ducts, leading to very high construction costs that far surpass ranges of acceptable cost effectiveness. Ecology concurs with TransAlta that the construction costs to overcome the technical difficulties of retrofitting an SCR system on its boilers given its current configuration render this technology economically infeasible for implementation at this time.

Following are summaries of TransAlta's and NPS' cost estimates for SCR.

<b>Costs estimated by</b>	<b>TransAlta/Ecology</b>	<b>NPS</b>
Emissions Reduction (tpy)	7,450	5,456
Capital Cost	\$ 290,100,000	\$ 227,046,261
Capital Cost (\$/kW)	\$ 413	\$ 323
O&M Cost	\$ 3,849,789	\$ 6,538,253
Total Annual Cost	\$ 35,706,198	\$ 31,466,712
Cost-Effectiveness (\$/ton)	\$ 8,205	\$ 5,768

However, we have a major concern with the way in which TransAlta estimated the costs of adding SCR at Centralia, and believe those costs are overestimated. While TransAlta did present "line item" costs for SCR, it is not possible to determine from the information provided how those "line item" costs were derived. Instead of CUECost and internal and proprietary databases, the BART Guidelines recommend use of the EPA Control Cost Manual:

The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS Control Cost Manual, Fifth Edition, February 1996, 453/B-96-001). In order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual, where possible. The Control Cost Manual addresses most control technologies in sufficient detail for a BART analysis. The cost analysis should also take into account any site-specific design or other conditions identified above that affect the cost of a particular BART technology option.

EPA's belief that the Control Cost Manual should be the primary source for developing cost analyses that are transparent and consistent across the nation and provide a common means for assessing costs is further supported by this November 7, 2007, statement from EPA Region 8 to the North Dakota Department of Health:

The SO<sub>2</sub> and PM cost analyses were completed using the CUECost model. According to the BART Guidelines, in order to maintain and improve consistency, cost estimates should be based on the OAQPS Control Cost Manual. Therefore, these analyses should be revised to adhere to the Cost Manual methodology.

TransAlta did not provide adequate justification or documentation for its cost estimates, and does not provide for a transparent method (as does the EPA Control Cost Manual) to determine how the costs were calculated.<sup>13</sup> We were not provided with any vendor estimates or bids for SCR. As a result, TransAlta's \$413/kW estimate for Total Capital Cost is substantially higher than the \$50 - \$320/kW found in available cost surveys. (Please see "Cost Survey Results" and "SCR Cost Survey Report" in Appendix B.) While we understand that installation costs may be greater than average for Centralia due to space constraints, TransAlta should show the extra expenses and how they were estimated.<sup>14</sup> For these reasons, we believe that capital and annual costs are overestimated.

We conducted our own analysis using the EPA-recommended EPA Control Cost Manual,<sup>15</sup> but with some very important modifications. Although the Control Cost Manual approach incorporates a built-in retrofit factor<sup>16</sup> that adds \$4 million to the Direct Capital Cost (DCC) of each unit at Centralia, we decided to assume that Centralia would equal the most-expensive SCR retrofit (on a \$/kW basis) in the cost survey literature by adding retrofit factors to escalate the DCC and the Indirect Capital Cost such that the Total Capital Cost would be about \$320/kW, which is the cost of the most expensive SCR based upon the survey information in Appendix B. Nevertheless, even after we escalated those costs by applying "extra" retrofit factors of 3.0 – 3.5, we still derived the much lower costs shown in the table above.<sup>17</sup>

#### **Step 5 – Evaluate visibility impacts.**

As discussed previously, we have a fundamental concern with Ecology's decision not to consider the cumulative visibility improvements that would occur at all of the Class I areas within 300 km of the BART source.

TransAlta ran CALPUFF for SCR at 0.07 lb/mmBtu<sup>18</sup> and predicted that the greatest improvement would be at Mount. Rainier NP at 2.1 dv. The cumulative Class I area improvement would be 12.5 dv. (Please see the enclosed map titled "Benefits of SCRs at Centralia Power Plant on Class I areas.")

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<sup>13</sup> TransAlta submitted revised SCR retrofit costs in July 2008 to address increases in the price for steel, concrete, other building materials, and overall construction costs. Given the downturn in the economy and the resulting decreased demand for raw materials, these cost estimate increases seem unnecessary and inappropriate. The Chemical Engineering Plant Cost Index ("CEPCI") for 2008 is 575.4. The June 2009 index is 508.9, a 12% decline in 6 months.

<sup>14</sup> For example, TransAlta could use an approach similar to that discussed by William M. Vatauvuk on pages 59 – 62 of his book Estimating Costs of Air Pollution Control.

<sup>15</sup> We attempted to adjust the cost derived by a direct application of the EPA Cost Manual by applying "extra" retrofit factors of 3.0 – 3.5 to the direct and indirect costs. Our "target" was to keep the capital cost of SCR around \$320/kW, which is the cost of the most expensive SCR based upon the survey information in Appendix B.

<sup>16</sup> that applies to equation 2.39

<sup>17</sup> The Excel workbook we produced, which is based upon the approach provided in EPA's Control Cost manual, can be found in Appendix B.

<sup>18</sup> This is appropriate for a 24-hour average for SCR.

**Geomatrix Table 4-3: YEARLY PREDICTED CHANGE TO THE 98TH PERCENTILE DAILY HAZE INDEX 98th Percentile Delta HI (dv)**

Area of Interest	Baseline	Flex- Fuel		SCR	
		Imapct	Improve	Imapct	Improve
Alpine Lakes Wilderness	4.103	2.737	1.367	<b>1.224</b>	1.513
Glacier Peak Wilderness	2.742	1.700	1.042	0.774	0.927
Goat Rocks Wilderness	4.336	2.912	1.424	<b>1.302</b>	1.610
Mt. Adams Wilderness	3.554	2.356	1.198	<b>1.061</b>	1.296
Mt. Hood Wilderness	2.797	1.730	1.067	0.796	0.934
Mt. Jefferson Wilderness	1.609	0.987	0.621	0.423	0.564
<b>Mt. Rainier National Park</b>	<b>5.454</b>	<b>3.899</b>	<b>1.555</b>	<b>1.775</b>	<b>2.125</b>
Mt. Washington Wilderness	1.446	0.844	0.603	0.391	0.452
N. Cascades National Park	2.060	1.326	0.734	0.576	0.750
Olympic National Park	4.037	2.646	1.391	<b>1.240</b>	1.406
Pasayten Wilderness	1.416	0.854	0.563	0.381	0.473
Three Sisters Wilderness	1.590	0.880	0.710	0.416	0.464
CRGNSA	2.228	1.426	0.801	0.598	0.828
<b>Cumulative</b>	<b>37.373</b>	<b>24.298</b>	<b>13.076</b>	<b>10.956</b>	<b>13.341</b>
<b>Cumulative-CRGNSA</b>	<b>35.146</b>	<b>22.871</b>	<b>12.274</b>	<b>10.358</b>	<b>12.513</b>

Even with SCR, Centralia would continue to cause visibility impairment in five Class I areas and contribute to impairment in three more (and the CRGNSA).

### Determine BART

#### According to Ecology

The Department of Ecology (Ecology) determined that BART for NO<sub>x</sub> emissions is the current combustion controls combined with the completion of the Flex Fuels project and the use of a sub-bituminous coal from the Powder River Basin or other coal that will achieve similar emission rates. This change results in a 20% reduction of NO<sub>x</sub> emissions from the baseline period emission rate. The use of low sulfur PRB coal also reduces SO<sub>2</sub> emission by about 60% from the same period. The NO<sub>x</sub> reduction from the BART controls selected by Ecology will result in a visibility improvement from the baseline impacts at Mt. Rainier National Park of approximately 0.6 dv, with improvements of 0.2 to 0.6 dv at other affected Class I areas. The controls are to be installed and start continuously meeting the emission limitation by October 1, 2009.

There will be federal requirements to reduce mercury emissions. The Flex Fuels project does not interfere with any potential mercury control technologies required by a future federal mercury control program.

In order to meet the requirement of the Governor's Executive Order on Climate Change, TransAlta will be making significant financial and plant viability analyses of how best to comply with the Executive Order directive and the resulting Agreed Order between the company and Ecology.

Meeting the requirements of the Executive Order will significantly affect the NO<sub>x</sub> emissions from the plant. This would occur whether compliance was achieved through shutdown of the plant, adding biofuels, or performing carbon removal and sequestration.

Based upon our reviews of BART analyses across the U.S., we believe that cost-per-deciview (\$/dv) of visibility improvement is the most-common and most-useful parameter for assessing the cost-effectiveness of strategies to improve visibility in Class I

areas. Our compilation<sup>19</sup> of BART analyses across the U.S. reveals that the **average cost/dv proposed by either a state or a BART source is \$12 - \$19 million,**<sup>20</sup> with a maximum of almost \$50 million/dv proposed by Colorado at the Martin Drake power plant in Colorado Springs. Using the information provided by TransAlta, we calculated the cost-effectiveness of its proposed combustion control option in \$/ton and \$/dv.

<b>Cost-effectiveness estimated by</b>	<b>TransAlta/Ecology</b>	<b>NPS</b>
Cost-Effectiveness (\$/ton)	\$ 8,205	\$ 5,768
Visibility Improvement (dv at Max Class I)	1.062	1.062
Cost-Effectiveness (\$/98th % dv at Max Class I)	\$ 33,611,106	\$ 29,620,375
<b>Visibility Improvement (dv at Summed Class I)</b>	<b>6.257</b>	<b>6.257</b>
<b>Cost-Effectiveness (\$/98th % dv at Summed Class I)</b>	<b>\$ 5,707,056</b>	<b>\$ 5,029,443</b>
Visibility Improvement (dv at Summed Class I+CRG)	6.671	6.671
Cost-Effectiveness (\$/98th % dv at Summed Class I+CRG)	\$ 5,352,718	\$ 4,717,177

We believe that TransAlta has overestimated the costs and underestimated the benefits of SCR. However, we recognize that there are considerable uncertainties and differences between the TransAlta cost estimates and those we produced based upon the EPA Control Cost Manual approach. Nevertheless, either set of cost estimates, when placed into the context of cost per degree of cumulative visibility improvement (e.g., \$/dv) and compared to the cost-effectiveness values accepted by other sources and states across the U.S.,<sup>21</sup> result in the conclusion that SCR at Centralia is relatively cost-effective.

### **Mercury Reduction**

Addition of SCR may enhance mercury removal by oxidizing some of the elemental mercury to a form that is more-readily captured by the existing PM and SO<sub>2</sub> controls. Ecology may also consider a more-comprehensive approach in which an existing ESP is removed and replaced by SCR, powdered activated carbon injection, and a fabric filter. Such a multi-pollutant approach is underway at Minnesota Power’s Clay Boswell station. PacifiCorp has also proposed to replace the existing ESPs with fabric filters at its Johnston and Naughton generating stations in Wyoming.

### **NO<sub>x</sub> BART Conclusions**

We believe that a valid “top-down” approach to reducing NO<sub>x</sub> demonstrates that addition of SCR is BART for Centralia. We have conducted our own analysis using the procedures described in EPA’s BART Guidelines and in EPA’s Control Cost Manual.

- TransAlta and Ecology did not consider other, potentially less-expensive, locations for SCR

<sup>19</sup> See <http://www.wrapair.org/forums/ssjf/bart.html>; a more-current compilation was sent to Ecology on 11/13/09.

<sup>20</sup> For example, PacifiCorp has stated in its BART analysis for its Bridger Unit #2 that “The incremental cost effectiveness for Scenario 1 compared with the baseline for the Bridger WA, for example, is reasonable at \$580,000 per day and \$18.5 million per deciview.”

<sup>21</sup> We recently sent our latest compilations of BART proposals to Ecology. That transmittal contained summaries of BART proposals by sources and/or states to reduce SO<sub>2</sub> and NO<sub>x</sub>. The average cost/dv for the NO<sub>x</sub> proposals was \$12 million/dv; and \$19 million/dv for SO<sub>2</sub>. The combined average was \$15 million/dv.

- TransAlta and Ecology have underestimated the ability of modern NO<sub>x</sub> control systems. SCR is capable of reducing emissions below TransAlta's target, and the amount of the reductions will increase.
- TransAlta's SCR costs are overestimated and unsubstantiated. EPA guidance advises that its Control Cost Manual should be used; TransAlta should follow this guidance.
- Ecology should consider the cumulative effects of improving visibility across all of the 12 Class I areas affected. Our results estimate a cost-effectiveness value for addition of SCR of \$4.7 million/dv, which is much less than the average cost-effectiveness accepted by the states and sources we have surveyed. Even when we use TransAlta's estimates of control-effectiveness and costs, addition of SCR is cost-effective at \$5.4 million/dv.



United States  
Department of  
Agriculture

Forest  
Service

Pacific  
Northwest  
Region

333 SW First Avenue (97204)  
PO Box 3623  
Portland, OR 97208-3623  
503-808-2468

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**File Code:** 2580

**Date:** November 3, 2009

Sarah Rees  
Air Quality Program  
Washington State Department of Ecology  
PO Box 47600  
Lacey, WA 98504-7600

Dear Ms. Rees:

On September 16, 2009, the USDA Forest Service received notification of the proposed Settlement Agreement between the State of Washington Department of Ecology and TransAlta Centralia Generation LLC on air quality matters. The proposed agreement includes both the determination of Best Available Retrofit Technology (BART) for the NO<sub>x</sub> emission limits and voluntary mercury reductions at this facility. Based upon our review of the BART documents, we are providing the following comments.

In brief we conclude:

- The TransAlta facility contributes to visibility impairment at 12 Class I areas (9 are FS managed) plus the Columbia River Gorge National Scenic Area.
- This visibility impairment is modeled to occur up to 144 days per year at the most impacted FS-managed Class I area (Alpine Lakes wilderness). Mt. Rainier National Park is impacted even more frequently at 168 days per year.
- New NO<sub>x</sub> controls as described in the BART documentation and the Settlement Agreement will do little to improve visibility; reducing the number of days impaired by only 6% at Alpine Lakes to 135 days per year and only 3 % at Mt. Rainier to 163 days per year.
- Post-combustion control technologies are available that can do a better job of reducing NO<sub>x</sub> and improving visibility than the Flex Fuels project alone. We encourage you to reconsider the value of visibility in the Class I areas and require additional NO<sub>x</sub> reductions through either Selective Catalytic Reduction (SCR) or Selective Non-Catalytic Reduction (SNCR).
- We advocate a reduction in permitted SO<sub>2</sub> emission limits from the current limit of 10,000 tons per year (tpy) to approximately 2900 tpy. This emission level has been demonstrated to be achievable by the facility in the past two years and allows for upward adjustment for maximum heat input in the past 10 years.
- The provisions associated with the BART determination should be independent from provisions associated with voluntary mercury reductions, effectively removing the non-enforceability provisions intended for the voluntary mercury reductions.
- Ecology should not limit itself from opportunities to reduce haze-causing emissions at the TransAlta Centralia plant for the next 20 years.

The details of our concerns are presented below. Please direct questions to Rick Graw at 503 808-2918

Mary Wagner  
Regional Forester

Enclosure



## **Forest Service Technical Comments on the Settlement Agreement between State of Washington Department of Ecology and TransAlta Centralia Generation LLC of Air Quality Matters**

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### **Overall Comment**

The Forest Service recognizes the substantial progress made by TransAlta in reducing its emissions of air pollutants from the Centralia electric generating facility in the past 10 years. Sulfur dioxide (SO<sub>2</sub>) emissions have decreased by 98%. PM emissions are controlled by 99%. Recent testing has shown that mercury can be reduced by greater than 80%. However, NO<sub>x</sub> emissions have only been reduced by 40-50%. Due to its contribution to haze, we remain concerned about the proposed BART determination for NO<sub>x</sub>, as it does little to decrease the frequency and magnitude of visibility impairment in the 12 affected Federal Class I areas and the Columbia River Gorge National Scenic Area (CRGNSA). We would like to see NO<sub>x</sub> controlled to similar levels of control as the other pollutants.

### **Flex Fuels plus SNCR**

In its support document for the BART determination, Ecology states that Flex Fuels plus selective non-catalytic control technology (SNCR) is both technically feasible and cost effective. While the rationale for not requiring installation of Flex Fuels plus SNCR technology are presented, these factors do not out-weigh the benefits of implementing this technology.

The benefits of implementing this control technology include:

- Increasing the level of visibility improvement at the 3 most heavily impacted Federal Class I areas due to NO<sub>x</sub> reductions by an additional 0.45 to 0.6 dv on the 98<sup>th</sup> percentile day, or about double that of flex fuels or SNCR alone.
- Reducing the NO<sub>x</sub> emissions to 0.18 lbs/mmBtu, much closer to the EPA presumptive limit (0.15 lbs/mmBtu) than achieved solely through the Flex Fuels program (0.24 lbs/mmBtu)
- Reducing annual NO<sub>x</sub> emissions by 8,022 tpy
- Achieve these at a cost of \$2,162/ton.

The factors weighing against this control technology are manageable, conflict with EPA's view, and would simply delay measurable improvements in visibility. Ecology also recognizes that the energy and non-air quality environmental impacts of compliance will be manageable. Contrary to Ecology's argument that the LNC3 combination of combustion controls previously installed should be considered BART, EPA has stated that "while the NO<sub>x</sub> emission limitation may have represented BART when the emission limit in the RACT Order were negotiated, recent technology advances have been made. EPA cannot now say that the emission limitations in the RACT Order for NO<sub>x</sub> represent BART." The Forest Service advocates a similar position.

Finally, while green house gas emissions will be reduced by December 31, 2025 in order for the facility to meet the Governor of Washington's Executive Order, this does not guarantee

reductions in NO<sub>x</sub>. Even if NO<sub>x</sub> emissions were further reduced by this deadline that still leaves at least a 15 year window in which impairment to visibility could be substantially reduced, a window in which 12 Class I areas and one National Scenic Area will still be impacted. Thus the benefits of implementing Flex Fuels plus SNCR to achieve an emission limit of 0.18 lbs NO<sub>x</sub>/mmBtu out-weigh the costs.

### **SCR Cost Effectiveness**

Use of post-combustion technology such as Selective Catalytic Reduction (SCR) could reduce NO<sub>x</sub> by an additional 76% over the base line condition. As demonstrated by the modeling analysis, this would achieve far greater improvement in visibility as compared with the currently proposed 20% reduction.

Ecology has determined SCR technology as technically feasible, but did not select SCR technology as BART due to costs. Upon reviewing the basis for this decision, we note that Ecology relied solely upon the \$/ton metric for determining that the technology is not cost effective. That metric has an acknowledged level of uncertainty of -20%/+50%<sup>1</sup>. This is considerably more than the ± 30 percent uncertainty typically used by EPA<sup>2</sup>.

Additionally, the annualized costs of the SCR system are based upon a 15 year plant economic life. This should be revised to a 20 year life to be consistent with both the default assumption used in the EPA Cost Control Manual for SCR and TransAlta's response to comments to Ecology<sup>3</sup>. Correction of this error will reduce the estimated total annualized cost.

Performing a cost-effectiveness analysis based solely upon \$/ton offers no consideration of visibility improvement, let alone cumulative impacts at multiple Class I areas. As this is a visibility rule, more transparency is needed in Ecology's determination of BART and how specifically it considered the visibility impacts from this facility.

While the BART guideline does not offer specific guidance on how to consider the visibility metric in assessing cost effectiveness, the BART guideline does mention use of such a metric as dollars per deciview (\$/dv). The FLMs have developed draft guidance which has been provided to Ecology<sup>4</sup>. Additionally, EPA Region 9 has developed a draft methodology which also considers visibility in evaluation of cost effectiveness. As this is a visibility rule, and this source contributes to visibility impairment at 12 Class I areas and a National Scenic Area, a cumulative \$/dv metric is appropriate and should be used.

In the most recent compilation of proposed and final BART determinations for NO<sub>x</sub> prepared by the National Park Service (which includes 46 EGUs from across the country), cumulative cost effectiveness ranges from \$0.6 million/dv to \$15.3million/dv (August 12, 2009). Using costs

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<sup>1</sup> BART Analysis for Centralia Power Plant. Prepared for TransAlta by CH2MHill, January 2008, Revised July 2008.

<sup>2</sup> US Environmental Protection Agency. Cost Control Manual, Chapter 2: Cost Estimation: Concepts and Methodology. EPA/452/B-02-001. January 2002.

<sup>3</sup> Preliminary Responses to Department of Ecology and SWCAA on the January 2008 TransAlta Centralia Power Plant BART Analysis. May 23, 2008.

<sup>4</sup> Estimating Regional Haze Cost/Benefit. Draft, September 25, 2008.

provided in the BART documentation for this facility, implementing SCR at Centralia is estimated to cost approximately \$8.5 million/dv (sum of 98<sup>th</sup> percentile across all affected Class I areas). Thus from this perspective, SCR is cost effective.

Given the high degree of uncertainty in the cost estimate, and the frequency, magnitude and number of Class I areas impacted by this facility, we advocate that Ecology reconsider the cost effectiveness of SCR control technology and the potential benefits to our nation's natural resources in making its BART determination.

### **SO<sub>2</sub> Emission Reductions**

The actual SO<sub>2</sub> emissions from this facility are far less than the currently permitted emission rates. According to the EPA Clean Air Markets database, the SO<sub>2</sub> emissions from this facility during 2008 were only 2318 tpy compared with their currently permitted emission rate of 10,000 tpy. This was accomplished through the increase efficiency of the wet scrubbing system as obtained through experience with the system and the reduction in sulfur content of the PRB coals compared with the coal from the local mine. We recognize that during 2008, the plant only operated at 80% of its historical capacity. If the plant operated at full capacity, it would have emitted approximately 2918 tpy of SO<sub>2</sub>. Given the adverse effects of acid deposition caused by sulfuric acid and its significant role in causing haze, SO<sub>2</sub> should be limited to 2918 tpy at this facility.

Additionally, it would be helpful if Ecology would quantify and present the improvement in visibility likely to occur from both SO<sub>2</sub> and NO<sub>x</sub> emission reductions resulting from the Flex Fuels project. Looking at the change in impacts from reductions in NO<sub>x</sub> emissions alone, as was provided in the modeling analyses, underestimates the actual reductions in haze anticipated from both SO<sub>2</sub> and NO<sub>x</sub> emission reductions.

## **BART Compliance Section of the Settlement Agreement**

The BART compliance section of the settlement agreement is missing a key provision proposed by Ecology in its Support Document for BART Determination (August 2009). In section 4.2 of that document, Ecology proposed BART to be the Flex Fuels project plus “use of a sub-bituminous Power River Basin coal or other coal that will achieve similar emission rates...” Since PRB coal contains approximately 1/3 of the sulfur content of the local TransAlta coal and 90% of the nitrogen content, this provision is key to keeping SO<sub>2</sub> and NO<sub>x</sub> emissions at or below the level achieved in recent years. As such, we advocate retaining this provision in the BART compliance requirements.

## **Continuous Improvement/Regional Haze Goal for NO<sub>x</sub>**

The Forest Service objects to excluding the TransAlta facility from future evaluation for opportunities to reduce haze-causing pollutants before submission of the comprehensive periodic revision of the RH SIP due to EPA by July 21, 2018. This would effectively prevent any evaluation of advancement in new control technology for another 20 years (until the 2028 SIP). This seems unreasonable given the periodic advancements in air pollution control technology and the substantial impact caused by this facility at multiple Class I areas.

## **General Terms and Conditions**

The last phrase of paragraph 2 of the Settlement Agreement is troublesome. It states conditions under which TransAlta, in its sole discretion, may terminate the Settlement Agreement. Because the TransAlta Centralia electrical generating facility is subject to BART, TransAlta should not have the right to terminate portions of the Settlement Agreement pertaining to compliance with BART. The BART compliance section of the Settlement Agreement ought to be addressed separately from the voluntary mercury reductions.

## **Early Mercury Emission Reductions**

Mercury has been found in fish from remote areas in Washington at levels exceeding those thought safe for consumption by wildlife and humans and is a concern for the Forest Service. The Forest Service commends TransAlta’s desire to reduce mercury prior to state or federal regulation.

The Settlement Agreement identifies sorbent injection as the sole technology planned to reduce mercury emissions by 50%. However, recent tests at the facility demonstrate that mercury may be reduced by greater than 80% using sorbent injection technology. As such, we would like to see incentives in place to encourage TransAlta to remove as much mercury as possible. Once federal and/or state regulations are developed for mercury, we would like to see emission limits in place which promote the maximum level of control achievable for this bio-accumulating toxic compound.

Section 7: Compliance Phase, Paragraph b. If construction of the sorbent injection system triggers New Source Review (NSR), please explain why TransAlta should be exempt from NSR.

Paragraph 13 creates a "hollow agreement" in that if TransAlta does not comply with the early reduction provisions of the Settlement Agreement, Ecology can effectively do nothing. This paragraph should be removed from the Settlement Agreement.

From: Rees, Sarah (ECY) on behalf of ECY RE AQComments  
Sent: Thursday, April 29, 2010 5:32 PM  
To: Schneider, Doug  
Subject: FW: Comments on Proposed Agreement for TransAlta's Centralia Coal-fired Plant

Form Letter #1

-----Original Message-----

From: steve12698@comcast.net [mailto:steve12698@comcast.net]  
Sent: Friday, October 09, 2009 9:27 PM  
To: ECY RE AQComments  
Subject: Comments on Proposed Agreement for TransAlta's Centralia Coal-fired Plant

Mr. Alan Newman  
Air Quality Program, Wash. Dept. of Ecology  
P.O. Box 47600  
Lacey, WA 98504-7600

Dear Mr. Newman,

Thank you for the opportunity to comment on air pollution at TransAlta's coal-fired power plant. As a national park tourist and advocate for our national parks, I treasure the beauty and pristine air quality of Mount Rainier and Olympic National Parks and recognize that the State of Washington has a unique opportunity to protect these and other treasured public spaces. In order to preserve these park resources for present and future generations, it is important that air quality laws and regulations are strictly followed.

Mount Rainier and Olympic National Parks, as well as multiple wilderness areas, are threatened by air pollution from the Centralia coal plant. To protect these public spaces Washington must require that TransAlta significantly reduce its air pollution.

The Clean Air Act requires power plants to reduce haze-causing pollutants, including nitrogen oxides, and toxic chemicals like

mercury. Washington should require the most effective pollution controls to reduce TransAlta's nitrogen oxide and mercury emissions. Without these controls, the Centralia coal plant will continue to unnecessarily obscure views and contaminate water and wildlife in our national parks and wilderness areas for decades to come.

Thank you for considering my comments.

Sincerely,  
Steve Lovelace  
PO Box 245  
Wilkeson, WA 98396

From: Rees, Sarah (ECY) on behalf of ECY RE AQComments  
Sent: Thursday, April 29, 2010 5:29 PM  
To: Schneider, Doug  
Subject: FW: Fight Coal Pollution in Washington!

Form Letter #2

-----Original Message-----

From: Sierra Club Membership Services  
[mailto:membership.services@sierraclub.org] On Behalf Of Frank And Nola Allen  
Sent: Monday, November 09, 2009 10:04 PM  
To: ECY RE AQComments  
Subject: Fight Coal Pollution in Washington!

Nov 10, 2009

Sarah Rees

Dear Rees,

I have the following concerns regarding the proposed Settlement Agreement between the Department of Ecology and the TransAlta corporation regarding its coal plant.

From health care professionals to park rangers to fishermen, the Washington public has grave concerns about that this plant generates in our communities. As the state's largest polluter for global warming, mercury and haze (from nitrogen oxide pollution), the cumulative impact of this plant affects Washingtonians from every walk of life. The State should not move forward with the Settlement Agreement as proposed until a more substantive review can take place.

There are four main problems with this Settlement Agreement as it now stands:

1. This agreement is insufficient in controlling nitrogen oxide, the main cause of haze in our national parks and wilderness areas.
2. The reductions required for toxic mercury emissions are insufficient and should be improved to 90 percent.

3. The pollutant-by-pollutant process has distorted the pollution impacts of this plant on public health.

4. The public process has been insufficient.

I hope the state will carefully consider our concerns. The TransAlta coal plant is the dirtiest form of energy in the state and is the leading source of top environmental problems. I know we can do better than the specifics in this Settlement Agreement and for the overall pollution problems caused by the state's only coal plant.

Sincerely,

Dr Frank And Nola Allen  
2147 E Shelby St  
Seattle, WA 98112-2027  
(206) 323-3168

*Jerry:* We're gonna get started in just a few minutes. So if you want to find a seat that would be great. There's a hand-out on the outside table just outside these doors. If you didn't get a chance to pick one of these up and you'd like to have one just raise your hand, we'll have a staff person bring it to you. It's like a focus sheet so we'll have Kim bring some of these focus sheets in. Can you all hear me way there in the back? You guys can come on up front if you like.

*Female:* Okay.

*Jerry:* Can you hear me okay? All right. So good evening, my name is Jerry Feelin and I'll be the facilitator public hearings officer for tonight's public hearing. On behalf of the Department of Ecology I want to thank you for coming out here tonight to provide testimony for the proposed ecology TransAlta Mediation Agreement. Let the record show that it is 6:38 on Tuesday, September 13, 2009 and this public hearing is being held at the Department of Ecology Headquarters Building at 300 Desmond Drive in Lacey, Washington.

A couple of logistical things. If you have not already turned off or silenced your cell phone, PDA's, pagers, anybody even carry a pager anymore? If you would do that at this time that would be great. Restroom facilities back out through this set of double-doors. Don't take the big stairs up although there are some up there at the top of those stairs. Just go through to the little stairs for those of you who came down the elevator and on the right hand side where you get to the elevators there's signage once you get to that little foyer there.

You will find restroom facilities and you begin – okay, would you bring in a couple of the focus sheets please? There's some folks that would like to get a copy of that and we did. If you want to hold your hand back up. If you didn't get those we'll make sure that those get to you.

*Female:* Anybody else.

*Jerry:* And as you came in you were asked if you wanted to, if you would sign in on one of our attendance cards. We're required to do this for the security of the building. And there's also the opportunity for you to indicate whether you want – would like to testify or not. There's about eight or nine of you that have indicated such. If you didn't realize you had to check that box, don't worry. When I

exhaust the list of those who have identified that they want to testify I'll come back, see who else wants to, or maybe you maybe changed your mind and you now want to testify. So just because you didn't check it on the way in doesn't mean that you still won't get a chance to do some testimony.

Basically the agenda is going to go like this. We're going to have a short presentation by a couple of staff folks from the air quality program. That will be followed by a short question and answer period. We'll have some – we have some marvelous microphones and we'll bring those up to you. Just raise your hand and we'll bring those to you. We'll facilitate the short question and answer period and then we'll get right into the formal public comment public testimony. So far, so good?

We're gonna run over just a couple of ground rules. Nothing earth-shattering or ground-breaking here. Most of the things are things that we learned about being nice to one another back in kindergarten. So we're gonna ask that you hold your questions during the presentation so we can get through the presentation and then we'll get – facilitate the questions of staff at the end of that. No distracting or destructive behavior. We request that you have respectful voices.

We could be recognized during the Q&A part and I'll do that recognition and then we'll have one of the microphone runners go to you. For the public comment I'm gonna call you up in the order in which you signed in, and again, if you didn't sign in or you didn't indicate that you wanted to testify and if you didn't so indicate we'll give you a chance to do so at the end. We have to use this one a lot sometimes.

We're gonna ask that you respect the right of others to have an opinion even if you don't agree with that opinion. Okay. You respect the right that they have – they have the right to have their opinion. We're gonna limit the testimony to some reasonable length of time. There's only like, say, nine or 10 of you that have indicated – we're probably gonna start at about five minutes. Hopefully you can get through in five minutes.

There's only a few of you. I'm gonna let that go a little bit. I won't let it go 12 or 15 minutes because there are people who are patiently waiting at the end of that list to testify. You have the parents' statement. If you'd like to turn that into us tonight that has the same weight as any oral testimony that you might present as does any of the written comments that you might submit during

the public comment period. So I'll – we'll wait until we get all the cards in as a few other people are trickling in but we're probably gonna go somewhere in the five to seven minute range. That's definitely about an hour's worth or so in barely about an hour's worth of testimony. So that sound reasonable to you folks? Somewhere between five and seven minutes. I mean you can probably speak to your concerns during that time frame.

Okay. With that we're gonna turn it over to the ecology staff for their presentation. We have Sarah Rees and Al Newman and you can follow along with their slideshow here and, again, we'll ask you to hold your questions and we'll facilitate that question and answer at the end. Sarah?

*Sarah:*

Great, hi. So can folks hear me? I was just getting close enough to the mic. So again, my name is Sarah Rees and I'm a manger with the Air Quality program and I'm gonna go over the basics of the mediation agreements and the mercury agreement that we have here and then I'm gonna turn it over to my Senior Engineer, Al Newman, who is gonna go over some of the details of our draft board determination.

So before I get into that I just wanted to give a little bit of a background on the TransAlta Centralia facility. It is the only coal fire power plant that we have in the State of Washington which is a bit unusual. In most states you'll have several of these but we only have the one. It started operating in 1971 so it's an existing facility. It's been around for quite a while. It's rated at 1400 megawatts of capacity which is a significant coal-fired power plant.

That generating capacity is important not only for the power that it produces but the location of that power. It's the only facility that's sized this side of the Cascades so it's really important for good stabilization.

Why we're taking action right now on this? As with all coal-fired power plants TransAlta generates mercury and it generates significant amounts of mercury. So in ecology mercury is a priority chemical for us and so it was important for us to work towards getting reductions of mercury emissions from the facility. It is the top source, single source of mercury in the states.

We also have some requirements that are triggered under the Federal regional haze rule and so because of the time the TransAlta was built and the type of facility it is there were some requirements

we had to go through and we knew we needed to do something about that and work with the facility on that and we decided that the best way to go about doing that given these two issues was to go into mediation. There were significant environmental issues that we wanted to resolve, we started this mediation process in the Fall of 2007.

*Jerry:* Sarah, move that just a little bit closer. This is – it's up as far as it'll go.

*Sarah:* Okay.

*Jerry:* It's just hard to hear you in the back.

*Sarah:* Can you guys hear me? Is this better?

*Jerry:* Speak up.

*Sarah:* Sorry about that. So we started this mediation process in the Fall of 2007. It was subject to the Uniform Mediation Act so it was a confidential mediation and we did that for a couple of reasons. One, we wanted to have open discussions with the facility so that TransAlta would be able to share some information that might be confidential business information.

Because we're a public agency unless we do that under a confidentiality agreement we can't protect that information and so we wanted to be able to have that environment to have those discussions with the plants. There was also the threat of litigation here. Certainly under the Federal regional haze rules ecology had the position that that facility was subject to a review to see if there were additional controls required.

Doing this on the mediation allows us to proceed and to work through with the facility and get to some resolution without having to go through a lengthy litigation process. And we did agree going through the mediation that there would be a public process coming out of this. Before signing any agreement with TransAlta there would be an opportunity for public review and comment.

We had a public meeting in the end of March of 2009 and now today we're having this public hearing, we also have a public comment period that's open and that will be open through November 9.

So what did we agree to in this mediation? It's focused on significant air issues. For mercury TransAlta is gonna be making voluntary reductions in their mercury emissions. They're gonna be installing controls to do so. On regional haze, ecology has come up with a determination of what constitutes best available retrofit technology, also known as BARTS for nitrogen oxides.

It's important to note that this mediation agreement does not include any agreement on greenhouse gas emissions from TransAlta. I know there's a lot of interest about that because TransAlta is clearly a significant emitter of greenhouse gas emissions in this state but that's covered under executive order 0509 by Governor Gregoire. That executive order requires ecology to work with TransAlta to come up with ways to reduce greenhouse gas emissions from the facility by about 50 percent by 2025. So that will be an entirely separate process from this mediation agreement.

Now on mercury, and I mentioned that TransAlta is voluntarily reducing their mercury emissions. There's currently a regulatory gap for mercury. The Federal government had started a rule making for mercury from coal-fired power plants in 2005. That rule would have given Washington a budget for mercury. It would have then allowed plants that were subject to that budget to trade mercury nationally.

That rule by the Federal government was struck down by the D.C. Court of Appeals in February of 2008. So when that rule got struck down there was a gap left behind. The Federal government is currently proceeding with developing a max standard for mercury for coal-fired power plants. That standard would constitute basically the top 12 percent of technologies for mercury control from those facilities. That process is gonna take several years.

EPA is undergoing it right now. They're in the way of doing some information collecting but there likely won't be a standard in place until the 2016 or 2017 time frame. Meanwhile what we have with our agreement, TransAlta is currently testing controls. They've installed emission monitors so they'll be able to start self-reporting what their mercury emissions are to ecology this year and, because they're going through the testing and starting to look at this they're starting to get some reductions in mercury.

By 2012 they'll be reducing their mercury emissions by 50 percent. So going through this process really gives us the fastest

path to get some mercury reductions today instead of waiting for a Federal process to work itself out. So the type of controls that they're installing, it's an activated carbon injection. You may also hear the term sorbent injection. Basically that is kind of like it sounds. You would inject activated carbon into the flu gasses of the facility. You pick an injection point where you want to maximize the contact of this activated carbon to the flu gasses and the carbon acts a little bit like a sponge and it takes up the mercury and separates it out from the flu gas.

These are state of the art controls for any existing coal-fired power plant. If you wanted to reduce mercury you would install this kind of system. As I mentioned before TransAlta is already testing this. They went out and hired a consultant and they've been running some tests through the summer and they've seen some pretty promising results coming out of this work, again, oriented towards a 50 percent reduction goal.

One thing I do want to mention is that there are some potential impacts to other processes as a result of activated carbon injection. When you move mercury from air it goes somewhere else and so one of the consequences of this process is that there will be – there may be some mercury contamination in fly ash from TransAlta. The plan is to have the controls fully-integrated into the system and operating by 2012 and the total cost to implement this would be about \$20 to \$30 million range.

So, as I mentioned, TransAlta is currently running tests to optimize mercury controls. These controls are not the kinds of things that you buy off the rack and you just slap onto the end of the tail pipe. They do require that there is a number of tests to go on to try to get the right point of injection, to try to get the right sorbents included, try to get the right injection rate.

And so there's a lot of work that has to go on to optimize this and make this work out right. From the current tests it does look like TransAlta will be able to get at least 50 percent reduction. The current emissions we believe are in the ballpark of 400 to 500 pounds per year.

So these are very significant reductions in mercury that we're looking at and, again, the preliminary test results look like it would be possible to go even higher than that. It's just preliminary results so we can't bank on those numbers but again the technology looks very promising.

So now I'm gonna turn this over to Al Newman and he'll give you some more detail on the regional haze rule and BARTS.

Al:

All right. The – there's a Federal regional haze rule that was issued a number of years ago and, among other things, it requires ecology to submit a – what's known as a state implementation plan which is the outline of how we intend to get from the current visibility conditions in wildernesses and national parks to what's considered or defined as natural conditions by 2064.

The plan is in steps. It's in a number of 10-year steps and the first plan is considered a foundation plan upon which the others are based. As part of the initial set plan we have to make sure that all facilities that are BART eligible and subject to BART are evaluated for their emission controls and if a further emission reductions that meet the criteria of the best available retrofit technology definition exist and can be implemented on the plant to require those controls.

So the best available retrofit control technology applies to a family of 26 specific source categories. In Washington that includes the TransAlta plant and six other facilities. All of these facilities have equipment that was built in between August '62 and August 1977 which is a period of time defined by the Federal Clean Air Act. They all have the potential of their BART eligible equipment to emit at least 250 tons per year of one of the visibility impairing pollutants and that the actual emissions from these facilities either cause a visibility impairment through modeling of one deciview or greater, which is a metric of visibility impairment, or contribute to visibility impairment by having an impact of half of a deciview or greater.

In the BART analysis process as defined by EPA and their guidance where the process starts with identifying all of the available retrofit controls that can be applied to a facility and elimination of all of the control technologies that are infeasible to operate on the facility, evaluating the control effectiveness of all of the remaining opportunities, evaluating the various impacts of the – those controls and documenting the results of that analysis and evaluating the visibility impacts and potential improvements from the emission controls that are proposed for BART.

So in the case of TransAlta's power plant emissions the BART determination process is limited to the Nitrogen Oxides emissions only. There was a regulatory process operated by the Southwest Clean Air Agency starting in 1997 that resulted in the construction

of emission controls for sulfur dioxide, nitrogen dioxides and particulate matter. Graphs on the side of the room here show the reductions that have occurred over that time due to those requirements for sulfur oxides and nitrogen oxides. As part of a 1999 visibility submittal, EPA approved in 2003, EPA accepted that the sulfur dioxide and particulate emission limitations that came out of that 1997 regulatory action represented BART for those pollutants and specifically said that nitrogen oxides did not currently represent BART or could not be defined whether it did or did not represent BART.

As a result this analysis that we've done is with the information developed in part by the company is limited to the nitrogen oxides portion of their emissions. So they evaluated a number of controls. The actual list started with the 37 different control technologies that were evaluated in 1997, looked at the most promising of the nitrogen oxide controlled technologies out of that list and added additional ones that had been found or developed in the meantime.

The primary new control technology that had showed up in the meantime has been over fire air – alternative over fire air systems and improved boiler optimization process, both of which were evaluated as part of this process. The more run of the mill and commonly applied technologies of selective catalytic reduction and selective non-catalytic reduction were evaluated in greater detail.

Both of these processes involve the injection of ammonia or urea into the flu gas from the boilers where it react – the urea or ammonia reacts with the nitrogen oxides to produce nitrogen gas and water. The big difference is the non-catalytic does not use a catalyst. The catalytic version uses a catalyst to achieve the controls at a lower temperature.

So one of the projects that I did not list on that was called the flexible fuels project or flex fuel project. It was a project that was ongoing with the plant at the time of the BART analysis and, as a result of the use of this project, nitrogen oxides were going to reduce approximately 20 percent. The primary reason for this was being able to operate on non-centralia coal. The target coal of the design has been a powder river basin type low sulfur sub-bituminous coal.

Along with this process and as part of the mediation agreement, the company has agreed to go – continue to work on how to further reduce the nitrogen oxides emissions over time and as a side benefit since the coals that are targeted from the flex fuel project

contained lower sulfur than the Centralia coals that they are currently replacing there will be a significant reduction in sulfur dioxide emissions.

So there are a number of other considerations in the BART process that are looked at. Some of them which are not listed on the slide include the costs of compliance, the energy and non-air quality impacts of the potential to control technology, the existing controls already in place at the plant and the remaining useful life of the plant in addition to the degree of visibility improvement that might be achieved.

In the analysis in the end the flex fuels project and selective non-catalytic reduction result in approximately the same improvement in visibility and approximately the same emissions reduction. Along with that we have some legislation laws that exist that reflect the carbon dioxide emissions and also in that process limit the opportunities of the plant to make modifications that increase its emissions.

There's an economic impact of the fly ash recycling and sort of as an also-ran the Governor's Climate Change Executive Order has the potential of limiting the useful life of the facility.

So what follows this meeting? We will – and the public comment period on the BART analysis is that we will evaluate all of the comments that we receive and we will write up a response to those comments and as necessary make changes as appropriate to our BART determination.

Later after this, after we've reviewed the comments, the mediation agreement would be signed or otherwise and later in early 2010 this BART determination along with the other six BART determination and our regional haze SIP as a whole will be open for public comment again and that's it.

*Jerry:*

All right. Thank you very much. Thank you for your patience in holding your questions. Appreciate that. I will now open it up for the next 15 or so minutes so – to take your questions. This will be the opportunity for them to respond directly to your questions. We'll set apart a little bit the process where we get to the public hearing. You can certainly ask a question of staff on the record but the staff will not be engaging in responding to that comment that you might make during that public hearing.

So if it's a question that you want an answer from tonight ask it during the Q&A. It goes onto the official hearing transcript. We're not gonna allow them to engage in dialog at that time. So we have Miriam and we have Tammy who will bring a microphone to you so that everyone can hear and I see a hand right here. We'll start right there. If you would stand and give us your name that would be great.

*Brimmer:* Hi, I love miseries. I'm Jennifer Brimmer with Earth Justice and I'm here on behalf of Sierra Club National Parks Conservation Association and the Northwest Environmental Defense Center and I actually have a question about questions. I have a lot of questions and it would probably show up more than the 15 minutes so I would like to make a proposal that I forego asking those questions here in the interest of speeding things along, and that I submit them to you in writing and you respond in writing but that we post those so that everyone that's here for the public hearing would get the benefit of the public exchange. Would that be an acceptable process?

*Sarah:* Let me get close to the mic here. Yeah, I think that would be an acceptable process and we'd be happy to do that.

*Brimmer:* I will submit those questions hopefully tomorrow, no later than next week.

*Sarah:* Thank you.

*Brimmer:* Thank you.

*Jerry:* All right. Who's next? Yes sir, right over here.

*Quinn:* Hello, my name is Mark Quinn. You mentioned that part of the agreement with TransAlta obligates them to begin addressing carbon dioxide emissions at some point up to 2025 to meet an early requirement for global warming emission, greenhouse gas emissions. I was just wondering how is that going to happen?

*Sarah:* Well again this agreement doesn't address carbon dioxide emissions. There's a separate process for doing that under Governor Gregoire's Executive Order 0509, and so that's ongoing right now and what that does is requires ecology to engage at TransAlta to work with them to get to a 50 percent reduction by 2025, and so getting that amount of reduction of greenhouse gas emissions from a traditional coal-fired power plant, it's gonna take a lot of looking at different technologies that are out there,

potentially different fuels that would be used. That process is very much in the starting point so that we haven't thought through all of that but we're just embarking on that process to figure it out.

*Jerry:* Thank you. Anyone else? You must have questions. Did I see a hand?

*Male:* Yes.

*Jerry:* All right. Right back here in the – hand me your – we can get there to you.

*Male:* I was wondering do you know the potential impacts of these mercury emissions and also BARTSA's reduce emissions as much as possible. Do you have an estimate of what that would work out to as it's defined in the percentage compared to the current emission rate?

*Sarah:* Okay. On the mercury emissions the mercury that's emitted from TransAlta is likely in a form that is gonna deposit much further away from Washington State. It's – mercury in general, there's an atmospheric mercury pool. Most of what we get is from Asia for the most parts and it circles the world several times before falling out and some coal-fired power plants that don't have any controls on them like the ones you find out in the Ohio River Valley for example, their mercury is in a form that falls out pretty close to the plants.

But TransAlta is a facility that has installed sulfur dioxide scrubbers and other emission controls that put their mercury in a form that's gonna go up, join this global mercury budget and kind of circle around for a while. So it's hard really to trace an impact here in Washington on that. We do know overall that mercury is a very important and toxic biocumulative toxin and so it's something that's important for Washington that we take steps to reduce and given that this is our single largest source of mercury in the state it's important that we look at that.

And then for the BART question I think I'll let Al answer that.

*Al:* Yeah, could you repeat it so I understand? I want to make sure I answer the question you're asking. Okay. If you need to ask me questions afterwards about what it means don't be afraid to come up.

*Jerry:* Yeah, staff will stay around following the end of the close here of the public hearing to address any one on one questions or comments that you might want to have. Yes?

*ACI:* I have part of a two-part question. The activated carbon injection, I'm curious if this process has ever been proven before to work and how effective it is, where – how deep down is the mercury going? Could it ever get out? If you could explain a little bit more about what that's about, that would be great.

And my other question is is are you counting the 50 percent reduction in mercury within that or is the reduction coming from something else as well?

*Al:* Yeah, Activated Carbon Injection for mercury control is actually a very well-proven technology. It's used on municipal waste and hazardous waste incinerators routinely for a number of purposes. It's been used in Europe for two decades at least for mercury reductions.

The mercury enters the pour space on the activated carbon and if it's an oxidized form of mercury it then binds in the carbon. If it's an elemental form of mercury it doesn't bind as well and that's why halogenated versions of activated carbon are often better at removing mercury from flu gasses when there are low quantities of – or I should say when the mercury is primarily in an elemental form.

There's a lot of research around whether the mercury stays in the carbon over time and the bulk of it that I have read which, granted, is not the bulk of the research that's available, indicates that once the mercury is in the carbon it will stay there as long as you don't burn the carbon. Okay. And the other part of your question was –

*ACI:* Is that part of the 50 percent reduction?

*Al:* 50 percent reduction is entire – that is being evaluated here is entirely due to the carbon injection. There is some – in the case of the Centralia facility with the wet limestone scrubber system there is some additional small removal that can be achieved through the web scrubbing system but that's not part of the 50 percent as it's been evaluated to date in their testing.

*Adam:* My name is Adam and this is a question direct towards Sarah but I guess all of you. You had mentioned earlier that the mercury that would be emitted into our atmosphere and by "our" I mean the

world would not directly – you know – would not really be affecting us in Washington, wouldn't be very near us. It would be spread out throughout the world and that most of our mercury in the atmosphere that we get is actually from Asia and that first strikes me as a little bit immoral to put our mercury on someone else, but first I want to just real quick read the Department of Ecology's mission and then I have the question.

The mission of the Department of Ecology is to protect, to preserve, and enhance Washington's environment and promote the wise management of our air, land and water for the benefit of current and future generations. In order to fulfill our mission and move Washington forward in a global economy the Department of Ecology has three goals: prevent pollution, clean up pollution and support sustainable communities and natural resources.

And a key word that you had mentioned that stuck out to me was "bioaccumulation," and I'm sure a lot of us have all heard about this and the fact that there is mercury build-up, especially in the fish that we eat, especially like the salmon which are so much an important element of our Washington culture.

And so my question is how is just putting our mercury on someone else wise management, let alone moral?

*Sarah:*

And I – we do take mercury very seriously. It's one of the top priority chemicals of concern at ecology and that's one of the reasons why we worked with TransAlta to get a reduction in emissions and to get a very significant reduction in emissions faster than what the Federal government would require.

My statements as to the mercury traveling around the world and kind of joining this global mercury budget, I mean that's just really what happens with this type of mercury and it's a phenomenon that's pretty well-documented that most of what we do get in the U.S. is from coal-fired power plants in China.

That said, we take it very seriously that there is an emission source coming from Washington. It's gonna fall out somewhere. It doesn't necessarily not aware, and so that's why we're taking steps to reduce it to the extent we can.

You know we feel that going through this process with TransAlta, they're installing the best possible controls for mercury that are available and they are taking steps to do it as soon as they can. They're not waiting for any kind of later deadline, so we feel that

this is making a very substantial step in reducing mercury emissions within this state.

*Jerry:* Any more questions? We have time for a couple more. Yes, way in the back?

*Wilcox:* Yeah, I'm Jim Wilcox of Trout Unlimited here. I just want to agree with Adam. It's real wise for a young man like him to say, "Are we not good neighbors in Washington? Should we be able to do like others and put our garbage in the air?"

And I'm curious about with mercury, I'm not sure about this, but how does that look like acid rain? What happens to the mercury when it – when we get rains? And then fish and wildlife as a member of Trout Unlimited is certainly important. In talking with a Fish and Wildlife biologist recently he said there's concerns about the salmon and other fish that the Orca whales are eating and causing problems. So there's some issues there and if we could get any of those touched on it would be great. Thanks.

*Sarah:* Okay. So again we do acknowledge that mercury is a significant issue within the state and most of what we get from deposition isn't coming from within Washington but, that said, we are taking steps to try to manage and reduce our sources internally.

As for the – what it looks like compared to acid rain, mercury that's emitted from coal-fired power plants that's in a form that would deposit locally, meaning from those facilities that don't have additional controls that TransAlta has, those would fall out closer to home kind of in the way that acid rain would work.

But the stuff that's mostly kind of going up and circling around in the global budget, we don't get as much of that. So it doesn't really line up for this particular case as much as well with the acid rain analogy.

*Jerry:* Time for one more, right up here.

*Brimmer:* Have you – Jennifer again. Have you sent a draft of this to EPA and solicited their input?

*Sarah:* A draft of the overall agreement?

*Brimmer:* The Mercury Environment Agreement.

- Sarah:* EPA has seen our draft BART analysis. We've not worked with them on the mercury.
- Brimmer:* What's been the reaction?
- Sarah:* BART's, they've had some comments and we've had some dialog about it. We – it's part of our normal course of working with EPA on any of our BART submissions.
- Brimmer:* What were EPA's comments?
- Sarah:* EPA has asked us some questions about our analysis, to ask us more about how we've justified using different technologies over the other and asked us for more supporting information.
- Brimmer:* Was EPA then critical?
- Sarah:* EPA has asked us for additional supporting information where they felt the analysis needed it.
- Jerry:* Okay. Any other questions? No? Oh, we have one. Okay. One more. This will be the final one and we'll move into the public hearing. Right back here.
- Female:* Now I'm just trying to figure out how much of this agreement was coming from TransAlta and how much of it was coming from you guys. How much pressure did you actually put on them to reduce their emissions and get the best possible agreement?
- Sarah:* It was a joint agreement. We worked with the facility because we had an interest in reducing mercury and we also needed to work through a process on reducing nitrogen oxide emissions for BART and so I think it was really a joint agreement that we reached.
- Jerry:* Take one more?
- Female:* Why not reduce emissions altogether? That would be a great goal to shoot for and eliminate, not produce any mercury at all.
- Sarah:* Elimination to not produce mercury at all would likely require this facility to be shut down and that's not where we were going with this agreement.
- Jerry:* We're gonna go ahead and wrap up the Q&A part at this time and move right into the public hearing. I don't like this microphone.

*Male:* Here, try that one.

*Jerry:* All right. Maybe this one isn't quite as sensitive. Okay. I'm gonna call you up in the order in which you signed in. I'll apologize in advance for any mispronounced names.

I'm gonna ask you to step into this microphone here, state your name and any affiliation that you might have, and again, we'll put a loose timer on you, somewhere between five and seven minutes as, again, we only have seven or eight folks that have currently identified that they want to testify.

If we go way beyond that I will apologize again in advance for interrupting you and asking you to submit to wrap up your comments or otherwise submit those in writing. Okay. First up, we have Donna Albert. She will come up and she will be followed by Mark Quinn. I'll have you speak right into that microphone.

*Female:* Donna Albert?

*D. Albert:* Right here, back here.

*Jerry:* Is that her back there?

*Sarah:* Is that mic on at all?

*D. Albert:* I'm not representing my employer but here as an individual representing my grandchildren: Austin, Donovan, Terrance.

*Jerry:* Okay. Tell me – then those are some – it's an emotional issue for a lot of people. Mark Quinn?

*Quinn:* My name is Mark Quinn. I'm here on behalf of the Washington Wildlife Federation. We are the state affiliate for the National Wildlife Federation and, like them, one of our top priorities is advocating for the establishment of a clean energy economy. We appreciate ecology's efforts to try to make emissions from the TransAlta coal – trying to reduce emissions from the TransAlta coal-fired power plant and make them cleaner and safer according to existing state and Federal rules which unfortunately don't do a very good job of making the air safe.

Even more unfortunately, the burning of coal to generate electricity is a process that even the most advanced technologies cannot make clean. Coal is the dirtiest source of energy on the planet and while we can argue that new technology makes it cleaner it's still the

dirtiest way to generate electricity when burned coal produces almost twice as much carbon dioxide as natural gas, four times as much carbon monoxide, four and a half times as much nitrogen oxide, almost 2,600 times as much sulfur oxide particulates, mercury, one of the most toxic substances known, as well as radioactive uranium and thorium.

If that wasn't enough to make you want to stop burning coal you can look further to the destroyed landscapes that result from the mining of coal and the huge stockpile of 130 million tons a year of hazardous coal ash, the leftovers after the coal is burned.

Ads about clean coal and the notion that its development is just around the corner with carbon capture and sequestration are very disingenuous. There are huge technological obstacles to overcome. When you consider where to store approximately six billion tons of carbon dioxide annually from the nation's coal plants you begin to understand the complexity and insanity of such a proposal.

We should leave coal in the ground where it and the carbon locked in its molecules can be used to continue filtering our ground water. We want to see every effort taken to control toxic emission like nitrogen oxides and mercury, and eventually carbon dioxide at TransAlta but a better approach in Washington, a state that according to Governor Gregoire when she talked to the Washington Conservation Breakfast just a few days ago, she said she wants to make Washington a global leader in reducing greenhouse gas emissions.

So a better plan for Washington would be to slowly but surely phase out the burning of coal as a fuel source for electricity in the first place. It won't be easy but it will be much better for our long-term health and welfare, something that is clearly the responsibility of government to ensure. Please figure out a way to get this state out of the coal business once and for all and transition to a clean energy economy that can sustain our health and welfare and our economy.

That's the vision that we'll – that's the vision that we'll get Governor Gregoire and the State of Washington where she wants it, leading the nation and the rest of the world in the fight against climate change. Thanks.

*Jerry:*

Thank you, very much. Next we have Randy King and he'll be followed by Jonathan Smith.

R. King:

Good evening, I'm Randy King, the acting superintendent of Mount Rainier National Park and I appreciate this opportunity to present comments of the National Park Service on the proposed consent to create addressing best available retrofit technology BART emissions reductions at the Centralia facility.

Centralia facility is located in proximity to majestic national parks and wilderness areas whose resources are significantly affected by its nitrogen oxide emissions.

Mount Rainier National Park was established by the citizens of Washington in 1899 as the nation's fifth national park. It's about 50 miles away. Emissions from Centralia facility almost impact Olympic and North Cascades National Parks and I'm also speaking this evening on behalf of Superintendent Karen Gustin of Olympic National Park, and Superintendent Chip Jenkins of North Cascades National Park.

By law our nation strives to conserve on par national parks and wilderness areas in their natural state, protected from the adverse impacts of air pollution.

In 1995 we testified regarding the need for strong limits on emissions of sulfur dioxide at the Centralia facility to address the visibility impairment and other environmental concerns of the park and in the region caused by those emissions.

We note with appreciation that since those strong emission limits were put in place and the facility came into compliance there has been a dramatic reduction in measured sulfate at Mount Rainier and a corresponding statistically significant improvement in visibility on the 20 percent worst visibility measured at the park.

Today we note that the proposed consent to create does not require the best technology to reduce emissions of nitrogen oxide, also a key component and visibility impairment at the parks. Our review of the technical support documents provided by the state concludes that applying the best technology to reduce nitrogen oxide, an example of this led to catalytic reduction technology, is both technically feasible and the most cost effective option when considering the visibility improvements that would occur at Mount Rainier, Olympic and North Cascades National Parks, and nine other class one wilderness areas administered by the U.S. Forest Service.

We are also concerned that the consent decree which addresses the BART component of the Environmental Protection Agency's 1999 regional haze SIP rules was negotiated without participation by the Federal land managers.

Since BART is a critical element of the State implementation plan for visibility protection it is uncertain if the state's consent decree process met the requirements and the spirit of the Federal land manager consultation provisions of the Clean Air Act.

On June 24, 2009 the Department of Interior was petitioned by the National Parks Conservation Association, Washington Wildlife Federation, Sierra Club and the Northwest Environmental Defense Center to certify that emissions and nitrogen oxides from the Centralia facility are reasonably anticipated to cause or contribute to visibility impairment at Mount Rainier and Olympic National Parks.

Such a certification would also require the State to specify BART for Centralia to address any reasonable attributable impairment under existing provisions of the state implementation plan. The Department of the Interior's initial response to the petitioners expressed the hope that the State's actions on BART for regional haze would address any concerns for reasonably attributable impacts. The consent decree as proposed does not adequately address these impacts.

The Department of the Interior will make a final decision regarding the petition pending the outcome of the Department of Ecology's actions for regional haze BART.

To remedy our concerns with the BART limits established in the consent decree we request that the Department of Ecology take a strong leadership role similar to its sulfur dioxide actions in 1995 and incorporate a BART requirement for selective catalytic reduction technology in the regional haze State implementation plan requirements for Centralia.

This would limit Centralia's emissions and nitrogen oxides to approximately 3,000 tons per year or approximately 12,000 tons per year less than that proposed in the consent decree.

Like the reduction in sulfur oxide clearly indicated such a reduction of nitrogen oxide would lead to a direct improvement in visibility of Mount Rainier National Park as well as contribute to

improve visibility and increased health effects from fine particular matter region-wide.

While the focus of our concern is the nitrogen oxide emissions we are also concerned with mercury deposition at Mount Rainier and throughout the region. We note that addition of selected catalytic reduction technology, if appropriately designed, would be compatible with emissions reductions of mercury and would not interfere with future mercury emissions removal should pending new regulations from EPA require more reduction than the co-benefit resulting from sulfur dioxide, scrubbing and selected catalytic reduction.

In closing I would like you to think about the importance of Mount Rainier National Park to this region and the world for today's public and for future generations. There are many reasons that the law mandates our highest levels of environmental protection for these special areas. National Parks and wilderness areas are our natural and cultural heritage.

Sociology studies confirm their importance as do our individual experiences of recreation and renewal. Over 1.1 million people visited Mount Rainier National Park in 2008 to recreate and visitation as of the end of August of this year is already above the one million mark.

Regarding the economic benefits of the park, for example, in 2001 when our last visitor survey was conducted we learned that recreation visitors to Mount Rainier National Park spent \$29.8 million within a 30-mile radius of the park. The total economic impact of visitor spending was \$24 million in direct sales, \$9 million in personal income, \$13 million in direct value added in 649 jobs.

With multiplier effects created by the recirculation of money spent by tourists, visitor spending generated about \$35 million in local sales and an associated \$13 million in personal income, \$20 million in value added and 812 jobs. These figures do not include park emission fees or the impacts of the MPSP role in operations in the area.

National Parks and wilderness areas not only guard the natural and cultural assets of our nation but they are also among our most sensitive gauges of environmental stewardship. Harm to these resources that our nation strives hardest to protect must signal an alarm for other resources and for us.

The National Park Service's desired outcome in this process is a solution and a decision that protects air and other important resources by using proven cost effective technologies to significantly reduce nitrogen emissions from the Centralia facility, to be clear an outcome that the National Park Service does not seek as a closure of the Centralia Power Plant.

Experience from other states and the success of the 1995 collaborative effort in reducing sulfur dioxide emissions from the plant tells us that these two outcomes achieving a significant reduction in nitrogen emissions and keeping an important facility operating are wholly compatible. We stand ready to work with all interested parties towards these outcomes.

This concludes my testimony. The National Park Service will be submitting detailed technical comments on a consent decree before the close of the public comment period. I thank you for the opportunity to testify on that. Thank you.

*Jerry:* Jonathan Smith, and he'll be followed by – is Maya Face?

*Maia:* Maia.

*Jerry:* Maia. Mr. Smith?

*J. Smith:* Hi, and I've worked for the past couple of years as a political campaigner and what I would call to light something that I think we're all pretty aware of. Right now coal is not very popular. It just isn't. People are waking up and becoming aware of coal as the dirtiest form of energy and we've seen a lot of campaign dollars come in to various campaigns and to TV ads and radio ads in our state making an awareness of coal.

Your comment was really enlightening when you responded to – I forget whose question but when you talked about keeping the facility open, this process of dividing CO2 emissions, doing the closed door arbitration to talk about mercury reduction seems like a tailor-fit project to try to keep this facility open but this facility is not popular in Washington state.

I want to make you aware and I want to raise the issue up to the Governors through this comment period that this is not gonna work out as a positive – as a positive spin but it's going to play back politically, it plays back with the citizens of Washington state.

It may well prove at some point soon that siding with the bad guys against the will of the people may be a dicy prospect in a democracy. Thank you.

*Jerry:* All right. Thank you. Maia? And she'll be followed by Adam – is it Fleishman?

*A. Fleisher:* Fleisher.

*Maia:* Hi, my name is Maia. I'm another organizer and campaigner and I've seen a lot of different companies try to brainwash themselves and say that they're doing something good and in pretty much every single case the situation is that they're not actually doing nearly what they say that they're doing and that they're not doing even a small fraction of what they actually could be doing.

So basically I think you just gave yourself away saying that it was a collaborative process, basically saying that you guys don't have that much of a backbone to stand up against them and push for some more tough regulations and it's – it basically shows that you're not doing everything that you possibly can to reduce the mercury, to reduce the carbon dioxide and to reduce the nitrogen oxide.

I also, I wanted to bring up that there's – I don't know if people are aware that there is an online sludge pond from the mining that happened originally there that still hasn't been cleaned up and this plan doesn't address that at all and it'd be really great if that could get cleaned up some time. In my opinion it's also a big – it's a liability issue and there's also people who live near there so it's – the mercury there and the mercury that's being emitted from this plant is a huge danger to our health and to the – I was really happy to see this person from the National Park Service come because I think that this is having – I've studied mercury. It has a significant, significant impact on human health and on wild areas, and I think any level is unacceptable but 50 percent isn't nearly what is possible.

In states like Maryland and Illinois they have reduced their mercury emissions from 80 to 90 percent and this is all carbon – activated carbon where is the – how about out of the stack? You know, how about some reduction in mercury emissions from another source or how about – and still then addressing like you said the elemental mercury.

So I'm very concerned about that. I think that our first priority when we're talking about these issues should be reducing our consumption overall and then we can talk about increasing efficiency and then we can talk about alternative energy, and then – and after that we shouldn't need any coal-fired power plants.

So I just want to say that this is just the beginning. There's gonna be – we're gonna meet every step of the way. We have direct action groups who are ready to throw down for this. We have a whole slough of non-governmental organizations, non-profits behind this and we are very unhappy with this proposal and you made a grandmother cry.

*Jerry:*

All right, thank you very much. Adam, you're next?

*A. Fleisher:*

Hello, my name is Adam. I am a student here in Washington. I'm also a Washington state voter and a personal member of the Sierra Club but, for the record, I would just like to point out that the proposed agreement between the Department of Ecology and TransAlta contains, as we've been saying no controls for mercury but instead of voluntary mercury controls by TransAlta to reduce mercury – I think that 50 percent by 2012 was the number – while using well-established carbon injection technology which puts this mercury into the ground for my grandkids, for your grandkids, for everyone's grandkids in here, for the other people of this Earth's future including the plants and animals as well as using technologies which puts our mercury somewhere else for other peoples in the world.

And the fact that we get most of our mercury in Washington state from China doesn't mean that we should give the rest of the world our mercury that we expose. In addition this proposed agreement goes against the EPA suggestions that in fact the nitrogen oxide controls on the plant did not impact BART, that the EPA asked for more justification in these conclusions and, in fact, also not only EPA but now that the official statement of the National Park Service that this is not BART which is being agreed upon and that, in fact, would then be not legal.

And finally, like I said before, but just again for the public record it says in the Department of Ecology's mission that it is among other things the department's mission to promote the wise management of our air, land and water for the benefit of current and future generations and this agreement just to me does not seem to be doing that and, thus, it's breaking the department's own mission. Thank you.

*Jerry:* Thank you. We have a Shane – is it McCarter?

*S. Macover:* Macover.

*Jerry:* You said “maybe,” on your testimony. Do you want to testify?

*S. Macover:* Yeah.

*Jerry:* Come on up.

*S. Macover:* All right. Mainly – hello? Yeah.

*Jerry:* You need to state your name and any affiliation for the record.

*S. Macover:* I’m Shane Macover. I’m not affiliated with any political group so I did once try to get a job with the environment in Washington but that fell through.

*[Audience laughing]*

*S. Macover:* Anyway.

*Jerry:* You can meet with him in the lobby afterwards, exchange business cards.

*S. Macover:* Anyway, the only thing I want to comment on really is that this says it’s – the plant’s volunteering mercury reduction which we have seen voluntary plans to do environmental benefits for a long time that happened with the EPA that we – would have made the Clean Air and Clean Water Act voluntary and typically it’s a real surprise, they usually don’t follow these voluntary compliances.

I think that, really, what we need is something with much more teeth than this and that the voluntary response is really just a way to throw some legislation and it and pretend it goes away. Thank you.

*Jerry:* Thank you and good luck on that job hunting. Next we have Jeanette – is it Brimmer?

*Brimmer:* Yes.

*Jerry:* And then Donna, you’ll be back up if you’re ready to go.

*D. Albert:* Yes. Do you want to go before me? You can.

*Brimmer:* Okay.

*Jerry:* Yeah, go ahead.

*Brimmer:* Hi, I'm Jeanette Brimmer. I'm with Earth Justice. As I stated previously I'm here on behalf of the Sierra Club Special Parks Preservation Association in the Northwest Environmental Defense Center.

I want to begin by noting that we will provide detailed written comments within the comment period which will include an – a report. We've engaged the services of Dr. Sabo to help us with that. I will note, as stated in an e-mail earlier today that constrained access to the documents, the fact that we're having trouble getting documents because of claimed mediation privileges and confidentiality has hampered that review and I hope that we can work toward getting access to those in a timely fashion so that we can, in fact, complete our review.

I'd like to echo Superintendent King that testified earlier that Washington is home to some pretty astounding resources. In fact I think our natural resources in many ways define this state. It's a hugely critical part of the region's economy from subsistence fishing to commercial fishing, tourism, agriculture and forestry, and I'm sure that the Department of Ecology doesn't need to be told that.

Mercury and nitrogen oxides emissions among others, global warming has been raised here tonight, CO2 emissions, are harming those industries, harming our resources, harming the industries that rely on them as well as public health, and TransAlta is the number one source of all of those harmful pollutants, and yet I have the feeling that we're not treating it like the number one source and not doing what we need to.

We are encouraging Washington to lead on these important issues, encouraging the governor to do so but we feel – we feel that this agreement and consent decree fail to demonstrate that leadership. They will simply perpetuate current haze conditions in particular and may do the same relative to mercury.

We also see that the State, the Department of Ecology appears to be tying its own hands in this agreement. We have a lot of concerns about some of the enforceability clause and some of the clauses with respect to promises about working with TransAlta in

the future that's going to prevent ecology from stepping forward, protecting these resources and the health of its – of Washington's citizens and the economy.

So let me turn directly to some of the pollutants at issue. So we've got that BART and nitrogen oxides or NOx issue. As I said, TransAlta as a coal plant is the single largest source of these emissions in the state of Washington but here's a really important thing to keep in mind.

According to the National Park Service TransAlta is the single largest cumulative impact to class one areas – class one areas of course being National Parks and wilderness areas in the nation. Now Four Corners has the dubious distinction of being the largest impact to a single class one area, and that being the Grand Canyon National Park, but this, I would say that we should not be proud that TransAlta is in our back yard having this level of an effect.

As the Department of Ecology is very aware haze is a significant problem even at current emissions levels and current levels is what we believe – and I think that this will be born out in the experts report and our written comments – current levels are going to be maintained.

I also want to just make note that while haze is a significant problem a lot of people might say, "Oh geez, big deal, visibility," what would we do if we couldn't see Mt. Rainier? I think people would find that to be a big deal.

But nitrogen deposition is an emerging environmental problem. I'm increasingly seeing studies. I know the National Park Service has these concerns as does the Forest Service, that a lot of our most precious areas are actually having their ecosystems changed as a result of nitrogen deposition and that's a direct result of nitrogen oxide emissions and that's something that we cannot afford.

Particularly with the changes that are going to be wrought from global warming we need those resources. We need them for the adaptability of the species and others that are going to rely on those.

I also want to point out with respect to the BART issue, EPA has made abundantly clear years ago with respect to the whole '97-99 agreement, that the low announced burners in the current technology of the plant is not BART.

I also want to emphasize what Superintendent King pointed out that there was a failure to consult the Federal land managers with respect to that process, so that too would contribute to the legal response that that is note BART, and I want to point out that the emissions control systems at the facility right now do not meet EPA's presumptive BART limit.

I know that the State entered into this process because they felt they were perhaps vulnerable or they want to avoid litigation with TransAlta. If that's the best arguments TransAlta can come up with those are weak. I think you have the legal arguments to withstand that and I would like to see that leadership for the State.

The SCR technology is available and feasible. I think we've already heard that tonight. The only arguments that I have seen from TransAlta are monetary. They just don't want to spend the money and, in fact, I think that the analysis by our expert and apparently the analysis by the National Park Service and the Federal land managers will demonstrate that, perhaps, it is in fact cost effective and that perhaps TransAlta's numbers have been inflated with respect to the costs of the SCR technology.

Other states are imposing SCR and we'll include information on that. We're researching that in our written comments and certainly, I would think, our resources here in Washington deserve the level of protection that other states are affording there.

I would like to move then to mercury. I strongly, strongly disagree that this department cannot regulate mercury simply because the Federal government has not taken a stand. The States, in all instances, have independent authority and obligations to regulate air pollutants including mercury.

The states can always regulate to a stricter standard than the Federal government can and I would invite the State to take that seriously. You do not have to wait for the Federal government. Other states are not waiting for the Federal government.

States in the Midwest and the Northeast have moved forward. They are imposing, and in some instances, achieving 90 percent mercury reduction or better and they are doing it with this technology, activated carbon technology. It's simply a matter of how much of that technology you use, how much carbon you use, how you work the process. You can remove larger amounts of mercury than this agreement provides.

In fact, interestingly enough, TransAlta on their own website has indicated that they are achieving 70 percent mercury reduction and they applaud themselves for doing so, and yet they don't seem willing to do that here.

I would submit that perhaps, again, it is that they don't want to spend the money on the level of activated carbon injection necessary and that they do not want to forego the profits they make from selling their ash to the cement kilns in Seattle, a whole 'nother environmental problem, one that is fraught with environmental justice issues as well.

I think one of the most egregious – that's probably a little hyperbole. One of the most concerning components with respect to mercury is the voluntary nature and, it's not just that it's voluntary. We also put a money cap on it. They can only have to spend so much money and that, voluntarily.

And then it appears that ecology said, "You know, if you don't even abide by this agreement we won't enforce it, we won't enforce the consent decree, there's nothing we will do to you if you choose not to abide by this," meaning that you're not even going to assert contractual obligations that would normally arise from a settlement agreement. That actually makes me wonder why we're bothering with a consent decree in the first place.

I, again, really believe that a greater mercury reduction is doable. I think Washington's resources are worth it. I think the health of Washington's citizens are worth it, and I would urge the State to lead on that and take a much stronger stance with respect to mercury regulation here, and with that, I'll conclude my remarks and you can put that in writing. Thank you.

*Jerry:* Great. Thank you, very much. Donna, would you like to come back up?

*D. Albert:* My name is Donna Albert. I'm a Licensed Civil Engineer with a Master's Degree in Civil Engineering working for the State of Washington as an Energy Engineer. I am not representing my employer but here as an individual representing my grandchildren: Austin, Donovan, Terrance and Tristin, who will be in their 40's and 50's in 2050, very possibly with grandchildren of their own.

To dramatically reduce the greenhouse gas emissions due to our use of electricity in the Northwest we must stop burning coal. According to the Northwest Power Planning Counsel's sixth power

plan, coal comprises only 13 percent of electric power capacity in the Northwest but is responsible for 85 to 90 percent of the carbon dioxide from the Northwest electricity sector.

In contrast coal is the major source of electric power in the United States as a whole. Why are we still burning coal in the Northwest? We have hydroelectricity waves, a mild climate west of the Cascades, plenty of great sunshine east of the Cascades. We have not accomplished all of the cost-effective energy conservation measures.

We are in the position to show that coal-free energy is possible now and essentially greenhouse gas emissions free electricity is possible in our future. We must do this. The UNEN Climate Science Compendium 2009 which is sort of an update from the IPCC report 2007, says that the actual warming since the IPCC's 2007 census report has exceeded all scenarios used in the 2007 report, including the business as usual scenario and appears to be accelerating.

The recent economic downturn slowed this but the trend is expected to continue upon recovery. Climate scientists are now warning that we need to act quickly to avoid catastrophic events and are now recommending more aggressive emissions reductions.

Sometimes they express this goal in terms of atmospheric concentrations of greenhouse gasses, 350 parts per million carbon dioxide. I believe that the State of Washington's goal of reducing emissions to 1990 levels by 2020 is no longer remotely in line with what we know about climate change today.

When my grandchildren are looking into the eyes of their own grandchildren in 2050 they will be living the consequences of our actions today. Arctic sea ice will be gone due to warming that is already in the pipeline due to the carbon dioxide accelerating the atmosphere.

The Maldives will be underwater, probably most of Bangladesh. The glaciers that feed rivers which people depend on for water in places like Pakistan and Chile will be gone. Hundreds of millions of people will be displaced or dead. We don't know how much agricultural land will be lost to flooding and drought.

Nations will be destabilized by conflict over shortages and refugees. We don't know what condition the oceans will be in by then but the possibilities frighten those who understand them now.

We don't know if methane stores in the permafrost and deep in the ocean will still be intact and we don't know how we would act if that happened.

The price of continuing to burn coal is too high. It is disingenuous to identify other pollutants from the TransAlta plant as dangerous and require mitigation while the most deadly pollutant of all continues to be ignored. We have no right to destroy the future of or grandchildren for convenience or narrowly-defined economics for pennies per kilowatt hour.

Other regions will find it much more challenging to close their coal plants than we will. The Pacific Northwest must lead the way. No more excuses. We must retire our coal plants now.

*Jerry:*

Thank you. Next up we have Doug Howe.

*D. Howe:*

Thank you. My name is Doug Howe. I'm with the Sierra Club and I have two general areas that I'd like to comment on, and the tremendous – the first is the tremendous disappointment we have about the public process.

When it came out in the press last March about the settlement agreement it was very clear that people were very concerned and there hadn't been adequate review. Then we had the climate legislation where there was a provision put in, a climate bill at the end of the season that never went through a public hearing, and I think it was in part because of that that that legislation failed for a lack of public process.

Then we have the – now the Governor has committed to a transparent process in her executive order in dealing with TransAlta and we are very hopeful that she delivers on that.

Then we had our Title 5 hearing of the Local Air Agency and we requested a public hearing on the Title 5 which is supposed to be the catch-all for all air pollutant issues but many issues were excluded in that permit and there was no public hearing in that Title 5 permit process.

Then we saw the settlement agreement and there was no opportunity to review that settlement agreement and, of course, there is gonna be a large public outcry when there was no opportunity to review and the provisions that we see on the agreement on the face of it appear weak, but as Jeanette Brimmer mentioned, there has still been an issue about getting access to

necessary documents to allow the public to do a full assessment. Again, that's a tarnish on the respect for public process.

And then when we had this process we had asked that we could have hearings in Seattle, Vancouver, even Olympia, to allow greater public process but again we were denied and even simple things like getting a phone in the room tonight so others could join in.

And when you look at the cataloging of where the public process has been snubbed, it is an extremely poor record and what we ask for is a large public process that's at the front end so that no settlement agreement or no negotiation gets too far down the track without meaningful public engagement. That's the first point to be made, a failure of public process.

The second major point to be made is that I believe it is extremely problematic to be dealing with the issues, the pollution issues associated with the TransAlta plant in isolation. Yes, you have Federal requirements to proceed with BART determinations. We understand that but that does not preclude ecology doing a more meaningful and all-inclusive process for the many liabilities that the plant has.

We know there are NOx liabilities and we know it's not just the haze but there could be an issue of nitrogen deposition that needs to be thoroughly reviewed. We need to know the impacts from mercury. We can't just have one hearing but we need to know what damage is being done from these mercury emissions.

Even if this agreement were to achieve the hoped-for 50 percent there is still huge amount of damage coming out for that remaining 50 percent. What is the public health risk for that remaining 50 percent if, in fact, that's what gets achieved?

And then we simply cannot separate it from the CO2 issues. The liability associated with CO2 is tremendous. Just under the Waxman-Markey alone if the estimate is \$20.00 a ton and the plant puts out 10 million tons a year that's \$200 million a year of carbon liability, and that carbon pricing as we talk about it under Waxman-Markey, that is going for reducing emissions. That does not reduce the fact of carbon damages which is in addition to carbon pricing as we know it which is only about for reducing emissions.

The rough estimates and the science on this, the economic science on monetizing climate damages is extremely difficult but some preliminary estimates from very esteemed economists like Sir Nicholas Stern, Chief Financial Officer or Advisor to Tony Blair, has tried to put a price tag on it and puts it at \$80.00 a ton.

\$80.00 a ton times 10 million tons a year from the TransAlta Coal Plant, \$800 million a year in 2009 dollars. So then you want to add on potential violations that EPA is asking about about new source review, and then we want to look at the waste handling from SO2 scrubbers, and what about other hazardous air pollutants that were mentioned tonight, potential existing and ongoing liabilities to the mine waste, and what about the management of coal combustion waste.

And then we still don't get at the upstream damages happening in the Powder River basin from the coal being taken out of the ground in Montana and Wyoming. What we request is that you do public forums and bring all these environmental liabilities to the forefront, and when you do that, you will see a very large public outcry calling for the transition of that plant off of coal to cleaner sources of energy. We urge you to take that path. Thank you.

*Jerry:*

Thank you. Thank you, very much. That exhausts the initial list of those of you who identified that you wanted to testify and I'll now ask if anyone has either changed their mind or perhaps didn't realize that you could have, should have marked that little 'X' in the box which would have allowed me to call you up here. Is there anyone now that would like to come up?

And this testimony, that would be great. While you're contemplating that prospect I'll remind you that the comment period runs through November 9 of this year, 2009, and if you picked up this focus sheet in the back, and if you haven't thrown it away or turned it into a paper airplane it shows the various ways in which you can provide that comment to us.

There's – there is a snail mail address as well as an [AQComments@Ecology.wa.gov](mailto:AQComments@Ecology.wa.gov) address that you can do this, make your comments on-line. So you can, regular mail or over the Internet. No one else? Seeing that there's no one else that wants to testify, let the record show that it is now 7:57 p.m. and this hearing is now closed. Thank you, very much.

*[End of Audio]*