Prevention of Significant Air Quality Deterioration Review

Final Determination

April 2010

Facility Name: Plant Washington
City: Sandersville
County: Washington
AIRS Number: 04-13-30300051
Application Number: 17924
Date Application Received: January 17, 2008

State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch

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BACKGROUND

On January 17, 2008, Plant Washington submitted an application for an air quality permit to construct and operate a supercritical pulverized coal fired power plant rated at 850 MW net output capacity. The facility is located at Mayview Road in Sandersville, Washington County. The facility will be designed to include: one supercritical pulverized coal-fired 8,300 MMBtu/hr boiler; one ultra low sulfur diesel-fired 240 MMBtu/hr auxiliary boiler; a steam turbine and associated generator; thirty-four cell cooling tower; emergency diesel-fired generator; fire water pump; facilities for receiving, handling and storing of coal, anhydrous ammonia, limestone, mercury removal sorbent and sulfur trioxide removal sorbent; facilities for handling and storing of process byproducts; facilities for on-site storage of process waste; diesel fuel oil storage tanks; and supporting plant equipment. The facility will be designed to burn sub-bituminous coal (Powder River Basin, or PRB coal) or up to a 50/50 blend (by weight) of eastern bituminous coal (Illinois #6) and sub-bituminous coal. Although the facility will be designed for use of PRB and Illinois #6 coals, the facility will also have the capability of utilizing bituminous and sub-bituminous coals with equivalent characteristics of PRB and Illinois #6.

On August 24, 2009 the Division issued a Preliminary Determination stating that the facility described in Application No. 17924 should be approved. The Preliminary Determination contained a draft Air Quality Permit for the construction and operation of the proposed equipment.

The Division requested that Plant Washington place a public notice in a newspaper of general circulation in the area of the proposed facility notifying the public of the proposed construction and providing the opportunity for written public comment. Such public notice was placed in *The Sandersville Progress* (legal organ for Washington County) on August 26, 2009. Georgia EPD held a question and answer session on October 6, 2009 and a public hearing on October 20, 2009. The public comment period expired on October 27, 2009.

During the comment period, comments were received from U.S. EPA Region IV, Plant Washington, GreenLaw, Ogeechee-Canoochee Riverkeeper, Inc. and hundreds of letters and emails from the citizens. The comments are listed below along with the Division's responses and a discussion of any changes made to the final permit.

A copy of the final permit is included in Appendix A. A copy of comments received during the public comment period is provided in Appendix B. A list of recently permitted coal fired power plants is included in Appendix C. Additional supporting documentations are included in Appendix D.

U.S. EPA REGION 4 COMMENTS

Comments were received from Gregg Worley, Chief of the Air Permits Section, U.S. EPA Region 4, by email on October 27, 2009. The comments are typed, verbatim, below and were the result of reviews by Katy Forney and Stan Krivo of U.S. EPA Region 4.

Comment 1

It is our understanding that the best available control technology (BACT) analysis for the boiler concluded that sorbent injection would be used as part of the control of $PM_{2.5}$ emissions. Condition 2.8 of the draft PSD permit does not include this control technology along with the fabric filter baghouse. The final PSD permit should include all controls that will be installed and operated as a result of the BACT analysis.

EPD Response: EPD agrees with EPA's comment. EPD will add a Duct Sorbent Injection System and good combustion controls along with the Fabric Filter Baghouse as part of the control of $PM_{2.5}$ emissions. EPD will modify Permit Condition 2.8 as follows:

2.8 The Permittee shall install and operate, as BACT for PM/PM_{10} and as MACT for Filterable PM, a Fabric Filter Baghouse and as BACT for $PM_{2.5}$, a Fabric Filter Baghouse, a Duct Sorbent Injection System and good combustion controls on Coal Fired Boiler S1.
[40 CFR 52.21(j) and 40 CFR 63 Subpart B]

Comment 2

It is our understanding that the BACT analysis for the boiler did not consider Integrated Gasification Combined Cycle (IGCC) as a potentially available control technology. However, in at least one federal permitting action, IGCC was considered an available control option in the BACT analysis for a facility proposed to generate electricity from coal. See Prairie State Generating Company (Illinois). In a recent decision, the EPA Environmental Appeals Board (EAB) remanded a permit because it did not contain an adequate justification for excluding IGCC from the BACT analysis for a coal-fired EGU. See Desert Rock Energy Company, LLC, PSD Appeal Nos. 08-03 et al., Slip. Op. at 76-77 (EAB Sept 24, 2009). The EAB concluded that the permitting record in that case did not support the permitting authority's conclusion that IGCC "redefines the source" and noted that the use of the phrase "innovative fuel combustion techniques" appears to be "intended to broaden the definition of BACT so that the production of gas from coal via gasification would generally be considered in the BACT analysis." Id. At 76-78 n.82 Consistent with the EAB's analysis with this opinion, the record for the final PSD permit should reflect consideration of IGCC as a potentially available control option, or thoroughly explain and support a decision to not consider IGCC as a control option.

EPD Response: IGCC is a physically and chemically distinct method of producing electricity that cannot be compared to the pulverized coal fired boiler at this facility without redefining the source. Neither Federal law or Georgia law requires the consideration of technologies that would redefine the proposed source.

In a recent decision from the Georgia Court of Appeals, *Longleaf Energy Associates, LLC v. Friends of the Chattahoochee*, the Court rejected the argument that IGCC must be included in the pollution control technology review for a pulverized coal-fired power plant. Plant Washington is the same type of pulverized coal-fired power plant that was at issue in the *Longleaf* decision.

In response to EPA comments and citizen comments during the public comment period, Plant Washington has updated the permit application on January 18, 2010 (please see Appendix D, Exhibit G) to include an analysis to assess IGCC technology as a potentially available control technology. The review shows that IGCC would be a "redefinition of the source", IGCC has not been demonstrated to be a commercially viable process for base load power plant, the reliability for the gasifier availability has been less than 80 percent during the first five years of operation at IGCC facilities, comparative cost analysis between Plant Washington (850 MW) and Edwardsport IGCC Plant (630 MW) shows cost effectiveness greater than $10,000 per ton, and no IGCC plants similar in size to Plant Washington have yet become operational. Please refer to Exhibit G in the permit application for details. EPD has independently reviewed the IGCC analysis submitted by the facility and agrees with the conclusions.

Comment 3

Condition 2.16 includes the detailed emission limitations that resulted from the BACT analysis for the auxiliary boiler; however, the averaging times have not been included as they were in Condition 2.13 (main boiler). It is our understanding from the permitting note on page 7 of the draft permit, that the averaging times of these limits are dictated by the test method. The final permit should be consistent with the information described in the preliminary determination.

EPD Response: EPD agrees with EPA's comment. EPD will modify Permit Condition 2.16 as follows:

2.16 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Auxiliary Boiler S45, any gases which

a. Contain Nitrogen Oxides (NOx) in excess of 0.1 lb/MMBtu on a 3-hour average.
[40 CFR 52.21(j)]

b. Contain Carbon Monoxide (CO) in excess of 0.04 lb/MMBtu on a 3-hour average.
[40 CFR 63 Subpart B and 40 CFR 52.21(j)]

c. Contain PM/PM_{10} in excess of 0.014 lb/MMBtu on a 3-hour average, Total PM/PM_{10} in excess of 0.024 lb/MMBtu on a 3-hour average and Total $PM_{2.5}$ in excess of 0.012 lb/MMBtu on a 3-hour average.
[40 CFR 63 Subpart B; 40 CFR 52.21(j) and 391-3-1-.02(2)(d)(2) (subsumed)]

d. Contain Sulfur Dioxide (SO_2) in excess of 0.0017 lb/MMBtu on a 3-hour average.
[40 CFR 52.21(j)]

e. Contain Volatile Organic Compounds (VOC) in excess of 0.003 lb/MMBtu on a 3-hour average.
[40 CFR 52.21(j)]

f. Contain Sulfuric Acid Mist (H_2SO_4) in excess of 6.0×10^{-5} lb/MMBtu on a 3-hour average.
[40 CFR 52.21(j)]

g. Exhibit greater than 20 percent opacity on a 6-minute average except for one 6-minute period per hour of not more than 27 percent opacity.
[391-3-1-.02(2)(d)(3) and 40 CFR 60.43b(f)]

Comment 4

The preliminary determination (page 65) summarizes the BACT analysis for the emergency generator and fire water pump. This section proposes NSPS 40 CFR Part 60 Subpart IIII emission limits as BACT limits for the majority of the pollutants. However, it does not seem that these emission limits are included in the draft PSD permit. The final PSD permit should include the numeric emission limits that were determined by the department to be BACT for the emergency generator and the fire water pump.

EPD Response: EPD agrees with EPA's comment. EPD will add Condition 2.36 to the permit as follows:

2.36 The Permittee shall comply with the emission limitation in 40 CFR 60 Subpart IIII "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" for the Emergency Diesel Generator, EG1 and the Emergency Fire Water Pump, EP1. The emission limits are listed in the following table:
[40 CFR 52.21(j) and 40 CFR 60 Subpart IIII]

	g/kW-hr		
Pollutant →	$NMHC+NO_x$	CO	PM
Emergency Generator, EG1 Emission Limit →	6.4	3.5	0.2
Emergency Fire Water Pump, EP1 Emission Limit →	4	3.5	0.2

Comment 5

In a letter dated May 19, 2009, the applicant provided supplemental information to amend their $PM_{2.5}$ BACT analysis. This letter includes emission limitations for several material handling point sources. The applicant proposed these emission limitations as BACT for the filterable $PM_{2.5}$ emissions; however, these emission limits do not seem to be included in the draft PSD permit. The final PSD permit should include all the lb/hr emission limits listed in Table F-13 of this letter.

EPD Response: The applicant proposed lb/hr emission limits for filterable $PM_{2.5}$ from several material handling point sources. EPD agrees and $PM_{2.5}$ emission limits in gr/dscf will be added to the permit. EPD will add Permit Condition 2.37 as follows.

2.37 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from PRB Conveyor Stackout S46, Illinois # 6 Conveyor Stackout S47, Coal Crusher House S40 and Tripper Decker S41 any stack emissions, which contain filterable $PM_{2.5}$ in excess of 0.0008 gr/dscf, from Fly Ash Mechanical Exhausters S43 and Fly Ash Silo S37 any stack emissions, which contain filterable $PM_{2.5}$ in excess of 0.00265 gr/dscf, from SO_3 Sorbent Silo S36, Mercury Sorbent Silo S38, Pretreatment Soda Ash Silo S44 any stack emissions, which contain filterable $PM_{2.5}$ in excess of 0.005 gr/dscf, from Pretreatment Hydrated Lime Silo S39, Limestone Stackout S48 and vents of Limestone Preparation Building Day Bin Silo S42 any stack emissions, which contain filterable $PM_{2.5}$ in excess of 0.00135 gr/dscf.
[40 CFR 52.21(j)]

In order to demonstrate compliance with Condition 2.37, EPD will require the facility to conduct testing for filterable $PM_{2.5}$ emissions on the exhaust baghouse stack for the Coal Crusher House S40, Tripper Decker S41 and Fly Ash Mechanical Exhausters S43. The facility will be required to use Method 5 or Method 17 (until the Director approves a test method) for measurement of Filterable $PM_{2.5}$ emissions. For

stacks with the insertable filters and/or the bin vent filters, the facility will be required to maintain guaranteed manufacturer's specifications for filterable $PM_{2.5}$ emissions as required in accordance with new Condition 6.12. Thus, EPD will add Conditions 6.11 and 6.12 to the permit as follows:

6.11 Within 60 days after achieving the maximum production rate at which the sources will be operated, but not later than 180 days after the initial startup, the Permittee shall conduct performance testing on the Coal Crusher House S40, Tripper Decker S41 and Fly Ash Mechanical Exhausters S43 for $PM_{2.5}$ to verify compliance with Condition No. 2.37 and furnish to the Division a written report of the results of the performance test.
[40 CFR 52.21 and 391-3-1-.02(3)]

6.12 The Permittee shall maintain records showing the guaranteed manufacturer's specifications for the insertable filters and/or bin vent filters on the PRB Conveyor Stackout S46, Illinois # 6 Conveyor Stackout S47, Fly Ash Silo S37, SO_3 Sorbent Silo S36, Mercury Sorbent Silo S38, Pretreatment Soda Ash Silo S44, Pretreatment Hydrated Lime Silo S39, Limestone stackout S48 and the vents of Limestone Preparation Building Day Bin Silo S42. These records shall be used to demonstrate compliance with the $PM_{2.5}$ limit in Conditions 2.37. These records shall be maintained in a format suitable for inspection or submittal to the Division.
[40 CFR 52.21 and 391-3-1-.02(3)]

The following are Air Quality Analyses Comments from EPA:

Comment 6

The impact modeling analyses used the Georgia Environmental Protection Division (GEPD) processed 1987-1991 Macon, GA meteorological data. These data appear to have been processed using surface characteristics within the previously recommended 3-km radius of the measurement location. The assessment of these data representativeness is a general, qualitative comparison that is not sufficient to demonstrate the Macon measurements as representative of the project location. The following comments are associated with the provided representative assessment. [Note: Because the roughness parameter is the most important for the impact assessment, the following addresses this parameter.]

a. The surface characteristics for the project location were estimated based on the planned as-built configuration of the plant and not on the current land cover. The acceptability of the analyses provided depends on how closely the estimated surface characteristics agree with the final constructed plant.

b. The surface characteristics for the Macon meteorological measure site and that of the project site were based on aerial photographs for four sectors. This assessment appears to only consider the average heights of the trees and buildings. The aerial photographs do not provide these heights so the source of this information should be provided.

c. A qualitative assessment of roughness value less than or equal to 1.0 was provided. The area in each sector included in the various land covered categories was not considered. A qualitative assessment of the roughness conditions (i.e. AERSURFACE program output) is needed.

EPD Response: The EPA comments on the representative assessment conducted of the meteorological data used in the modeling analysis for Plant Washington. The EPA comments that a more quantitative assessment, using the AERSURFACE program, is needed. The first meeting regarding Plant Washington was held between the applicant and Georgia EPD on November 30, 2007. At this meeting, the applicant

presented a modeling protocol (see georgiaair.org website, PSD permit page). The meteorological data to perform the assessment was provided by Georgia EPD using the AERMET processor and inserting site surface characteristics (albedo, Bowen ratio, and surface roughness) values developed from the review of topographic maps and the inspection of aerial photos and using the tabular values provided in the AERMET guidance document for the various land use categories. This was the prescribed means available to make this assessment:

a. At the time the meteorological data was processed (June, 2007),

b. At the time the modeling protocol was approved (November 30, 2007), and

c. up until January 11, 2008 (based on the 'last-modified date of the application as contained within the compressed AERSURFACE application file.

Thus, the modeling work for the Plant Washington project was essentially completed prior to the release date of AERSURFACE. It is common that, when a change in modeling guidance is issued, EPA allows a 'grace' period of time for projects, which have approved modeling protocols prior to the date of such changes. A recent example is seen in the initial release of the AERMOD model for regulatory applications (see 40 CFR 51, Appendix W dated November 9, 2005). Projects with approved ISCST modeling protocols could be allowed to proceed if the protocols were submitted nearly a year after AERMOD was released. Such a grace period should certainly apply to projects with essentially completed modeling assessments as of the date of a guidance change.

The current version of EPA's AERMOD Implementation Guide (March 19, 2009) stipulates:

While the AERSURFACE tool is not currently considered to be part of the AERMOD regulatory modeling system, i.e. the use of AERSURFACE is not required for regulatory applications of AERMOD, the recommended methodology described in Section 3.1.2 [of the AERMOD Implementation Guide should be followed unless case-by-case justification can be provided for an alternative method.

Georgia EPD maintains that, in so far as possible and emphasizing the parameter of surface roughness, the recommended methodology was followed, given that:

a. The purpose of conducting air dispersion modeling assessments to address Prevention of Significant Deterioration Rule requirements should be to examine the potential air quality impacts of a proposed project of such project after it begins to operate. In the case of Plant Washington, substantial modifications to the project site are proposed necessary in order for the project to operate as designed. These modifications include grading the site, developing the ash-handling and gypsum-handling facilities, the creation of coal storage piles, and the construction of the power plant building and other structures, which do not currently exist.

b. The database recommended for the derivation of surface characteristics AERSURFACE is dated 1992, and thus represents project site conditions extant at least two decades prior to the operation of Plant Washington. The increased area of influence (10 km square) for albedo and Bowen ratio characteristics recommended by AERSURFACE is considered sufficiently extensive as to minimize the impacts of the proposed site modifications on those parameters. For surface roughness length assessment, the AERSURFACE proposed radius of influence decreased from 3- to 1-km. At the 3-km radius (applicable prior to January 11, 2008), the proposed project site modifications would have less impact on the surface roughness length due to the relatively larger size of the area evaluated. At the 1-km radius of AERSURFACE, the project will modify most of the area of surface roughness length influence. Furthermore, the January 8, 2008 AERMOD

> Implementation Guide stipulated that, rather than a real weighting (as prior to January 11, 2008), surface roughness length should be assessed using an inverse-distance weighting, which will tend to make the project site modification of greater importance relative to the un-modified area within either 3 or 1 km.

Georgia EPD concurs with the following Plant Washington response to EPA's comment on the average heights of trees and buildings: The parameters selected for these characteristics are based on the qualitative assessment of the topography (both existing and what it will be when Plant Washington is constructed) using the published tables listed in the AERMET users guide (Tables 4-2, 4-3 & 4-4). The comparison table listed in the application (Table 5-4) lists average heights of trees based on a visual observation but this factor was not used in the assessment. The land use was compared to the categories listed in the user guides (primarily Deciduous forest, Coniferous forest, cultivated land, or grassland).

The surface roughness lengths for these land uses listed in AERMET Table 4-4 are the ones used for processing of the meteorological data and for demonstrating project site representation of the meteorological data collection site. The area in Washington County where the plant will be located is currently a combination of cleared area, cultivated coniferous forest or existing deciduous forest. After construction of Plant Washington most of the inner portions of Sectors 2 and 3 as shown in Figure 5-4 of the application will be cleared for construction of the plant. For the most part these areas are already flat offering little wind resistance corresponding to a surface roughness of 0.2 and 0.1 for Sectors 2 and 3 respectively. These values were derived from the AERMET user guide table matching them to land use categories of swamp and desert shrub land, which would have similar surface characteristics. For Sectors 1 (except for the southern edge) and 4 away from the immediate site these areas will remain a combination of coniferous and deciduous forest, which is designated in the AERMET user guide as a surface roughness length of 1 and 1.15 for sectors 1 and 4 respectively.

Georgia EPD notes that the use of AERSURFACE merely provides an objective assessment of surface roughness length, <u>not</u> the quantitative assessment called for by Region 4 EPA's comment. The following is the opinion expressed by EPA in the most recent AERMOD Implementation Guide (March 19, 2009), Section 3.1.2, second paragraph, Sentence 1:

The availability of high-resolution digitized land cover databases provides an opportunity to apply systematic procedures to determine surface characteristics based on an objective analysis of the gridded land cover data across a domain.

Georgia EPD maintains that the implications of changing the recommended up-wind distance of influence for the assessment of surface roughness length and the change to the inverse-distance weighting, both on January 11, 2008, make the project site modifications significantly more worthy of consideration than the possibly-unmodified peripheral area. As such, the use of AERSURFACE for assessment of surface roughness length based on a 1992 database of land-use and/or land cover does not seem productive.

Comment 7

The application indicates the modeling was performed using the "worst case base load conditions, which will occur most of the time". Reduced load and startup conditions were modeled as separate analyses. Only 40 percent reduced load operation was considered with the assumption that the emissions and exit flow rate would be 50 percent of the previously modeled values (i.e. no change in exit temperature). All anticipated operational loads, and their applicable emissions rates, exit velocities, and exit temperatures, should be provided and included in this impact analysis.

The modeling of the startup emissions assumed, for each 24-hour period, that the boiler always starts at 5 AM, the auxiliary boiler operates only from 1 AM to 10 AM, and the boiler is at full load at 7 PM. The reason this 24-hour schedule was selected and considered to provide worst case impacts should be provided.

EPD Response: Georgia EPD concurs with the following response, provided by Plant Washington:

The permit application included a reduced load analysis of 40% load since that is the minimal operational load at which the boiler could be operated while maintaining proper operating conditions for emissions control equipment, based on discussions with an engineering design company. Long-term operation at reduced load is not an anticipated occurrence. Plant Washington is planned to be a base load facility, intending to operate at near peak conditions most of the time. However, it is possible to operate at a reduced load during lower demand months. There is no set level at which reduced-load operating conditions can physically occur (only a minimum sustained level, 40%). Therefore, an evaluation of each and every load condition of the boiler is impractical. Table 5-11 of Section 5 of the permit application indicates that the modeling results at 40% operational load were lower than those found from operation at 100% load. Additional model runs were made that further verify that worst-case conditions (those associated with the greatest environmental impact) occur during full load conditions. The modeling indicates a clear progression of higher ground-level concentrations for higher load conditions. Therefore, the analysis presented in the application of 100% load represents the worst-case load condition for modeling results.

Regarding the EPA's comments about the time of day selected for the plant startup modeling assessment, the actual time of day that a plant starts up can be influenced by many factors, not the least of which includes coal availability, completion of the required maintenance, availability of necessary personnel to manage the startup process, the ability of the electrical grid to absorb the generated power, and the requirements of the grid for the power. All these factors suggest the time of startup could be anytime of the day. However, typically a power plant is operated at full load during peak demand periods of the day, which include the evening hours. Beginning the startup sequence at midnight meets this demand by having the power plant at full capacity during the evening hours, which is typically one of the peak power demand periods of the day.

The EPA comment asks why this sequence would yield worst-case results. The time period was not selected to achieve worst-case results from a meteorological standpoint but from an actual occurrence standpoint. Since wind velocity tends to be lower at night and highest during the afternoon hours from a meteorological standpoint, a startup in the afternoon would potentially provide higher ground level concentrations since there will be less dispersion during the night when the main boiler is starting up. A startup modeling assessment was repeated starting the sequence in the mid-afternoon (2 PM), and results of that run show that for PM_{10} results remained relatively constant, SO_2 ground-level concentrations decreased, and CO ground-level concentrations increased when compared to the early morning startup scenario included in the permit application. This second start up scenario would then bring the main boiler up during the other typical daily peak demand period (the morning hours). These results demonstrate that an evaluation of startup during the afternoon hours also produces acceptable modeling results.

Comment 8

Use of an interim significant impact level (SIL) as a screening tool for $PM_{2.5}$ air quality analysis prior to EPA's promulgation of the $PM_{2.5}$ SILs will necessitate a demonstration for the administration record by the GEPD that their interim SILs represent reasonable de minimis values. Simply highlighting the fact that the interim $PM_{2.5}$ SILs used by GEPD are EPA's proposed values is not an acceptable demonstration.

At a minimum, the GEPD should express in the permit record an independent judgment whether EPA's proposal provides an adequate rationale and record to establish the interim values as de minimis values for $PM_{2.5}$ impacts in the area of concern.

EPD Response: Currently, there are no requirements for Georgia EPD to evaluate $PM_{2.5}$ impacts as part of the PSD permitting process. Georgia EPD did an in-house modeling exercise with the CAMx model to provide additional information beyond the information required by EPA. These modeling results were compared to EPA's proposed $PM_{2.5}$ SILs as a reference to give in-house guidance. Georgia EPD has no intention to select specific de minimis values for $PM_{2.5}$ in the area of concern since this is not an EPA requirement for the permit.

Comment 9

The following comments are associated with the inventory of other sources used in the cumulative national ambient air quality standards (NAAQS) and PSD increment compliance modeling.

a. The 20D procedure is used to identify sources that could be considered for elimination. It should not be used without review and consideration of their proximity to other emissions sources. Confirmation is needed that all sources within the significant impact area were included in the PSD increment and NAAQS impact modeling.

b. Confirmation is needed that the modeling emissions for the PSD increment expanding units were associated with the actual emissions on the major source baseline date or the difference between those actual emissions and the current actual or allowable emissions.

c. The minor source baseline date used to identify increment-affecting emission sources should be provided. Because the appropriate minor source baseline date is specific to the affected baseline area(s), confirmation is needed that all modeled PSD Class II receptors were within Washington County.

EPD Response: Georgia EPD concurs with the following response provided by Plant Washington:

A thorough review of all off-site SO_2 emissions sources within 56 km of the site (SIA plus 50 km) was completed to identify those sources, which should be included in the NAAQS and PSD Increment SO_2 models. The emission sources in the area were compiled using the historic EPD spreadsheets that track increment consumers, Title V permits, SIP permits, PSD permits, and one additional data source the EPA Envirofacts website. The EPA Envirofacts website identifies all plants which are sources of air emissions in an individual county. This system was queried for each county that is located within 56 km of the site. Each source was then mapped and a distance was calculated to determine if individual sites were within 56 km of Plant Washington. Those beyond this distance were not included in the analysis.

The above review did not find any off-site emissions sources within the project's Significant Impact Area (5.6 km). Had any sources within the SIA been identified, they could not have been screened out using the "20 D Rule". The "20D Rule", which allows for the screening out of off site sources which will have negligible impact on the modeling results, was only applied to sources that were beyond the SIA but within the total modeled off site data retrieval area (56 km). The "20D rule" allows for the elimination of any sources for which plant wide allowable emissions measured in tons per year, are less than 20 times the mean distance (km) from the source being modeled. For the annual period the distance is taken from the source to the outer edge of the SIA. For the short-term sources, D is the distance to the plant itself. Because a single SO_2 model with both short term and long term averaging was completed the 20D approach was limited to the more conservative distance from the off site source to the SIA and not to the

plant. This technique was used to screen out several small sources. The 20D rule was applied to each individual plant except in those cases where the plants were within 2 km of each other. If the plants were located within 2 km of each other, their SO_2 emissions were combined for comparison to the 20D level. These sources were identified by mapping all identified sources to identify all those that were within 2 km of each other.

For simplicity the same emissions used in the NAAQS models (potential to emit) were used for the PSD increment model for all PSD consumers. Potential emissions for each source were calculated based on regulatory allowable emission rates. For fuel burning sources the maximum short term emission rate was determined by calculating the maximum sulfur content in the fuel being burned (based on the units maximum fuel rating from its latest Title V permit application and maximum sulfur content allowed by permit) and then assuming 100% of the sulfur contained in the fuel is converted to SO_2.

The SO_2 PSD increment modeling included only 5 increment expanders, which were modeled at a total emission rate of 0.68 lb/hr. These are the 4 dryer stacks (each modeled at 0.1 lb/hr) and a boiler (0.28 lb/hr) located at the Temple-Inland particleboard plant in Thompson, Georgia, which is approximately 50 km away from the Plant Washington site. These emissions were based on actual emissions from the plant provided by the Georgia EPD in their modeling database spreadsheets. A review of the permit application on which the database is based confirms that the modeled emissions are at or below the reported actual values in the original April 1999 permit application. The modeled values are therefore conservative.

The minor source PSD baseline date for SO_2 in Washington County is October 2000, which was triggered by the submittal of the first PSD permit application for SO_2 emissions in the county (Duke Energy Sandersville LLC). All emissions source that had increases in actual emissions after the minor source deadline were included in the PSD increment modeling. The SO_2 NAAQS and PSD Increment modeling only included those receptors within the projects SIA (5.4 km), which does not extend beyond Washington County.

In some cases the AERMOD model identifies velocities and temperatures, which may be outside the expected range for the parameter. These values were verified and corrected where necessary in the refined modeling.

Comment 10

The Class I area impact assessment submitted by the applicant on August 4, 2009, indicated an SO_2 emission limit of 0.08 lb/MMBtu over 24-hours for the main boiler will result in project impacts in all PSD Class I areas of less than the significant impact levels. This result would eliminate the need to perform cumulative PSD increment modeling. Review of the emissions provided in revised Table 5-3 (included with the letter) shows the only change in SO_2 emissions were those for the annual analysis, which showed an increase from 54.38 g/s to 120.83 g/s. Since there appears to be no change in the 3-hour and 24-hour modeled emission rates, the proposed limitation and modeling results should be explained. This discrepancy should be explained in the final determination.

EPD Response: The EPA comments that the Class I Area impact assessment submitted by the applicant on August 4, 2009 indicated that a proposed 24-hr emission limit for SO_2 was utilized in the Class I modeling assessment, and use of this modeled rate resulted in modeled impacts at all Class I Areas evaluated less than the Significant Impact Levels (SILs), eliminating the need for PSD increment modeling. The EPA further comments that there appears to be a discrepancy in the indicated modeled rates in Table 5-3, and these discrepancies should be explained.

Footnote 1 to Table 5-3 addresses EPA's comment on this issue, and was included to attempt to alleviate confusion on this issue. Different modeled rates were used in the Class II (AERMOD) modeling assessments versus the Class I (CALPUFF) modeling assessments. Footnote 1 reads as follows:

[1] SO_2 3-hr, 24-hr, and annual models in AERMOD conservatively evaluated utilizing the proposed 3-hr BACT emission limit of 959 lb/hr (120.83 g/s). Class I screening analysis evaluation (in Section 7.3) utilized a proposed 24-hr SO_2 emission rate of 0.08 lb/MMBtu in the evaluation of the 24-hr SO_2 impacts to the defined Class I Areas. Both the 3-hr and annual SO_2 Class I screening analysis utilized the proposed 3-hr emission rate limit of 959 lb/hr (120.83 g/s).

The modeling input files provided on the CD attached to the August 4, 2009 letter will confirm that the modeled emission rate for the main boiler within the Class I Area evaluations for SO_2 on a 24-hr basis are consistent with a 24-hr emission limit of 0.08 lb/MMBtu.

POWER4GEORGIANS, LLC COMMENTS

Comments were received from MACTEC Engineering and Consulting, INC., on behalf of client Power4Georgians, LLC (P4G), by email dated October 27, 2009.

The following are noted items for requested changes in the draft air permit:

Comment 1

Filterable PM Averaging Period: Condition 2.13(d) (Page 8) of the draft permit, in conjunction with Condition 6.2(u) and 7.7 states that compliance with the filterable PM emission limit of 0.012 lb/MMBtu for the main boiler will be demonstrated through PM CEMS on a 3-hr average (rolling). The application proposed compliance demonstrated through use of PM CEMS on a 24-hr block average.

In section 4.3.1 of the Prevention of Significant Deterioration Permit Application, the lack of operating facility experience with utilization of PM CEMS to demonstrate continuous compliance with stringent PM emission limits on a short-term basis was discussed. Also, in a letter submitted to the Georgia EPD dated May 28, 2009 regarding VOC and PM emission limits, the response and variability of PM CEMS, as well as discussions on operational practices (soot blowing, load changes, etc.) that could cause sudden increases in system PM emissions were discussed.

The variables identified in the May 2009 letter will make continuous compliance on a short term basis (3-hr rolling) very difficult if not impossible to achieve. It is recognized that many operational facilities routinely conduct stack testing to demonstrate compliance with filterable PM emission limits, and that these stack tests are conducted over a 3-hr period. However, these stack tests do not account for the operational variability that needs to be accounted for with a system continuously monitoring emissions from a system 24 hours a day 7 days a week.

Therefore, P4G requests that the Georgia EPD consider the longer averaging time as proposed in the permit application (24-hr average) to demonstrate compliance with the facility filterable PM emissions limit while using a CEMS device. The shorter continuous compliance period of 3 hours does not allow sufficient time in monitoring to account for knowable and unavoidable transient conditions that could cause an increase in emissions such as;

Soot blowing
Load changes
Scrubber mist carryover
Fuel blend changes
Monitor variability
Severe changes in ambient conditions

P4G would also like to point out that since the National Ambient Air Quality Standard for PM has been established on a 24-hr average basis, continuous compliance with the PM emissions limits of the facility on a 24-hr average basis should be acceptable.

EPD Response: EPD agrees with the facility's comments. EPD will modify the averaging period from a 3-hour (rolling) average to a 24-hour (rolling) average for the PM/PM_{10} BACT limit in Condition 2.13.d.

Please also refer to EPD's response to GreenLaw comments on PM/PM_{10} BACT limits. Based on comments received by GreenLaw and the Division's review of the recent coal fired power plants permits

issued (see Appendix C), EPD has decided to lower the filterable PM/PM_{10} BACT emission limit from 0.012 lb/mmBtu on a 3-hour averaging period to 0.010 lb/mmBtu on a 24-hour averaging period. EPD believes that BACT emission limit of 0.010 lb/mmBtu on a 24-hr averaging period is achievable for Filterable PM/PM_{10}. Therefore, EPD will modify Conditions 2.13.d, 7.7.a, 7.25.b.iv and 7.26.i as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

d. Contain Filterable PM/PM_{10} in excess of 0.010 lb/MMBtu on a 24-hour rolling average. [40 CFR 63 Subpart B; 40 CFR 52.21(j); 391-3-1-.02(2)(d)(2) (subsumed) and 40 CFR 60.42Da(c) (subsumed)]

7.7 The Permittee shall determine compliance with the PM Filterable emissions limitations in Condition No. 2.13.d using emissions data acquired by the PM CEMS. The 24-hour rolling average shall be determined as follows:
[40 CFR 63 Subpart B; 40 CFR 52.21 and 391-3-1-.02(6)(b)1]

a. After the first 24-hour average, a new 24-hour rolling average shall be calculated after each operating hour.

7.25 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition No. 7.24 (and all others in this Condition), the following excess emissions, exceedances, and excursions shall be reported:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

b. Exceedances: (means for the purpose of this Condition and Condition No. 7.24, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

iv. Any 24-hour rolling average for Filterable PM/PM_{10} emission rate which exceeds 0.010 lb/MMBtu for the Coal Fired Boiler S1,

7.26 The Permittee shall submit a written report containing the following information for each quarterly period ending March 31, June 30, September 30, and December 31 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, April 30, July 30, October 30, and January 30, respectively. Reporting required by this condition shall begin at the end of the quarter in which initial startup is completed.
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

i. The maximum 24-hour rolling average Filterable PM/PM_{10} emission rate in lb/MMBtu from the Coal Fired Boiler S1, during the quarterly reporting period.

Comment 2

$PM_{2.5}$ Emission Limit: Condition 2.13(e) (Page 8) for $PM_{2.5}$ currently reads "Total $PM_{2.5}$ in excess of 0.0123 lb/MMBtu on a 3-hr average". P4G requests that the condition read "Total $PM_{2.5}$ in excess of 0.01236 lb/MMBtu on a 3-hr average". The value of 0.01236 is the value which was calculated as BACT

and used in the dispersion modeling for Plant Washington.

EPD Response: Per Section 4 in Appendix I of the Procedures for Testing and Monitoring Sources of Air Pollutants (PTM) manual, any emission limit shall be considered to have at least 2, but no more than 3 significant digits. Thus, no change will be made to Condition 2.13.e.

Comment 3

Minimum Wet Scrubber Removal Efficiency: Condition 2.14 (Page 10) states the following;

2.14 The Permittee shall maintain a minimum Sulfur Dioxide (SO_2) removal efficiency of 97.5 percent on a 30-day rolling average for the Wet Limestone Scrubber.
[40 CFR 52.21(j) and 40 CFR 60.43Da(i)(l) (subsumed)]

Condition 2.14 is acceptable. However, the scrubber removal efficiency requirements are not included in discussions on how the averaging periods (i.e. 30-day rolling average) are derived to demonstrate compliance with the SO_2 emissions limitations. P4G requests adding Condition 2.14 under the requirements of Condition 7.6. Permit language would then read as follows:

7.6 The Permittee shall determine compliance with the SO_2 emissions limitations in Condition No. 2.13.f, g, h, p, and Condition 2.14 using emissions data acquired by the SO_2 CEMS. The 30-day rolling average (emission rate and efficiency), 12-month rolling average, 3-hour rolling average and 24-hr rolling average shall be determined as follows:
[40 CFR 63 Subpart B; 40 CFR 52.21 and 391-3-1-.02(6)(b)1]

g. The 30-day average removal efficiency shall be the average of all valid hours of SO_2 removal efficiency data for any 30 successive operating days. The Permittee shall use the inlet and outlet SO_2 CEMS data per Condition 5.2.b to determine SO_2 removal efficiency for each operating hour and for each day of operation.

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Condition 7.6 as follows:

7.6 The Permittee shall determine compliance with the SO_2 emissions limitations in Condition No. 2.13.f, g, h and p and with the minimum SO_2 removal efficiency in Condition No 2.14 using emissions data acquired by the SO_2 CEMS. The 30-day rolling average (emission rate and efficiency), 12-month rolling average, 3-hour rolling average and 24-hr rolling average shall be determined as follows:
[40 CFR 63 Subpart B; 40 CFR 52.21 and 391-3-1-.02(6)(b)1]

g. The 30-day average removal efficiency shall be the average of all valid hours of SO_2 removal efficiency data for any 30 successive operating days. The Permittee shall use the inlet and outlet SO_2 CEMS data per Condition 5.2.b to determine SO_2 removal efficiency for each operating hour and for each day of operation.

Comment 4

Auxiliary Boiler Hours of Operation: Condition 2.17 (Page 10) limits the hours of operation of the auxiliary boiler to 876 hours during any twelve consecutive months. While it is understood that this limitation takes effect following official commissioning of the auxiliary boiler, please be aware that the commissioning hours of the auxiliary boiler will be greater during the first year of facility commissioning to support additional equipment checkout and evaluation of facility equipment during the initial startup phase of the facility. This extended run time is necessary in the normal commissioning process of a power plant and also may be necessary if any operational difficulties are encountered during the startup phase of the plant. For this reason, during the first year of operation of the main boiler, the auxiliary boiler may operate more than the 876 hours limitation due to the extended commissioning time.

EPD Response: Condition 2.17 will take effect after the construction of the power plant has been completed and the facility is set to produce power (i.e. after initial startup of the Coal Fired Boiler S1). EPD will modify Permit Condition 2.17 as follows:

2.17 After initial startup of the Coal Fired Boiler S1, the Permittee shall limit the hours of operation of Auxiliary Boiler S45 such that the total hours of operation does not equal to or exceed 876 hours during any twelve consecutive months. This condition shall take affect after the initial startup date for the Coal Fired Boiler S1 in accordance with the notification required in Condition 7.21.b. [40 CFR 52.21(j) and 40 CFR 60.44b(l)(1)]

Comment 5

Cooling Tower Compliance Methods: Condition 2.18 (Page 10) indicates maintaining documentation that a 0.0005% drift rate is guaranteed for the cooling tower, but no Condition was listed (as proposed) for quarterly monitoring of the dissolved solids content of the cooling tower makeup water. Since the PM emissions from the cooling tower are based on both the drift rate of the cooling tower, and the Total Dissolved Solids (TDS) content of the cooling tower makeup water, P4G requests that a condition be added to the draft permit to include a requirement for quarterly monitoring of the TDS content of the cooling tower makeup water, to include additional compliance monitoring for the cooling tower (Emission Units S2 to S35). Condition 2.18 could be modified to read as follows;

2.18 The Permittee shall install and operate, as BACT for cooling tower (Emission Units S2 to S35), drift eliminators and shall maintain documentation that a 0.0005% drift is guaranteed and conduct analysis of the quality of the cooling tower makeup water each calendar quarter, limited to 3,300 mg/L TDS.
[40 CFR 52.21(j)]

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Condition 2.18 as follows and will add Permit Condition 5.9 to monitor and record the total dissolved solids (TDS):

2.18 The Permittee shall install and operate, as BACT for cooling tower (Emission Units S2 to S35), drift eliminators and shall maintain documentation that a 0.0005% drift is guaranteed and limit the total dissolved solids (TDS) in the cooling tower makeup water to 3,300 mg/L.
[40 CFR 52.21(j)]

5.9 The Permittee shall perform an analysis of the cooling tower makeup water to measure the total dissolved solids (TDS). The measurement shall be performed and recorded during each calendar quarter.
[40 CFR 52.21(j)]

Comment 6

Opacity Monitor: Condition 5.2(f) (Page 13) of the draft permit specifies use of a Continuous Opacity Monitoring System (COMS) on the main boiler. Additional draft permit terms and conditions refer to the opacity monitor. The Preliminary Determination to the draft permit (Page 10) states the following;

Continuous Opacity Monitoring System (COMS) is required to determine compliance with the opacity standard. However, units that use PM CEMS to meet compliance with PM standard are exempt from COMS requirement. Compliance with the opacity standard is determined through PM CEMS [40 CFR 60.48Da(o) and 40 CFR 60.49Da(u)].

Therefore, P4G maintains that there is no regulatory basis for requirement of the COMS device. The difficulty in operation of a COMS device in a wet stack is a well documented and recognized issue. Many of the utility facilities now operating wet scrubbers have changed over from COMS to PM CEMS due to the difficulties in operation of COMS devices in a wet stack. The Permit Statement of Basis for the Kentucky Utilities Company – Ghent Generating Station (12/15/05) reads "Due to wet stack conditions during operation of the wet scrubber system, representative continuous opacity monitor (COM) data cannot be obtained. As a Phase 1 Extension Control Unit (a unit with a wet flue gas control system), 40 CFR 75.14(b) has exempted the unit from the opacity monitoring requirements. To provide assurance of compliance with the applicable PM and opacity limitations, the permittee has proposed to install and operate a Particulate Matter Continuous Emissions Monitoring System (PM-CEMS)."

Therefore, due to the recognized difficulty in operation of a COMS device following a wet scrubber, the allowed exemption under the New Source Performance Standards (NSPS) for sources that utilize PM CEMS, and the fact that compliance with the filterable PM emission limit of the permit will be demonstrated continuously through use of PM CEMS, P4G requests that the requirement for installation and operation of a COMS unit on the Coal Fired Boiler (S1) be removed.

EPD Response: 40 CFR 60 Subpart Da allows the facility to install a filterable PM Continuous Emissions Monitoring System (CEMS) in lieu of a Continuous Opacity Monitoring System (COMS) to demonstrate compliance with the opacity limit. EPD also agrees that it is difficult to install and operate a COMS device on a wet stack. In this case, the COMs would have been placed following the wet scrubber, and because of the high moisture content in the flue gas, it would be very difficult to operate the COMS device properly.

Expected opacity from the boiler stack is approaching zero percent. As such, the facility plans to demonstrate compliance with the 20 percent opacity limit in Condition 2.13 via direct monitoring of filterable PM emissions. Therefore, EPD will delete the COMS monitoring requirements in Conditions 5.2.e and 6.2.v and the exceedance reporting in Condition 7.25.b.xi in the permit. Also, Condition 7.25.c.i is modified and it defines that exceedance of any PM limit is as an excursion for opacity.

7.25 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition No. 7.24 (and all others in this Condition), the following excess emissions, exceedances, and excursions shall be reported:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

c. Excursions: (means for the purpose of this Condition and Condition No. 7.24, any departure from an indicator range or value established for monitoring consistent with any averaging period specified for averaging the results of the monitoring).

i. Any exceedance of the PM emissions limits in Condition 2.13 is an excursion for opacity,

Comment 7

Testing Methods for PM, PM_{10} and $PM_{2.5}$: Condition 6.2 specifies that Method 5 or Method 17, in conjunction with Method 202 shall be used for determination of total PM/PM_{10} concentrations. With the understanding that the presumption is made that total PM is equivalent to total PM_{10}, then P4G requests removal of Condition 6.2(f) as this condition is now ambiguous.

Also, the PM testing methods specified in 6.2(g) and 6.2(h) specify "Method 5 or Method 17". P4G requests that this permit condition be modified to read "Method 5, Method 5B, or Method 17". Such conditions have been included in permit conditions for other utility coal fired boilers (i.e. Santee Cooper Cross). Method 5B is an EPA promulgated test method to eliminate interferences from sulfuric acid mist in particulate matter evaluations.

EPD Response: Permit Condition 6.2.f is applicable for the determination of Particulate Matter concentration from the Material Handling and Storage Facilities. EPD will modify Permit Condition 6.2.f as follows:

6.2 The methods for the determination of compliance with emission limits listed under Section 2.0 are as follows:

f. Method 5 or Method 17, as applicable, shall be used for the determination of Particulate Matter concentration from the Material Handling and Storage Facilities,

The Division does not believe Method 5B is an appropriate test method, in conjunction with Method 202, to measure total PM/PM_{10} emissions. In Method 5B, part of the filter catch is volatilized to remove the sulfuric acid. This procedure will remove a small fraction of PM_{10} and therefore will not be representative of the entire PM_{10} emissions. Thus, this method has not been approved per the Division's Procedures for Testing and Monitoring Sources of Air Pollutants (PTM). Therefore, EPD does not agree with the facility's comments to include test Method 5B in Permit Conditions 6.2.g and 6.2.h.

Comment 8

Testing Methods for Sulfuric Acid Mist: The application proposed use of Controlled Condensate Method 8A for compliance testing demonstration for sulfuric acid mist. The draft permit states use of EPA Method 8 (Condition 6.2(j), Page 17). Page 46 of the Preliminary Determination states;

The facility will be required to perform stack test using Method 8. The Division requires the facility to use Method 8 to ensure compliance with the SAM limit, as Method 8 is the method required for SAM as per Division's Procedures for Testing and Monitoring document.

Method 8 specifies that interferences with the test method include the presence of fluorides and free ammonia, which will be present in the exhaust gas stream of Plant Washington. Method 8A, also called Controlled Condensate Method 8A, eliminates these concerns. Since other coal fired utility boilers have utilized Method 8A for compliance demonstrations with their permitted sulfuric acid mist emission limits, including facilities such as Santee Cooper Cross, TS Power (Newmont), and Wygen II, and the text of Method 8 specifies interferences with conditions that would be expected at Plant Washington, Plant Washington should be allowed use of Method 8A for compliance demonstration for sulfuric acid mist. Use of Method 8A has been granted in other Georgia issued permits (Georgia Pacific Cedar Springs LLC,

Permit No. 2631-099-0001-V-02-0, Condition 4.13(h)). P4G requests that Condition 6.2(j) be modified to read; Method 8 or NCASI Method 8A shall be used for the determination of sulfur acid mist emissions.

EPD Response: EPD agrees with the comment and will add Conditional Test Method 013 (also known as Method 8A) as an alternative to Method 8 in Condition 6.2.j. EPD will modify Permit Condition 6.2.j as follows:

6.2 The methods for the determination of compliance with emission limits listed under Section 2.0 are as follows:

j. Method 8 or CTM 013 shall be used for the determination of sulfur acid mist emissions,

Comment 9

Testing Requirements for Small Dust Collectors: Condition 6.6 and 6.8 contain testing requirements for small dust collector sources (i.e. insertable dust collectors, bin vent filters on silos, etc.). Testing of such emission sources, with small exhaust flow rates, horizontal discharges, etc. can be challenging and require construction of stack extensions and additional apparatus. Also, bin vent filters operate periodically via displaced air into and out of the material storage device (i.e. Pretreatment Soda Ash Silo). These circumstances make testing of such sources under the requirements of the specified test methods difficult, if not impossible. Due to the inherent difficulty in conducting testing of such sources, P4G requests elimination of Condition 6.6 and modification of Condition 6.8 to read;

Within 60 days after achieving the maximum production rate at which the sources will be operated, but not later than 180 days after the initial startup, the Permittee shall conduct performance testing on the Coal Crusher House S40, Tripper Decker S41, Fly Ash Mechanical Exhausters S43 for Particulate Matter to verify compliance with Condition No. 2.28 and furnish to the Division a written report of the results of the performance test.
[40 CFR 52.21 and 391-3-1-.02(3)]

EPD Response: EPD agrees with the facility's comments, and the testing requirements for the small insertable dust collectors and bin vent filters in Conditions 6.6 and 6.8 will be removed.

Please note 40 CFR 60 Subpart OOO does not require testing on vents for limestone storage bins (Emission Unit: Limestone Preparation Building Day Bin Silo S42) to comply with the NSPS PM limit of 0.014 gr/dscf. This NSPS limit is subsumed by the PSD limit of 0.005 gr/dscf in Condition 2.27 for the vents for the Limestone Preparation Building Day Bin Silo S42.

Also, Condition 6.6 will be modified and it will require the facility to maintain guaranteed manufacturer's specifications for the insertable filters and/or the bin vent filters on the PRB Conveyor Stackout S46, Illinois # 6 Conveyor Stackout S47, Fly Ash Silo S37, SO_3 Sorbent Silo S36, Mercury Sorbent Silo S38, Pretreatment Soda Ash Silo S44, Pretreatment Hydrated Lime Silo S39, Limestone stackout S48 and the vents of Limestone Preparation Building Day Bin Silo S42 to demonstrate compliance with the PM limit of 0.005 gr/dscf.

EPD will modify Conditions 6.6 and 6.8 as follows:

6.6 The Permittee shall maintain records showing the guaranteed manufacturer's specifications for the insertable filters and/or bin vent filters on the PRB Conveyor Stackout S46, Illinois # 6 Conveyor Stackout S47, Fly Ash Silo S37, SO_3 Sorbent Silo S36, Mercury Sorbent Silo S38, Pretreatment Soda Ash Silo S44, Pretreatment Hydrated Lime Silo S39, Limestone stackout S48 and the vents

of Limestone Preparation Building Day Bin Silo S42. These records shall be used to demonstrate compliance with the PM limits in Conditions 2.24, 2.27 and 2.28. These records shall be maintained in a format suitable for inspection or submittal to the Division.
[40 CFR 52.21 and 391-3-1-.02(3)]

6.8 Within 60 days after achieving the maximum production rate at which the sources will be operated, but not later than 180 days after the initial startup, the Permittee shall conduct performance testing on the Coal Crusher House S40, Tripper Decker S41 and Fly Ash Mechanical Exhausters S43 for Particulate Matter to verify compliance with Condition No. 2.28 and furnish to the Division a written report of the results of the performance test.
[40 CFR 52.21 and 391-3-1-.02(3)]

Comment 10

Scrubbant pH: Conditions 6.9 includes a condition to establish the minimum scrubbant pH for the wet scrubber (for HF and HCl emissions control) during the initial performance tests. However, modifying these parameters to establish the minimum value for operation to maintain compliance during the initial compliance-testing phase would be unwise, since modifying these parameters improperly during testing could lead to failure of the initial compliance test. Therefore, P4G requests that Condition 6.9 be removed. Since the SO_2 control device (wet scrubber) has been demonstrated to effectively control acid gases, surrogate monitoring of SO_2 will demonstrate ongoing compliance with the permitted HF and HCl emission limits.

EPD Response: EPD agrees that one stack test is not the best way to establish a relationship between pH and HCl and/or HF emissions. This issue is best left to the CAM plan required by Condition 2.3. Permit Condition 6.3.d requires the facility to do performance tests for HF and Condition 6.2.f requires the facility to do performance tests for HCl. Permit Condition 6.9 requires the facility to perform tests for HF and HCl on the Wet Limestone Scrubber and to include the average value for the scrubbant pH in the test report that is submitted to EPD. To clarify wording, Condition 6.9 is modified as follows:

6.9 Within 60 days after achieving the maximum production rate at which the sources will be operated, but not later than 180 days after the initial startup (and annually thereafter), the Permittee shall conduct tests for HF and HCl on the Wet Limestone Scrubber. During tests, the Permittee shall use pH monitor per Condition 5.7 to determine average pH from test runs. The Permittee shall furnish to the Division a written report of the results of the test.
[40 CFR 52.21, 40 CFR 63 Subpart B and 391-3-1-.02(3)]

However, EPD does not prohibit the facility from using the results for testing done in Conditions 6.3.d and 6.3.f to satisfy the requirements of Condition 6.9. Also, excursion Condition 7.25.c.i for the pH is deleted because it is not necessary.

Comment 11

Discussions of Valid Hours of Emissions Data: Draft permit conditions in Section 7 discuss “valid hours of ….emissions data”. However, there is no clear definition established of what constitutes a valid hour of emission data. P4G requests that permit language be added to define valid hours of emissions data as defined in the New Source Performance Standards (NSPS) regulations.

EPD Response: EPD agrees and the definition of valid hour of emissions data has been added in Permit Condition 5.2. EPD will modify Condition 5.2.e as follows:

5.2 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated pollutants on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.

e. For the purpose of this Permit, a valid hour of emissions data means any 60-minute period commencing on the hour and it must be based on at least 30 minutes of operation and include at least 2 data points representing two 15-minute periods.
[391-3-1-.02(6)(b)1]

The following are noted items for clarification in the draft air permit.

Comment 12

The Air Pollution Control Device Description for Emission Unit ID No. A3 (Page 3) indicates the use of water sprays for control of emissions from the Bottom Ash Transfer to Bin and from Bin to Truck. These materials will already be wet after transference through the submerged chain conveyor since pyrites from the pulverizers are being sluiced to this conveyor, as illustrated in Figure 2-5 of Page 2-12 of the Prevention of Significant Deterioration Permit Application. Therefore, these materials will already be wet and typically do not require additional spray.

EPD Response: The facility shall take reasonable precautions to prevent fugitive dust from becoming airborne from the Ash Handling particulate Sources, which consists of Bottom Ash Transfer to Bin And from Bin to Truck (Emission Unit ID A3). Water Sprays is listed as Air Pollution Control Device for Emission Unit ID A3 to control fugitive dust emissions from Bottom Ash handling. Water needs to be added to the bottom ash during transport and not necessarily during Bottom Ash Transfer to Bin and from Bin to Truck.

Comment 13

Condition 2.27 (Page 12) is stated as the following;

2.27 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from vents of Limestone Preparation Building S42, any emissions, which contain PM/PM_{10} in excess of 0.005 gr/dscf.
[40 CFR 52.21(j) and 40 CFR 60.672(e)(2) (subsumed)]

The permit condition is indicating the Limestone Preparation building as source S42. As described in Section 2, pages 2-8 thru 2-9 of the Plant Washington Prevention of Significant Deterioration Air Permit Application, limestone will be conveyed into a day bin silo located inside of the Limestone Preparation Building. This day bin silo will be equipped with a bin vent filter, indicated as emission point S-42 in Figure 2-3 (Page 2-9) of the application. Therefore, emission point S42 is a bin vent filter located on top of a silo inside of a building, with the vent from the filter discharging outside of the building.

Also, it should be considered that NSPS Subpart OOO exempts from applicability to PM emission limits baghouses that control emissions from only an individual, enclosed storage bin. It is therefore recommended that the condition be modified to read as follows;

2.27 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from the day bin silo vent S42 of the Limestone Preparation Building, any emissions, which contain PM/PM_{10} in excess of 0.005 gr/dscf.
[40 CFR 52.21(j)]

In conjunction with this comment the Emission Unit description on Page 3 of the draft air permit for source S42 should also read "Limestone Preparation Building Day Bin Silo".

EPD Response: The control device (APCD No: C10) for Limestone Preparation Building Day Bin Silo S42 was incorrectly listed as a "Baghouse" and it is updated as a "Bin Vent Filter" in the Emissions Units section of the permit (i.e. page 3 of final permit). The word "Day Bin Silo" has also been added to the description for Limestone Preparation Building Day Bin Silo S42.

EPD agrees that NSPS Subpart OOO exempts applicability of PM emission limits for bin vent filters that control emissions from only an individual, enclosed storage bin. Thus, the bin vent filter for Limestone Preparation Building Silo Day Bin Silo S42 is not subject to the NSPS limit but only the more stringent PSD limit. EPD has updated the citation and Condition 2.27 is modified as follows:

2.27 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from vents of Limestone Preparation Building Day Bin Silo S42, any emissions, which contain PM/PM_{10} in excess of 0.005 gr/dscf.
[40 CFR 52.21(j)]

The following are noted typographical errors in the draft air permit.

Comment 14

Equipment Description – Page 4: EG1 and EP1 currently read "Diesel Fired". These equipment descriptions should read "Ultra Low Sulfur Diesel Fired" to conform with other equipment descriptions.

EPD Response: EPD agrees with the facility's comment. EPD will modify the equipment description in the permit.

Comment 15

Auxiliary Boiler PM Limit: Condition 2.16(c) (Page 10) currently reads; "Contain PM/PM_{10} in excess of 0.014 lb/MMBtu". The condition should read "Contain Filterable PM/PM_{10} in excess of 0.014 lb/MMBtu".

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Condition 2.16.c as follows:

2.16 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Auxiliary Boiler S45, any gases which

c. Contain Filterable PM/PM_{10} in excess of 0.014 lb/MMBtu on a 3-hour average, Total PM/PM_{10} in excess of 0.024 lb/MMBtu on a 3-hour average and Total $PM_{2.5}$ in excess of 0.012 lb/MMBtu on a 3-hour average.
[40 CFR 63 Subpart B; 40 CFR 52.21(j) and 391-3-1-.02(2)(d)(2) (subsumed)]

Comment 16

Mercury CEMS: Condition 5.2(g) (Page 15) currently reads "The 1-hour average Mercury emission rates shall also be recorded in pound per MW-hr heat output". The condition should read "The 1-hour average Mercury emission rates shall also be recorded in pound per MW-hr electrical output".

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Condition 5.2.g as follows:

5.2 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated pollutants on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.

g. A Continuous Emissions Monitoring Systems (CEMS) for measuring Mercury emissions discharged to the atmosphere from the Coal Fired Boiler, S1. The 1-hour average Mercury emissions rates shall also be recorded in pound per MW-hr electrical output.
[40 CFR 52.21; 40 CFR 63 Subpart B and 391-3-1-.02(6)(b)1]

Comment 17

Monitoring: Condition 5.3(c) (Page 15) currently reads" The gross electrical output in MW for the Coal Fired Boiler" The condition should read "The gross electrical output in MW for the Power Plant".

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Condition 5.3.c as follows:

5.3 The Permittee shall install, calibrate, maintain, and operate monitoring devices for the measurement of the indicated parameters on the following equipment. Data shall be recorded at the frequency specified below. Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

c. The gross electrical output in MW for the Power Plant. Data shall be recorded on a continuous basis.

Comment 18

Performance Testing for Main and Auxiliary Boiler: Condition 6.3(b) (Page 18) and 6.4(c) (Page 19) currently reads "Performance tests …. for PM". These conditions should read "Performance Tests …. for PM/PM_{10}".

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Conditions 6.3.b and 6.4.c as follows:

6.3 Within 60 days after achieving the maximum production rate on each coal type (sub-bituminous coal and a 50/50 blend of sub-bituminous and bituminous coal) in Coal Fired Boiler S1, but not later than 180 days after the initial startup of the boiler, the Permittee shall conduct the following performance tests and furnish to the Division a written report of the results of such performance tests:
[391-3-1-.02(3)]

b. Performance tests on Coal Fired Boiler S1, for PM/PM_{10} to verify compliance with Condition 2.13.e.
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

6.4 Within 60 days after achieving the maximum production rate at which the Auxiliary Boiler, S45, will be operated, but not later than 180 days after the initial startup of the boiler, the Permittee shall conduct the following performance tests and furnish to the Division a written report of the results of such performance tests:
[391-3-1-.02(3)]

c. Performance tests on the Auxiliary Boiler, S45, for PM/PM_{10} and $PM_{2.5}$ to verify compliance with Condition No. 2.16.c.
[40 CFR 63 Subpart B; 40 CFR 52.21 and 391-3-1-.02(6)(b)1]

Comment 19

SO_2 Emissions Compliance: Condition 7.6 currently reads "The Permittee shall determine compliance with the SO_2 emissions limitations in Condition No. 2.13.f, g, h and o". The condition should read "The Permittee shall determine compliance with the SO_2 emissions limitations in Condition No. 2.13.f, g, h and p".

EPD Response: EPD agrees with the facility's comment. EPD will modify Permit Condition 7.6. Please refer to EPD's response to facility Comment 3.

The following are comments on Air Permit Preliminary Determination Document.

Comment 20

PD Page # i - Mercury State BACT Requirement: The summary description of regulatory requirements does not mention BACT for mercury required under State Rule 391-3-1-.02(2)(ttt). This requirement is noted elsewhere in the determination documents but perhaps should also be indicated in the summary on Page i.

EPD Response: Comment so noted.

Comment 21

PD Page # 3 - Coal Handling and Limestone Preparation: 2nd Paragraph 2nd sentence of Page 3 regarding coal handling states "Coal will be pulled from the active piles via eight grizzly hoppers and feeders to two reclaim conveyors. These emission points will be located underground". When coal is taken from the active piles via the grizzly hoppers the coal is taken from the bottom of the pile into an underground enclosed structure. The statement should therefore read "Coal will be pulled from the active piles via eight grizzly hoppers and feeders to two reclaim conveyors. The reclaim conveyors will be located underground."

The last sentence of the 5th paragraph on Page 3 reads "Limestone preparation area is controlled by a baghouse". As discussed in clarification of draft permit Condition 2.27, The Limestone Preparation Building is not controlled by a baghouse, the day bin silo located within the Limestone Preparation Building is controlled by a bin vent filter (S42).

EPD Response: EPD agrees with the coal handling and limestone preparation description changes. Comment so noted.

Comment 22

PD Page # 50 - EPD Review Mercury Control: The 2nd paragraph of Page 50 states that Michigan DEQ is currently reviewing the Mid-Michigan Energy permit application. The application for that facility was withdrawn in May 2009.

EPD Response: EPD agrees with the facility's comment.

Comment 23

PD Page # 86- Additional Impacts - Growth: The 3rd paragraph on Page 86 states that 100 to 500 people will be required for the construction phase of Plant Washington. Estimates have indicated that up to 1600 people will be required for the construction phase of the project.

EPD Response: Comment so noted.

Comment 24

NOTICE OF MACT APPROVAL Page # 2 - Fuel Use Description: The fuel use description discussion in the 2nd paragraph does not include discussion of fuels with equivalent characteristics of PRB and Illinois #6, as stated in Condition 2.11 of the draft air permit.

EPD Response: Comment so noted.

Comment 25

NOTICE OF MACT APPROVAL Page # 6 - List of Hazardous Air Pollutants (HAPs): Table II incorrectly identifies Methyl Ethyl Ketone (MEK) as a HAP. MEK was removed from the HAP list in 2005.

EPD Response: EPD agrees with the facility's comment. Table II of NOTICE OF MACT APPROVAL document will be modified as follows:

Table II – List of HAPs Emitted from Coal-Fired Power Plants

Organics		**Acid Gases**
PAHs	Methyl methacrylate	Hydrochloric Acid
Acetaldehyde	Methyl tert butyl ether	Hydrogen Fluoride
Acetophenone	Methylene chloride	
Acrolein	Phenol	**Non-mercury Metals**
Benzene	Propionaldehyde	Antimony (Sb)
Benzyl chloride	Tetrachloroethylene	Arsenic (As)
Bis(2-ethylhexyl)phthalate	Toluene	Beryllium (Be)
Bromoform	1,1,1-Trichloroethane	Cadmium (Cd)
Carbon disulfide	Styrene	Chromium (Cr)
2-Chloroacetophenone	Xylenes	Cobalt (Co)
Chlorobenzene	Vinyl acetate	Lead (Pb)
Chloroform	Dioxins	Manganese (Mn)
Cumene	Hexachlorobenzene	Nickel (Ni)
Cyanide	Carbon tetrachloride	Selenium (Se)
2,4-Dinitrotoluene	Quinoline	
Dimethyl sulfate	1,1-Dichloroethylene	
Ethyl benzene	N-nitrosodimethylamine	Mercury
Ethyl chloride	1,1,2-Trichloroethane	
Ethylene dichloride	Trichloroethylene	
Ethylene dibromide	Pentachlorophenol	
Formaldehyde	Trans 1,3 – Dichloropropene	
Hexane	Cresols	
Isophorone	Dibuyl phthalate	
Methyl bromide	Methyl isobutyl ketone	
Methyl chloride	Phthalic anhydride	
Methyl hydrazine	Methyl iodine	

Comment 26

NOTICE OF MACT APPROVAL Page # 10, 14 - Mercury MACT Review: Table IV, Page 10 lists the Consumers Energy (ASPC) mercury limit as 14 x 10^{-6} lb/MW-hr. The value listed in the draft permit for the site is 7.9 x 10^{-6} lb/MW-hr. Page 14 states that Michigan DEQ is currently reviewing the Mid-Michigan Energy permit application. The application for that facility was withdrawn in May 2009.

EPD Response: EPD agrees with the facility's comment.

Comment 27

NOTICE OF MACT APPROVAL Page # 25 - Acid Gas MACT Floor: The first paragraph of Page 25 under Applicant's Proposal states "Very little information is available from EPA on HCl and HF emissions from coal fired power plants". The Prevention of Significant Deterioration permit application discussed the limited data available to evaluate the comparative performance of control technologies. EPA documents which discuss emissions of acid gases from utility coal fired boilers were reviewed and discussed in the permit application (i.e. Utility Report to Congress - 1998). The statement should read "Very little information is available from the EPA regarding the effectiveness of control technologies for HF and HCl".

EPD Response: EPD agrees that very little information is available from the EPA regarding the effectiveness of control technologies for HF and HCl.

Comment 28

NOTICE OF MACT APPROVAL Page # 26 - Beyond the Floor: The 2nd paragraph of Page 26 (under Beyond the Floor) states "Plant Washington provided basic cost analysis on adding a WESP system to the facility". Also, it is stated that the environmental impacts "specifically would place greater demands on the limited water supply in the region". Page 26 is under the "Applicant's Proposal" section but the application made no such statement regarding greater demands on the limited water supply.

EPD Response: Comment so noted.

Comment 29

NOTICE OF MACT APPROVAL Page # 30 - Organic HAPs: Table XVI on Page 30 incorrectly lists the Surrogate VOC monitoring limit for the John W. Turk Jr. site as 0.0025 lb/MMBtu, when the Arkansas DEQ 112(g) determination was 0.00078 lb/MMBtu for the site. P4G conducted an evaluation of the 112(g) emission limit (0.00078 lb/MMBtu) for the John W. Turk Jr. site, and submitted the results of that evaluation to the Georgia EPD in the VOC/PM response letter submitted by P4G on May 28, 2009. That evaluation determined that the emission limit derived for the John W. Turk Jr. site should not be considered for Plant Washington.

The BACT VOC emission limit for the John W. Turk site was determined to be 0.0036 lb/MMBtu. However, the Arkansas DEQ determined that the MACT organic HAP compliance monitoring method for the John W. Turk Jr. facility should be VOC stack compliance testing with a limit of 0.00078 lb/MMBtu. Plant Washington will more effectively monitor and control organic HAPs (MACT) through continuous monitoring of CO emissions. This fact, combined with questions of reliability of the testing data on which the limit of 0.00078 lb/MMBtu was derived, and the typical level of NOx emissions from the emission source on which the 0.00078 lb/MMBtu limit was derived, it was determined that the data on which the 112(g) limit of 0.00078 lb/MMBtu was derived should not be used as a basis for assessment of emission limits for Plant Washington.

EPD Response: Comments so noted. Based on the facility's letter submitted to the Division on May 28, 2009, EPD agrees and updates the surrogate VOC monitoring limit for John W. Turk Jr. site as 0.00078 lb/mmBtu in Table XVI on page 30 of Notice of MACT Approval document.

Comment 30

NOTICE OF MACT APPROVAL Page # 37 - Acid Gas Auxiliary Boiler: The EPD Review states in

several places that EPD "partially agrees with Plant Washington's MACT floor analysis for inorganic HAPs". However, no clarification on why EPD partially agrees with the MACT floor analysis is given.

EPD Response: EPD agreed that no add on control technology is needed as part of the MACT determination but did not agree with the type of fuel selected to be burned in the auxiliary boiler. EPD changed the allowable fuel from very low sulfur diesel fuel to ultra low sulfur diesel fuel to ensure the lowest emissions from inorganic HAPs that are possible based on the MACT determination.

Comment 31

NOTICE OF MACT APPROVAL Page # 40 - MACT Approval Fuel Use Discussion: Page 40 of the MACT Approval document, under Proposed MACT limits and Requirements states the following;

(5) These boilers are permitted to burn sub-bituminous coal (Powder River Basin, or PRB), or up to a 50/50 blend of sub-bituminous and bituminous coal (Illinois #6), as fuel. Ultra low sulfur diesel fuel can be used for startup in the coal-fired boilers. The use of any other substances as fuel is prohibited without prior written approval from the Division.

This differs with the condition in the draft permit that allows use of equivalent coals (Page 8 Condition 2.11).

2.11 Except as provided in Condition No. 2.12, the Permittee shall only fire sub-bituminous coal (Powder River Basin, or PRB coal), or up to a 50/50 blend (by weight) of sub-bituminous and bituminous coal (Illinois #6) in the Coal Fired Boiler S1. Firing of bituminous and subbituminous coals with equivalent characteristics of PRB and Illinois #6 is permitted.
[40 CFR 52.21(j) and 391-3-1-.02(2)(g)(subsumed)]

The draft permit condition 2.11 also does not reference the MACT sections of the CFR (40 CFR Part 63). P4G requests striking of the last sentence of item (5) of the Notice of MACT Approval as shown;

(5) These boilers are permitted to burn sub-bituminous coal (Powder River Basin, or PRB), or up to a 50/50 blend of sub-bituminous and bituminous coal (Illinois #6), as fuel. Ultra low sulfur diesel fuel can be used for startup in the coal-fired boilers.

EPD Response: EPD agrees with the facility's comment. General requirement (5) listed under section 5.a. of NOTICE OF MACT APPROVAL document will be modified as follows:

(5) These boilers are permitted to burn sub-bituminous coal (Powder River Basin, or PRB), or up to a 50/50 blend of sub-bituminous and bituminous coal (Illinois #6), as fuel. Firing of bituminous and sub-bituminous coals with equivalent characteristics of PRB and Illinois #6 is permitted. Ultra low sulfur diesel fuel can be used for startup in the coal-fired boilers.

The following are noted typographical errors in the Preliminary Determination Documents.

Comment 32

PD Page # 75 - Monitoring Requirements: Section i at the top of Page 75 reads
"Instrumentation to read the gross electrical output of the boiler"

Should read;
"Instrumentation to read the gross electrical output of the power plant"

EPD Response: EPD agrees with the facility's comment.

Comment 33

PD Page # 80 - Modeling Results Table 6-4: The PM_{10} annual modeled value is incorrect and should read 0.8613 instead of 0.4613.

EPD Response: EPD agrees with the facility's comment. Table 6-4 of preliminary determination will be modified as follows:

Table 6-4: Class II Significance Analysis Results – Comparison to MSLs

Pollutant	Averaging Period	Year	UTM East (m)	UTM North (m)	Maximum Impact (ug/m^3)	MSL (ug/m^3)	Significant?
NO_2	Annual	1989	338762	3659340	0.4578	1	No
PM_{10}	24-hour	1989	337260	3660883	4.951	5	No
	Annual	1989	336977	36607484	0.8613	1	No
SO_2	3-hour	1991	336637	3659011	30.38	25	**Yes**
	24-hour	1987	338468	3658817	11.31	5	**Yes**
	Annual	1989	338763	3659340	0.601	1	No
CO	1-hour	1987	338037	3661311	127.63	2000	No
	8-hour	1988	336037	3659511	60.01	500	No

Data for worst year provided only.

Comment 34

PD Page # 81 - NAAQS and Increment Modeling: The second paragraph 1st sentence has a statement that reads; "all sources located more than 50 kilometers from the plant were excluded from the analysis". This statement should read "all sources located more than 50 kilometers outside the SIA were excluded from the analysis".

EPD Response: EPD agrees with the facility's comment.

Comment 35

PD Page # 87 - General Typographical Error: The words "in some" from the end of the second sentence at the top of the page should be removed.

EPD Response: EPD agrees with the facility's comment.

GREENLAW COMMENTS

Comments were received from GreenLaw via email dated October 27, 2009.

Comment 1 – GreenLaw BACT Comments

The BACT Emission Limitations in the Permit Are Inadequate.

A. General

The proposed plant will be a supercritical baseload, 850 MW (net) coal-fired unit designed to burn PRB sub-bituminous coal or an alternate blend of 50:50 PRB and eastern bituminous (Illinois #6) coal. The proposed blend is an alternate; the main fuel supply for the unit is PRB. Fuel characteristics are provided below, as taken from the application. 100% Illinois #6 coal is not proposed to be used in the unit.

Table A-2 : Coal Design Data

Item (%) As Received (Wet Basis)	PRB		50/50 Blend		Illinois #6	
	Average	Abuormal	Average	Abnormal	Average	Abnormal
Moisture	29.61	32.05	19.81	21.19	10	10.32
Carbon	49.16	47.66	55.24	53.89	61.32	60.12
Hydrogen	3.43	3.29	4.45	4.10	5.46	4.9
Oxygen	11.31	12.25	9.75	9.77	8.19	7.28
Nitrogen	0.71	0.57	1.55	1.21	2.38	1.85
Sulfur	0.32	0.53	1.72	2.23	3.11	3.93
Ash	5.46	3.65	7.49	7.63	9.52	11.6
HHV (Btu/lb)	8500	8300	9950	9650	11,400	11,000
Trace Analysis (ppm) (Dry Basis)						
Chlorine	100	220	1400	2110	2700	4000
Fluorine	77	181	79	152	80	124
Mercury	0.1	0.25	0.1	0.2	0.09	0.15
Lead	4.63	10.8	7.7	18	10.8	25.3

EPD Response: Comment so noted. Condition 2.11 authorizes the facility to only fire sub-bituminous coal (Powder River Basin, or PRB coal), or up to a 50/50 blend (by weight) of sub-bituminous and bituminous coal (Illinois #6) in the Coal Fired Boiler S1. Firing of bituminous and sub-bituminous coals with equivalent characteristics of PRB and Illinois #6 is permitted.

B. The BACT Analysis Fails to Set Limits For Each Type of Coal.

Although the facility is being designed to burn PRB coal and an alternate blend of 50:50 PRB and Illinois #6 coal, separate BACT limitations have not been set for each type of coal, even though limits are required. A BACT determination must consider clean fuels. Accordingly, the specific blend that results in the lowest emissions should be evaluated in the BACT analyses. Alternatively, if the range of fuels is 100% PRB up to a 50:50 blend, the permit should set separate BACT limits for each unique fuel, e.g., PRB and 50:50 blend, and then stipulate that the applicable emission limit for any blend of the two shall be determine based on the relative proportions of each. The permit should do so for each pollutant where the parent compound in the coal affects the emission rate such as for SO_2, H_2SO_4, mercury, HF, etc.

EPD Response: The Division's response to the BACT emissions limits for SO_2, H_2SO_4, mercury and HF are as follows:

SO_2

SO_2 BACT emission limit in the permit does account for sulfur content in the coal and the permit has a 97.5 percent SO_2 removal control efficiency limit that applies while the facility is firing either sub-bituminous coal or 50/50 blend coal. Page 4-108 of permit application also provides an explanation and it states as follows:

"The proposed 12-month rolling average BACT limit corresponds to an average coal blend and optimal scrubber conditions. The proposed 30-day rolling average BACT limit corresponds to an above average coal blend and optimal scrubber conditions. The proposed 3-hour average BACT limit corresponds to an above average coal blend and sub-optimal scrubber conditions with the scrubber operating at a minimum efficiency of 97.5% on a short term 3-hr average basis. The minimum removal efficiency of 97.5% will ensure that emissions of SO_2 during use of low sulfur coals will be effectively controlled".

H_2SO_4

The Division has reviewed other similar coal fired power plant projects (see Appendix C). H_2SO_4 limit in Condition 2.13.l applies while the facility fires either the sub-bituminous coal or the 50/50 blend coal of bituminous coal and sub-bituminous coal. This is consistent with coal power plants permits issued by other states.

Based on the Division's review, 0.004 lb/MMBtu on a 3-hour average is the BACT emission limit for H_2SO_4 for each type of coal. The facility will be required to comply with this BACT limit while firing sub-bituminous coal or 50/50 blend coal.

Mercury

Please refer to the Division's response to GreenLaw Comment 3, Section D regarding the discussion on mercury (Hg) emissions limit.

Based on comments received and the Division's review of recent coal fired power plant permits issued (see Appendix C), the Division has decided to lower the mercury emissions limit from 13 x 10^{-6} lb/MW-hr to 7.64 x 10^{-6} lb/MW-hr while firing sub-bituminous coal and add a mercury emissions limit while firing 50/50 blend coal based on computed weighted average. This change in mercury limit will lower the facility wide potential mercury emissions from Plant Washington from 122 lbs/yr to 62.3 lbs/yr. Thus, the Division will modify Conditions 2.13.m and 7.25.b.x as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

m. Contain Mercury (Hg) in excess of 7.64×10^{-6} lb/MW-hr (gross) on a 12-month rolling average while firing sub-bituminous coal or a computed weighted average on a 12-month rolling average based on the proportion of energy output in gross MW output contributed by each coal rank (sub-bituminous and bituminous) and its applicable Hg emissions limit while firing up to a 50/50 blend of sub-bituminous and bituminous coal. Hg emission limit of 6.0×10^{-6} lb/MW-hr (gross) shall be used for bituminous coal to calculate computed weighted average.
[40 CFR 63 Subpart B and 391-3-1-.02(2)(ttt)]

7.25 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition No. 7.24 (and all others in this Condition), the following excess emissions, exceedances, and excursions shall be reported:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

b. Exceedances: (means for the purpose of this Condition and Condition No. 7.24, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

x. Any 12-month rolling average mercury emission rate that exceeds 7.64×10^{-6} lb/MW-hr (while firing sub-bituminous coal) or the computed weighted average as per Condition 2.13.m (while firing blend of sub-bituminous and bituminous coal) for the Coal Fired Boiler S1,

<u>HF</u>

Please refer to the Division's response to GreenLaw Comment 3, Section D regarding the discussion on hydrogen fluoride (HF) emissions limit. The HF limit in Condition 2.13.k applies while the facility fires either the sub-bituminous coal or the 50/50 blend coal of bituminous coal and sub-bituminous coal. This is consistent with coal power plants permits issued by other states.

Based on comments received and the Division's review of recent coal fired power plant permits issued (see Appendix C), the Division has decided to lower HF emissions limit while firing either sub-bituminous coal or while firing 50/50 blend coal from 2.17×10^{-4} lb/MMBtu to 1.40×10^{-4} lb/MMBtu. The Division will modify Condition 2.13.k as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

k. Contain Fluorides (as HF) in excess of 1.40×10^{-4} lb/MMBtu on a 3-hour average.
[40 CFR 63 Subpart B and 40 CFR 52.21(j)]

C. Comments on Draft Permit (Permit No. 4911-303-0051-P-01-0) Conditions.

The following comments are provided in addition to the more detailed comments on BACT and other issues as will be discussed later.

(a) On Page 2/30 of the permit, the coal unit and its controls are generally described as shown below.

S1	Supercritical Pulverized Coal Fired Boiler – 8300 MMBtu/hr Maximum Heat Input Capacity	LN1 CO2 CO1 CO3 SI1 SI2	Low NOx Burners/Over-fire Air Selective Catalytic Reduction Fabric Filter Baghouse Wet Limestone Scrubber Sorbent Injection for Sulfuric Acid Mist Activated Carbon Injection for Mercury

However, the permit contains no additional engineering design or other description of the coal unit itself, its operating conditions (i.e., steam conditions) or any engineering design or capacity descriptions of the various air pollution controls. These should be provided.

EPD Response: It is not required to include additional engineering design or other description of the coal fired boiler and its operating conditions or engineering design or capacity descriptions of the various air pollution controls in the permit. The applicant has provided as much details as possible with regards to engineering designs, operating conditions and designs for the various air pollution controls in the permit application, and EPD has reviewed them. There are no federal or state regulations requiring such information be explicitly included in the permit as this facility proposes to monitor emissions directly, which makes parametric monitoring of control equipment operating parameters redundant. This facility is required to install NOx, SO_2, Filterable PM, CO and Mercury CEMS to demonstrate compliance with BACT emission limit and compliance with other pollutants will be demonstrated by performing stack tests. It is consistent with other permits issued by the Division and also consistent with other coal fired power plant permits issued by other states.

(b) Condition 1.1 states that "[a]t all times, including periods of startup, shutdown, and malfunction, the Permittee shall maintain and operate this source, including associated air pollution control equipment,….". However, the terms startup, shutdown, and malfunction are not defined. They should be.

EPD Response: The terms startup, shutdown and malfunction are defined in Georgia Rule 391-3-1-.01 (Definitions).

(c) Condition 2.5 states that "[t]he Permittee shall install and operate, as BACT and MACT for CO and BACT for VOC on Coal Fired Boiler S1, good combustion controls." However, the term "good combustion controls" is not defined and is therefore unenforceable. It should be properly defined.

EPD Response: Compliance with CO and VOC emissions limits is an indicator of "good combustion controls". EPD has determined good combustion controls as BACT and MACT for CO and BACT for VOC on Coal Fired Boiler S1. This determination is consistent with permits issued for similar coal fired projects. The compliance with CO BACT and MACT emission limit will be verified through CEMS and compliance with VOC emission limit will be verified by performing stack testing.

(d) Condition 2.7 states that "[t]he Permittee shall install and operate, as BACT for H_2SO_4 on Coal Fired Boiler S1, a Duct Sorbent Injection System". The wet limestone scrubber is also part of the BACT for H_2SO_4 and should be noted in this condition.

EPD Response: The applicant has proposed BACT control technology for H_2SO_4 emissions from the coal fired boiler to be the use of Duct Sorbent Injection (along with the co-benefits of a Fabric Filter Baghouse and Wet Scrubber). Wet scrubber is determined as BACT for SO_2, BACT and MACT for HF and as MACT for HCl. Wet scrubber also controls H_2SO_4 emissions as a co-benefit. There is no need to list it as a BACT for H_2SO_4.

(e) Condition 2.9 states that "[t]he Permittee shall install and operate, as BACT and MACT for Mercury on Coal Fired Boiler S1, an Activated Carbon Injection System". However, no details as to the type of activated carbon or its injection rate are specified and they should be.

EPD Response: Direct monitoring of emissions makes the requirement to conduct parametric monitoring redundant. The mercury CEMS, which is required by Condition 5.2, will ensure that the facility is complying with the mercury emissions limit. Also, this ongoing compliance with the mercury limit will ensure that the activated carbon injection system is operating properly. No other design operating parameters for the activated carbon injection system are required to be reported under any federal or state regulations.

(f) Condition 2.13(a) states that "[t]he Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which Contain Nitrogen Oxides (NOx) in excess of 0.05 lb/MMBtu on a 30-day rolling average". The numerical limit should be specified to one additional significant digit, namely 0.050 lb/MMBtu. Without that additional significant digit, there may be confusion as to the stringency of this limit. However, please see further comments below on the BACT limit for NOx.

EPD Response: EPD agrees with GreenLaw's Comments. Per Section 4 in Appendix I of the Procedures for Testing and Monitoring Sources of Air Pollutants (PTM) manual, any emission limit shall be considered to have at least 2, but no more than 3 significant digits. EPD will modify Condition 2.13.a as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

a. Contain Nitrogen Oxides (NOx) in excess of 0.050 lb/MMBtu on a 30-day rolling average. [40 CFR 52.21(j); 391-3-1-.02(2)(d)(4) (subsumed) and 40 CFR 60.44Da(e)(1) (subsumed)]

(g) Condition 2.13(b) states that ". . . [c]ontain Carbon Monoxide (CO) in excess of 0.1 lb/MMBtu on a 30-day rolling average . . . " The numerical limit should be specified to one additional significant digit, namely 0.10 lb/MMBtu.

EPD Response*:* EPD agrees with GreenLaw's Comments. Per Section 4 in Appendix I of the PTM manual, any emission limit shall be considered to have at least 2, but no more than 3 significant digits. EPD will modify Condition 2.13.b as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

b. Contain Carbon Monoxide (CO) in excess of 0.10 lb/MMBtu on a 30-day rolling average. [40 CFR 63 Subpart B and 40 CFR 52.21(j)]

D. Proposed NOx Emission Limit is Not BACT.

The NOx BACT limit of 0.05 lb/MMBtu on a 30-day average basis is inadequate. This limit is proposed to be achieved using a combination of low NOx burners and over-fire air to minimize NOx generation in the boiler itself, followed by a Selective Catalytic Reduction unit (SCR) using ammonia injection, for further NOx reduction.

First, neither the application nor the record contains any engineering details on any of these proposed controls. For example, the types of low NOx burners that may be used or even the technologies that comprise low NOx burner designs are not discussed. Furthermore, no details of the over-fire air strategies are provided. For example, will close-coupled or separate over-fire air be used or will both be used in combination. Finally, no details are provided for the SCR such as the type and amount of catalyst. In fact, the description provided likely underestimates the degree of NOx reduction by SCRs. Thus, the selection of BACT was made not on the basis of what these technologies can achieve (i.e., what is achievable, which is the requirement for selecting BACT), but rather what has been achieved in the past.

Modern boilers employ sophisticated burner and combustion management systems that serve to optimize overall combustion conditions and often result in 15-20% NOx reduction in the boiler itself. Yet, the record makes no reference to these technologies and their implementation as part of the BACT for NOx. The analysis is therefore incomplete.

As noted above, the NOx outlet emissions are a function of the NOx level generated in the boiler itself, followed by further reduction in the SCR. As part of the BACT analysis, the applicant and EPD have the obligation to carefully examine each of these steps and their combination in arriving at the lowest achievable emission rate, consistent with the regulatory BACT factors.

EPD Response: Direct monitoring of emissions makes the requirement to conduct parametric monitoring redundant. Condition 5.2 requires operation of a NOx CEMS to ensure that NOx controls are operating properly and to demonstrate ongoing compliance with the BACT limit. Also, burner and combustion management systems are an integral part of boiler system design and are part of the proper combustion techniques for Plant Washington. These systems will be essential to maintaining a low level of CO, VOC and NOx emissions from the Coal Fired Boiler S1.

Boiler-Out NOx Emissions

The application states, without any support, that the boiler-out NOx level will be 0.22 lb/MMBtu. This is wrong. Numerous PRB-fired coal boilers, currently operating (and operating since the last five years) have much lower boiler out NOx emission rates. A survey of the EPA‘s acid rain database8 shows, for example, lower monthly NOx 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 various mines in the PRB with likely considerable variability in the coal nitrogen content, and none of these units uses SCR so their NOx emission levels reflect the use of low NOx burners and other strategies (such as OFA) in the boiler itself. Tables containing these data are provided in Exhibit 145 to this letter.

It should also be kept in mind that these units are not subject to stringent NOx permit limits and are therefore not carefully maintaining NOx performance. In other words, likely lower NOx emissions from the boiler are possible, with careful control. Nonetheless, it is obvious from the tables that boiler-out NOx emissions from a new, 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.

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 BACT 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., Ex. 129. This paper states that "[f]or PRB coal, emission levels down to 0.008 lb/MMBtu NOx, 0.04 lb/MMBtu SO2, and 0.006 lb/MMBtu particulate with a high level of mercury capture can be achieved".

- Kokkinos, et al., "Which is Easier: Reducing NOx from PRB or Bituminous Coal, Power 2003", Ex. 130. This paper discusses retrofits at Georgia Power Company's Plant R.W. Scherer Units 3 and 4 (which burn PRB coal) with separated overfire air. The paper shows that Units 3 and 4 achieved 0.13 lb/MMBtu of NOx after the retrofit, with CO ranging from 114 to 121 ppm (3% O2 basis). As such, this refutes the contention that low NOx levels can only be achieved with corresponding higher levels of CO (and VOC) emissions.

- Robert Lewis, et al., Summary of Recent Achievements with Low NOx Firing Systems and Highly Reactive PRB and Lignite Coal, Ex. 131: as Low as 0.10 lb NOx/MMBtu; Patrick L. Jennings, Low NOx Firing Systems and PRB Fuel, Ex. 132; 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, Ex. 133.

- Galen Richards, et al., Development of an Ultra Low NOx Integrated System for Pulverized Coal Fired Power Plants, Ex. 134. "Baseline NOx emissions increased with coal rank 0.49, 0.56, and 0.66 lb/MMBtu for the PRB, hvb, and mvb coals, respectively. The optimized TFS 2000TM firing system achieved NOx emissions of 0.11, 0.15, and 0.22 lb/MMBtu for the 3 fuels for approximately 70-75% reduction over the baseline NOx emissions. Additional NOx reduction of approximately 0.03 lb/MMBtu over the optimized TFS 2000^{TM} levels was achieved using the Ultra-Low NOx firing system technology".

It is striking that the Georgia EPD did not review the technical literature or the performance of even other Georgia units, such as the four Plant Scherer units in assessing the NOx BACT emissions levels.

In any case, there is no support for the contention that the boiler out NOx emissions levels will be as high as 0.22 lb/MMBtu. Rather, it should be closer to 0.10 lb/MMBtu on a 30-day average basis, especially for a new, well-run, baseload unit.

SCR NOx Control Efficiency

If the boiler out NOx is 0.10 lb/MMBtu, the current NOx BACT limit of 0.05 lb/MMBtu means that the SCR control efficiency necessary would only be 50%. If the boiler out NOx was as high as 0.15 lb/MMBtu, the current NOx BACT limit of 0.05 lb/MMBtu would imply an SCR control efficiency of 67%. Both of these are low, even by the assumptions made by the applicant (i.e., efficiency in the range of 70-90%).

Although the application makes vague reference to vendor discussions, there is no data from vendors provided with the Plant Washington permit application to support these low SCR efficiencies or why higher SCR efficiencies cannot be obtained. Modern SCRs routinely achieve NOx removal efficiencies greater than 90%. Ex. 135. Detailed analyses of EPA's Acid Rain database indicate that "90% removal efficiency was currently being achieved by a significant portion of the coal-fired SCR fleet . . ." Ex. 136, even prior to the time of preparation of the Plant Washington permit application. More than 30 units have achieved greater that 90% NOx reduction based on 2005 data.

Ex. 136. Ninety% NOx removal was achieved on 10,000 MW of coal-fired generation in 2004. Ex. 137. Many coal-fired units have been guaranteed to achieve greater than 90% NOx reduction and are achieving greater than 90% reduction. The McIlvaine reports, one of the sources that EPA states should be considered in a BACT analysis, indicate three of Haldor Topsoe's SCR installations averaged over 95% NOx reduction during the 2005 ozone season. Ex. 139.

Given this impressive and growing track record with SCR installations, Plant Washington's BACT analysis must demonstrate why the proposed SCR cannot achieve even a minimum of 90% NOx reduction years from now when SCR retrofits on old subcritical boilers fired on PRB coals are doing better today. The application contains no site-specific or technical factors that would preclude SCRs from achieving at least 90% NOx reduction, even with lower boiler out emissions in the range of 0.10-0.15 lb/MMBtu.

Based on review of the current state of catalyst technology and based on periodic, general and ongoing discussions with SCR and catalyst vendors such as Haldor Topsoe, Cormetech, and others, Plant Washington should be able to obtain at least a 90% removal guarantee for NOx removal at the SCR.

Suggested NOx BACT Limit

Based on the discussions above, we believe that the NOx BACT that is appropriate for Plant Washington is 0.02 lb/MMBtu on a 30-day average basis. This level should be readily achievable by (1) either a combination of 0.15 lb/MMBtu from the boiler (as discussed earlier), followed by 87% reduction at the SCR, (2) or a combination of 0.10 lb/MMBtu from the boiler followed by an SCR reduction of 80% or any combination in between. Since actual SCR performance can be better than 90% reduction and actual boiler out performance can be lower than 0.10 lb/MMBtu, a level of 0.02 lb/MMBtu should also provide sufficient compliance margin.

Plant Washington's support for its BACT level is erroneous since it relies exclusively on a look-back analysis of actual operating data from existing units (none of which are subject to low permit limits and therefore have no incentive or compulsion to achieve good performance). The selected BACT level is also deficient because it uses the wrong BACT standard (i.e., that it "matches the lowest levels, which have been proposed for BACT for similar projects".). While it may be commendable that the proposed limit is comparable to other proposed low limits, that is

not a relevant standard for BACT. BACT is selected on a case-by-case basis, to reflect the maximum degree of emission reduction achievable level, considering the other BACT factors of energy, environmental, and cost impacts. The application does not evaluate, for example, why levels lower than 0.05 lb/MMBtu, such as 0.04, or 0.03, or 0.02 or 0.01 lb/MMBtu are not BACT. These levels are technically feasible. If cost was a factor in failing to select one of these levels, the factor was not part of the BACT discussion.

EPD Response: The Division conducted a NOx BACT analysis in accordance with 40 CFR 52.21 requirements. The Division independently reviewed both what the controls can achieve and what limits have been achievable in the past for similar sources to determine a NOx BACT limit of 0.05 lb/mmBtu on a 30 days rolling average. As part of the analysis, the Division compiled a list of recently proposed coal-fired power plants, which is attached as part of Appendix C in this document. Based on comments received, the Division has decided to add another NOx BACT limit of 0.030 lb/mmBtu (12-month average) while firing sub-bituminous coal and a computed weighted average NOx limit (12-month average) while firing the 50/50 blend coal of sub-bituminous coal and bituminous coal. The computed weighted average for a blend of 50 percent sub-bituminous coal and 50 percent bituminous coal will be 0.037 lb/mmBtu (12-month average). The 0.030 lb/mmBtu rate is based on a rate of 0.15 lb/mmBtu at the outlet of the boiler and 80% removal by the SCR. Similarly, the 0.037 lb/mmBtu rate is based on a rate of 0.185 lb/mmBtu at the outlet of the boiler (weighted average of 0.15 lb//mmBtu for PRB and 0.22 lb/mmBtu for bituminous) and 80% removal by the SCR. Not only is this the lowest ever permitted rate for a pulverized coal fired power plant, but in 2009 not a single coal-fired unit emitted less than 0.030 lb/mmBtu. Figure 4-8 of the application shows that while 90% NOx reduction by an SCR may be achievable at an inlet NOx rate of 0.4 - 0.5 lb/mmBtu, it does not appear to be achievable at lower inlet NOx rates. This limit will become effective 6 months after initial startup of the coal boiler, thus allowing the facility an optimization period of 6 months for the boiler. Thus, EPD will modify Conditions 2.13.r, 6.2.s, 7.5.d, 7.25.b.xi and 7.26.m

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

r. Contain Nitrogen Oxides (NOx) in excess of 0.030 lb/MMBtu on a 12-month rolling average while firing sub-bituminous coal or a computed weighted average on a 12-month rolling average based on the proportion of MMBtu input contributed by each coal rank (sub-bituminous and bituminous) and its applicable NOx emissions limit while firing up to a 50/50 blend of sub-bituminous and bituminous coal. NOx emissions limit of 0.044 lb/MMBtu shall be used for bituminous coal to calculate computed weighted average. This condition becomes effective 6 months after initial start-up of Coal Fired Boiler S1, absent approval by the Division for an extension of this date.
[40 CFR 52.21(j)]'

6.2 The methods for the determination of compliance with emission limits listed under Section 2.0 are as follows:

s. Compliance with the NOx limits in Condition 2.13.a and 2.13.r, SO_2 limits in Condition 2.13.f, 2.13.g, 2.13.h and 2.13.p and the removal efficiency for Wet Limestone Scrubber in Condition 2.14 shall be determined using the CEMS required by Condition 5.2.
[40 CFR 63 Subpart B; 40 CFR 52.21; 40 CFR 60.49Da and 391-3-1-.02(6)(b)1]

7.5 The Permittee shall determine compliance with the NOx emissions limitations in Condition No. 2.13.a and 2.13.r using emissions data acquired by the NOx CEMS. The 30-day rolling average and 12-month rolling average shall be determined as follows:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

d. A 12-month average shall be the average for any 12 consecutive months.

7.25 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition No. 7.24 (and all others in this Condition), the following excess emissions, exceedances, and excursions shall be reported:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

b. Exceedances: (means for the purpose of this Condition and Condition No. 7.24, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

xi. Any 12-month rolling average NOx emission rate that exceeds 0.030 lb/MMBtu (while firing sub-bituminous coal) or the computed weighted average as per Condition 2.13.r (while firing blend of sub-bituminous and bituminous coal) for the Coal Fired Boiler S1. This condition becomes effective 6 months after initial start-up of Coal Fired Boiler S1, absent approval by the Division for an extension of this date.

7.26 The Permittee shall submit a written report containing the following information for each quarterly period ending March 31, June 30, September 30, and December 31 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, April 30, July 30, October 30, and January 30, respectively. Reporting required by this condition shall begin at the end of the quarter in which initial startup is completed.
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

m. The twelve-month rolling average NOx emission rate in lb/MMBtu from the Coal Fired Boiler S1 for each month in the quarterly reporting period.

Therefore, this new 12-month average NOx limit (0.03 mmBtu/hr or computed weighted average), along with the 30-day average NOx limit (0.05 lb/mmBtu), will be the most stringent NOx BACT limit for any coal power plant in the United States.

Inconsistent Applicant Assumptions Regarding Variability

Instead, the application contains erroneous technical analysis pertaining to variability. For example, it contains an analysis noting coal nitrogen variability that is detached from the other assumptions in the application. This analysis notes that the nitrogen content of Wyoming coal can vary from 0.38% to 2.05% relying on the USGS Coal Quality Database. However, its own design basis shows that the PRB coal nitrogen content is 0.71% (normal) and 0.57% (abnormal). The analysis fails to note that the USGS data is derived, in many cases, from the 1970s, from mines and seams that are no longer in production. It also fails to note that since not all seams are uniform, the USGS data do not represent volume-average coal data. In any case, the applicant‘s analysis in this regard contradicts its own design basis assumption, as noted above.

EPD Response: According to the facility, the purpose of the variability analysis in the permit application was included to demonstrate that the NOx emissions from Plant Washington could be significantly impacted by the nitrogen content of the fuel, and any assessment establishing BACT limits should consider potential fuel variability impact, not just regarding Plant Washington but also when assessing the emissions performances of other facilities.

Flaws in Applicant's Look-Back NOx BACT Analysis

Even relying on the look-back approach to set BACT, the permit fails to set the correct BACT limit. As the application notes, "a total of 25 boilers are achieving levels equal to or below the proposed BACT level (0.05 lb/MMBtu)". Seven units achieved levels that were lower than 0.05 lb/MMBtu for the whole year 2007. At least two similar units (Walter Scott Unit 4 and Colbert Unit 5) achieved emission levels lower than 0.05 lb/MMBtu consistently.

EPD Response: Greenlaw fails to mention that the permit applicant also included a review of the emissions from these 25 boilers for years 2002 through 2007. A summary of the results of that analysis was included in Table 4-5 and Figure 4-1 of Section 4 in Plant Washington permit application. This data shows that the historical emission levels from many of these boilers approached or exceeded 0.05 lb/mmBtu for the time periods evaluated.

Trade-off Between Lower NOx and Lower CO/VOC Emissions

Finally, it is incorrect that there is a trade-off between lower NOx and lower CO values. Newer low NOx burners can achieve low NOx as well as low CO values. For example, the DRB-4Z NOx burners developed by Babcock and Wilcox have demonstrated via testing at Wygen Unit 1 that NOx values as low as 0.13 lb/MMBtu were achieved leaving the boiler, while simultaneously providing CO values as low as 100 ppm and very low Loss on Ignition (LOI), which is indicative of low volatile organic compounds (VOC). Wygen Unit 1 burns PRB coal. Ex. 140.

Wygen is not the only example showing that lower NOx can be achieved while having low CO and VOC. Other vendors have provided examples of low NOx and low CO for non-PRB fuels. A different vendor, Foster Wheeler, in a presentation at Power-Gen Asia in September 2006, Ex. 141, also provides examples of testing confirming this fact. Using proper air-fuel biasing technologies, Foster Wheeler was able to achieve very low NOx and CO emissions for different fuels. In one case study discussed in the paper, on a unit burning PRB coal, NOx emissions of 0.11 lb/MMBtu were achieved while keeping CO levels to 5 ppm. Incidentally, unburned carbon levels leaving the boiler were also low. This was demonstrated in 2002.

EPD Response: Greenlaw is incorrect in stating that there is a lack of tradeoff between lower NOx and lower CO emissions. Since combustion is a complex process, the boiler designer has to design the combustion process to simultaneously control the CO and VOC emissions. As these emissions are decreased, the resultant NOx will increase since control of VOC and CO are dependent upon fuel blend, flame temperature, combustion residence time, oxygen in the combustion zone, fuel to air ratio, mixing, boiler and burner design, etc. Low CO and VOC and low NOx are competing mechanisms and thus a balance must be chosen in the boiler design. Nonetheless, in comparison to Wgen Unit 1, Plant Washington has a CO BACT limit of 0.1 lb/mmBtu (approximately equivalent to 100 ppm) and a NOx BACT limit of 0.05 lb/mmBtu (30 day average) firing sub-bituminous and/or 50/50 blend of sub-bituminous and bituminous coals. As discussed above, the Division has decided to add another NOx BACT limit of 0.030 lb/mmBtu (12-month average) while firing sub-bituminous coal and a computed weighted average NOx limit (12-month average) while firing the 50/50 blend coal of sub-bituminous and bituminous coal.

Averaging Time

Finally we note that the averaging time for the proposed NOx BACT limit of 0.05 lb/MMBtu (30-days) is not as stringent as the proposed NOx limit for the Taylor Energy Center which had a proposed limit of 0.05 lb/MMBtu but on a 24-hour average or the Trimble County Unit 2 which also has a NOx limit of 0.05 lb/MMBtu on a 24-hour average.

EPD Response: Page 4-49 of the permit application discusses the justification for selection of a 30 days rolling average limit for NOx emissions. Taylor Energy Center was a proposed project in Florida whose application was withdrawn and the project did not receive a draft permit. In the permit application, Taylor Energy Center had proposed a NOx limit of 0.05 lbs/mmBtu based on 30 days rolling average. The Trimble County Unit 2 NOx emissions limit is 4.17 tons per day, which at the unit's maximum firing rate is equivalent to an emissions limit of 0.05 lb/mmBtu. However, this limit would be less stringent than 0.05 lb/mmBtu when the boiler is operating at reduced loads, and is therefore not an effective basis of comparison to Plant Washington. Regardless, this new 12-month average NOx limit (0.03 mmBtu/hr or computed weighted avearge) in Condition 2.13 for Plant Washington, along with the 30-day average NOx limit (0.05 lb/mmBtu), will be the most stringent NOx BACT limit for any coal power plant in the United States.

E. The Proposed SO_2 Emission Limits are not BACT.

The permit for Plant Washington contains three BACT emission limits for SO_2, as follows: Condition 2.13(f) limits SO_2 to no more than 0.052 lb/MMBtu on a 12-month rolling average; Condition 2.13(g) limits SO_2 to no more than 0.069 lb/MMBtu on a 30-day rolling average; and Condition 2.13(h) limits SO_2 to no more than 959 lb/hr on a 3-hour rolling average. In addition, it contains a BACT control efficiency limit. Condition 2.14 requires that the wet scrubber SO_2 removal efficiency be a minimum of 97.5% over a 20-day average period. In addition, Condition 2.13(p) limits SO_2 to no more than 0.08 lb/MMBtu on a 24-hour average basis.

Explicit Permit Limit When Burning PRB coals

Let us examine the effect of these various permit conditions. First, we consider the limits when the main fuel, namely PRB coal is to be used at the boiler. Using the design coal specifications, the sulfur content of the PRB coal under normal conditions is 0.32%. Using the heating value of 8500 Bu/lb, and assuming that all of the sulfur in the coal is fully converted to SO_2 and that none of the SO_2 is converted to SO_3 nor lost via bottom ash in the boiler (both conservative assumptions), the boiler out SO_2 emission rate is 0.75 lb/MMBtu. For these conditions, the annual limit of 0.052 lb/MMBtu implies a SO_2 removal rate in the scrubber of 93.1% and the 30-day average limit of 0.069 lb/MMBtu implies a removal rate of 90.8% in the wet FGD. Clearly, the controlling condition is the need to maintain 97.5% removal via condition 2.14. Since this requirement is to be maintained for a 30-day average, it will also be maintained on an annual basis. Using the boiler out emissions level of 0.75 lb/MMBtu and a 97.5% removal rate in the wet scrubber, the outlet emission limit is 0.019 lb/MMBtu. Thus, the permit condition for SO_2 should explicitly state that the SO_2 limit is 0.019 lb/MMBtu for the 30-day and the annual averaging time periods. This is equivalent to the current permit conditions, when burning the main fuel, i.e., PRB coals in the proposed boiler.

That 0.019 lb/MMBtu should be the explicit permit limit when burning PRB coals is also supported by actual data from the Pleasant Prairie Unit 1, a PRB unit with a wet scrubber. The attached Table (Exhibit 145 to this letter) shows that this unit has been achieving SO_2 levels of

0.019 or 0.020 lb/MMBtu consistently throughout 2008 and 2009 on a monthly and annual average basis. Since it is not constrained with such a limit, we believe that its performance can be further improved.

EPD Response: The Division's review of the table (Exhibit 145) for Pleasant Prairie Unit 1 shows that monthly SO_2 emissions range from 0.018 to 0.029 lb/MMBtu in 2008 and 2009.

SO_2 emissions in the range of 0.019 lbs/mmBtu is expected from Plant Washington when burning PRB coal and maintaining compliance with the minimum removal efficiency of 97.5 percent per Condition 2.14. Maintaining compliance with the minimum removal efficiency value is essentially the same as establishing a specific lb/mmBtu permit limit for PRB coal when utilizing the average design basis PRB coal. For PRB coal, minimum removal efficiency limit will be more stringent than the lbs/mmBtu limit and thus an additional lbs/mmBtu limit is not needed.

Permit Limit for All Fuels

It is our opinion that this same limit should also apply, regardless of the fuel used at the plant. For the alternate fuel (50:50 blend of PRB and Illinois #6), the blend average normal sulfur content is 1.72% assuming no coal washing (since this assumes that the Illinois #6 coal has a sulfur content of 3.11%) and the SO_2 uncontrolled emissions rate from the boiler (again, assuming no loss of SO2 to SO3 or to bottom ash) is 3.46 lb/MMBtu. Thus, meeting a limit of 0.019 lb/MMBtu would require a scrubber SO_2 removal efficiency of 99.55%. Assuming no washing of the coal but a loss of 15% SO_2 in the boiler to bottom ash, the scrubber efficiency required to meet the 0.019 lb/MMBtu limit would be 99.36%. However, assuming a coal washing sulfur loss of 40% (which is conservative given the relatively high pyritic sulfur content of the bituminous coal), and a 15% loss to bottom ash, the required wet scrubber efficiency to meet the limit of 0.019 lb/MMBtu is 99.14%. This assumes that there is no improvement in the bituminous coal heating value as a result of the washing, which is conservative.

We believe that the wet scrubber can be designed to meet a removal efficiency of 99.14% on a 30-day or longer average basis when using the blended coals, and that the limit of 0.019 lb/MMBtu can therefore be met. As the application itself suggests, a minimum efficiency that can be expected for these conditions is 98.5%, based on the applicant's analysis of existing scrubber performance, as discussed in the application.

We believe that the 99.14% removal efficiency can be met based on current vendor designs and possibly using additives like dibasic acid, if needed. Ex. 142. Of course the application does not contain any details of the actual wet scrubber design or even the type of wet scrubber that is proposed. So, it is quite likely that the scrubber design itself can accomplish the necessary 99.14% removal efficiency or greater, without need for any additives. In particular, the BACT analysis failed to consider a combination of controls such as a dry scrubber followed by a wet scrubber that would result in greater SO_2 removal efficiency. Such configurations have been proposed for Trimble Unit 2 and Cliffside Unit 6. Assuming even a 50% efficiency of the dry scrubber, the combined efficiency (along with 98.5% removal from the wet scrubber) is 99.25%.

EPD Response: Figure 6 of Exhibit 142 shows removal efficiencies of less than 99% will be achieved with addition of dibasic acid. Additives, such as diabasic acid, also have not been proposed as BACT control technology for SO_2 emissions in any other permits. Also, EPD's review of Trimble Unit 2 and Cliffside Unit 6 permits show that, in both cases, each facility was able to net out of PSD review for SO_2 emissions.

The Division conducted a SO_2 BACT analysis in accordance with 40 CFR 52.21 requirements. As part of the analysis, the Division compiled a list of recently proposed coal-fired power plants, which is attached as part of Appendix C in this document. This analysis shows that SO_2 control efficiency of 97.5 percent (based on a 30 days rolling average) from the wet scrubber for Plant Washington compares very well with all other similar projects. Only Illinois' Peabody coal power plant, which will fire Illinois #6 bituminous coal, has a lower BACT limit of 98 percent control efficiency (12 months average). However, Plant Washington's SO_2 BACT limits of 0.069 lb/mmBtu (30 days average) and 0.052 lb/mmBtu (12 months average) are significantly lower than Peabody's SO_2 BACT limit of 0.182 lb/mmBtu (30 days average). Please refer to pages 24 to 27 in the preliminary determination for details on the SO_2 BACT analysis.

> There are numerous other examples of scrubbers that have achieved 99% or greater control for SO_2. WFGD performance guaranteed to achieve a minimum of 99% efficiency (especially over a long averaging period such as 30 days) is readily possible today and will become increasingly more the norm by the time these plants are built. This is discussed below.
>
> First, over twenty years ago, Mitchell power station Unit 3 (Alleghany Power), a 292-MW generating unit near Pittsburgh, was retrofitted in 1982 with a magnesium-enhanced lime ("MEL") wet FGD system pursuant to a Consent Decree. Data is available for four months during 1983 and 1984 for that unit. Ex. 143. The daily average SO_2 emission rate was 0.009 lbs/MMBtu and the daily average SO_2 removal efficiency was 99.76%. The maximum monthly average during these four months was 0.029 lb/MMBtu, corresponding to a 99.72% SO_2 reduction. Thus, over 99% reduction of SO_2 was being achieved more than two decades ago.

EPD Response: The limited data that is available for Mitchell Power Station Unit 3 does not demonstrate that SO_2 removal efficiencies as high as 99.72 percent are achievable on a long-term basis. No information was provided regarding the coal type (or characteristics of that coal) used in the analysis. From the data provided in Exhibit 143, the coal type was likely a bituminous coal due to the high uncontrolled SO_2 emission rate and presumed high coal sulfur content. EPD's review of emissions data for Mitchell Power Station Unit 3 from January to September 2009 as reported to the EPA Clean Air Markets Program indicated average monthly SO_2 emission rates ranging from 0.10 to 0.13 lb/MMBtu. Monthly data also reviewed for calendar year 1995 (the first year in the Clean Air Markets database that monthly data is available) indicated monthly SO_2 emission rates ranging from 0.09 to 0.16 lb/MMBtu. This emission unit has therefore not maintained the high SO_2 removal efficiencies indicated on a long-term basis.

> Second, a 2003 paper discussing the actual operating performance of the Chiyoda JBR or CT-121 wet scrubber technology in Japan notes that SO_2 removal efficiency of greater than 99% was achieved for all load levels and that a "[s]table SO_2 removal efficiency of over 99 percent" was achieved. Ex. 144. Additionally, Chiyoda's experience list shows at least three instances of 99% removal.

EPD Response: GreenLaw's references indicate that the vast majority of operators of CT-121 wet scrubbers have not achieved 99 percent removal efficiency. For example, the website cited in footnote 32 of this comment, indicates that only 2 CT-121 units have achieved 99 percent removal. The other 46 CT-121 units listed by this website reported removal efficiencies that ranged from 82 to 98 percent. Also, a review of the Chiyoda scrubber performance at the installation at Killen Station Unit 2 in Ohio (Pages 4-101 to 4-103 of the Plant Washington application) indicated removal efficiencies less than 99 percent SO_2 removal. Similarly, an evaluation of the Chiyoda performance data for the referenced AEP Cardinal Units 1 & 2 also indicated less than 99 percent SO_2 removal.

Third, Mitsubishi Heavy Industries ("MHI"), another reputable vendor of wet scrubbers has a design called the High Efficiency Double Contact Flow Scrubber ("DCFS"), which has achieved SO_2 removal efficiencies as high as 99.9%. A presentation on the DCFS scrubber highlights the fact that it can be designed to achieve SO_2 removal efficiencies as high as 99.9% on a unit that burns high sulfur coals without the use of buffer additives. Ex. 146. The manufacturer, MHI, guarantees SO_2 removal of 99.8%. A 2004 paper discussing the DCFS scrubber technology notes that this technology was recently selected at least two years ago by TVA for their Paradise Plant Unit 3, which will start up in early 2007. Ex. 147. This paper also reports on several recent commercial operating successes with this technology "including super high desulfurization performance (i.e., 99.9%) with a single absorber". The paper also notes that the COSMO oil Yokkaichi unit is an outstanding example of high SO_2 removal by a single counter current DCFS. Commercial operation at COSMO began in 2003, and the FGD system has achieved a cumulative availability of 100% since startup. The system is designed at 99.5% and operates at 99.9% SO_2 removal efficiency.

Fourth, a different variant of the wet scrubber technology –FLOWPAC – has demonstrated an SO_2 removal efficiency of over 99%. Ex. 148. From November 2002 to March 2003, Karlshamn Unit 3 operated for 2152 continuous hours while firing a heavy fuel with an average sulfur content of 2.4%. The SO_2 emissions during this period were kept to 21 mg/Nm^3, which is an SO_2 efficiency of 99.5% with an S efficiency of 99%. During this period the FGD system was 100% available.

Fifth, another vendor, Alstom, recently discussed high efficiency scrubbing on high sulfur fuels. As noted in the paper "[t]o date, the wet flue gas desulfurization system has achieved 100% availability while achieving the plant SO_2 emissions limits throughout the operating duration . . . as indicated . . . the WFGD system has achieved SO_2 removal efficiencies up to 99+% without the use of organic additives". Ex. 149.

Sixth, the Coal Utilization Research Council within the Electric Power Research Institute (CURC/EPRI) concluded in its September 2006 Roadmap that up to 99% SO_2 removal for FGD was commercially available in 2005. Ex. 150. The CURC/EPRI Roadmap also projects removals of up to 99.6% in 2010 and 99.9% in 2015.

EPD Response: A table within Exhibit 150 shows a projected SO_2 removal of 98 to 99.9 percent by 2025. It is unclear where the value of 99.6 percent SO_2 removal by 2010 originated since this value does not appear within Exhibit 150. Details regarding the future technologies that would achieve the indicated SO_2 removals are not provided.

In summary, the various permit conditions relating to the BACT limits, namely conditions 2.13(f), 2.13(g), and 2.14 should be replaced by a simple condition limiting the SO_2 emissions to 0.019 lb/MMBtu on a 30-day rolling average basis.

EPD Response: Please refer to pages 24 to 27 in the preliminary determination for details on the SO_2 BACT analysis.

Short Term Emissions Limit

As to the 3-hour permit mass limit of 959 lb/hr, at the maximum heat input rate of 8,300 MMBtu/hr, this corresponds to 0.1155 lb/MMBtu. Even with the worst case (i.e., blend coal without coal washing and no loss to bottom ash), this implies that the scrubber would be operating at an efficiency of 96.7% SO_2 removal efficiency. Of course the controlled SO_2

emission rate would be greater if the actual heat input is lower than 8,300 MMBtu/hr and the scrubber efficiency would be even lower. There is no basis for assuming such a low value of scrubber efficiency. At a minimum, even under startup conditions (when the scrubber would or should be operational before coal is fired into the boiler), the minimum scrubber efficiency should be no lower than 98.5%, as assumed by the applicant. At the maximum heat input rate of 8,300 MMBtu/hr and using blended coals, the controlled emissions rate should be 0.052 lb/MMBtu and the corresponding mass limit should be 430.4 lb/hr. Thus, the 3-hour average SO_2 BACT limit of 959 lb/hr in the draft permit fails to reflect BACT for Plant Washington.

EPD Response: The Division does not agree with GreenLaw's comments. On Page 4-108 of Plant Washington's application, it is clearly stated that the worst case blended coal has uncontrolled SO_2 emissions of 4.62 lb/MMBtu. At full boiler load, 0.1155 lb/MMBtu, or 959 lb/hr, corresponds to a 97.5 percent removal efficiency of SO_2. However, the removal efficiency evaluations included on Pages 4-101 to 4-108 of the application are long-term efficiency evaluations. It is possible that the removal efficiency can drop below 97.5 percent over a short 3 hours period, but the facility will still be required to maintain a 97.5 removal efficiency over a 30 days rolling average in accordance with the BACT limit in Condition 2.14.

Also, as part of the SO_2 BACT analysis, the Division conducted a review of 3 hours BACT limits from other similar sources (please see Appendix C), and they range from 0.16 to 0.69 lbs/mmBtu. Thus, a 3 hours BACT limit of 959 lb/hr compares well with other similar projects and it represents BACT for SO_2 emissions at Plant Washington. Please refer to pages 24 to 27 in the preliminary determination for details on the SO_2 BACT analysis.

F. Proposed PM/PM_{10} Emission Limits Are Not BACT.

The proposed PM/PM_{10} permit limits are 0.012 lb/MMBtu for filterable (3-hr rolling average, using CEMS) and 0.018 lb/MMBtu for total (3-hr average). While these limits are comparable to PM/PM_{10} limits for other facilities, they do not appear to have been set considering what is achievable using current baghouse technology.

The PM/PM_{10} emissions that will be achieved at the proposed unit will depend largely on the design and operation of the fabric filters that will be used. It is well known that, by design and by operation, the fabric filter is not a constant control efficiency device in which its outlet emissions level is simply a fixed fraction of the inlet emissions level. In fact, fabric filters control PM (of any size fraction) emissions generally to the same level of outlet concentration, irrespective of the PM loading at the inlet. This fact has long been recognized by others including EPA. Particulate matter (of various sizes) is captured on the fabric filter as well as the filter cake that develops on the fabric as the device is run over time. The control or removal efficiency achieved depends not only on the inlet emissions levels but also on all of the variables that affect the development, maintenance, morphology, and other characteristics of the filter cake, and the variables associated with the cleaning cycle of the baghouse. In short, the outlet concentration depends more on the design of the fabric filter, the choice of filter materials, and the manner of operation and maintenance of the filters. Yet, given these technical facts, the application or the record does not contain any detailed technical discussion of any of these aspects.

The application notes that the filterable PM limit for Desert Rock is 0.010 lb/MMBtu, using CEMS. Yet, this was rejected simply because the facility has not yet been built at this time. This is not an adequate basis to reject a permit limit determined to be BACT by another agency, in this case the EPA.

Source test data have shown that lower emission levels can be achieved. At least 147 performance tests at coal-fired plants in Florida, as early as May 2004, measured filterable PM/PM_{10} at less than 0.010 lb/MMBtu and 82 recorded PM/PM_{10} emissions less than 0.005 lb/MMBtu. The lowest reported PM/PM10 emission rate was 0.0004 lb/MMBtu. Ex. 151.

In light of these discussions, the filterable PM/PM_{10} limit should be reassessed and based on the actual capabilities of the best types of coated bag filter available. At a minimum, the limit should take into account the numerous low test data results that are provides and other similar data that are available from other states. The total PM/PM_{10} limit, which includes the condensable (which will all likely be $PM_{2.5}$ in size or smaller) should be reassessed as well to realistically reflect the BACT degree of control of the major condensables, namely H_2SO_4 and certain VOCs. Please see the BACT discussion for these pollutants.

EPD Response: Plant Washington plans to utilize a CEMS to continuously monitor filterable PM/PM_{10} emissions. Measurement of PM emissions on a continuous basis via CEMS will also measure PM during issues such as soot blowing, load changes, scrubber mist carryover, fuel blend changes, etc. These issues were discussed in the May 28, 2009 letter submitted to the Division regarding an evaluation of the filterable PM/PM_{10} emissions limit. Therefore, a direct comparison of a short-term test to a system that will be required to monitor compliance continuously, incorporating periods of transient conditions into monitoring, is not an accurate basis of comparison.

GreenLaw notes that 147 performance tests measured filterable PM/PM10 less than 0.01 lb/mmBtu. Review of data in Exhibit 151 shows there were 174 performance tests instead of 147 tests as listed in this comment, which measured less than 0.01 lb/mmBtu. Also, review of the data in Exhibit 151 shows that 127 performance tests showed results greater than 0.010 lb/mmBtu and 98 performance tests showed results greater than the 0.012 lb/mmBtu for filterable PM/PM_{10} limit. This supports EPD's argument that there is a lot of variation involved in PM emissions and they need to be accounted for when setting a BACT limit.

Based on comments received from GreenLaw and the Division's review of other coal power plant permits (see Appendix C), the Division has decided to lower the filterable PM/PM_{10} limit for Plant Washington from 0.012 lb/mmBtu (on a 3 hours average) to 0.010 lb/mmBtu (on a 24 hours average). EPD believes that BACT emission limit of 0.010 lb/mmBtu on a 24-hour averaging period is achievable for Filterable PM/PM_{10}. EPD will modify Condition 2.13.d, 7.7.a, 7.25.b.iv and 7.26.i as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

d. Contain Filterable PM/PM_{10} in excess of 0.010 lb/MMBtu on a 24-hour rolling average. [40 CFR 63 Subpart B; 40 CFR 52.21(j); 391-3-1-.02(2)(d)(2) (subsumed) and 40 CFR 60.42Da(c) (subsumed)]

7.7 The Permittee shall determine compliance with the PM Filterable emissions limitations in Condition No. 2.13.d using emissions data acquired by the PM CEMS. The 24-hour rolling average shall be determined as follows:
[40 CFR 63 Subpart B; 40 CFR 52.21 and 391-3-1-.02(6)(b)1]

a. After the first 24-hour average, a new 24-hour rolling average shall be calculated after each operating hour.

7.25 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition No. 7.24 (and all others in this Condition), the following excess emissions, exceedances, and excursions shall be reported:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

b. Exceedances: (means for the purpose of this Condition and Condition No. 7.24, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

iv. Any 24-hour rolling average for Filterable PM/PM_{10} emission rate which exceeds 0.010 lb/MMBtu for the Coal Fired Boiler S1,

7.26 The Permittee shall submit a written report containing the following information for each quarterly period ending March 31, June 30, September 30, and December 31 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, April 30, July 30, October 30, and January 30, respectively. Reporting required by this condition shall begin at the end of the quarter in which initial startup is completed.
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

i. The maximum 24-hour rolling average Filterable PM/PM_{10} emission rate in lb/MMBtu from the Coal Fired Boiler S1, during the quarterly reporting period.

G. Proposed $PM_{2.5}$ BACT Limits are Incorrect.

First, in addition to the criticisms provided below, we note that although the Plant Washington application contains proposed emission limits for both filterable $PM_{2.5}$ (0.00636 lb/MMBtu) and total $PM_{2.5}$ (0.01236 lb/MMBtu), the permit only contains the total limit. It is not clear why the filterable $PM_{2.5}$ limit, even as proposed by the applicant, is not included in the permit. The Plant Washington permit must contain BACT limits both for filterable and total $PM_{2.5}$.

EPD Response: EPD will add the proposed filterable $PM_{2.5}$ BACT limit of 0.00636 lb/mmBtu in the final permit as proposed by the facility in the $PM_{2.5}$ BACT analysis. EPD will modify Permit Conditions 2.13.q and 6.3.c as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

q. Contain Filterable $PM_{2.5}$ in excess of 0.00636 lb/MMBtu on a 3-hour average.
[40 CFR 52.21(j)]

6.3 Within 60 days after achieving the maximum production rate on each coal type (sub-bituminous coal and a 50/50 blend of sub-bituminous and bituminous coal) in Coal Fired Boiler S1, but not later than 180 days after the initial startup of the boiler, the Permittee shall conduct the following performance tests and furnish to the Division a written report of the results of such performance tests:
[391-3-1-.02(3)]

c. Performance tests on Coal Fired Boiler S1, for $PM_{2.5}$ to verify compliance with Conditions 2.13.e and 2.13.q.
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

Second, to the extent that a significant portion of the condensable $PM_{2.5}$ emissions may be comprised on H_2SO_4 and condensable VOC emissions, proper BACT controls and limits for those pollutants would also result in lower condensable $PM_{2.5}$ emissions. EPD's proposed emission limits for these pollutants fail to reflect BACT and, therefore, the total $PM_{2.5}$ limit fails to reflect BACT. Please see discussions regarding the improper BACT limits for H_2SO_4 and VOCs.

EPD Response: Please refer to the Division's response to GreenLaw's Comment 1, Sections H and I regarding VOC and H_2SO_4 BACT limits.

Third, the $PM_{2.5}$ BACT analysis notes correctly that NOx emissions are precursors for secondary $PM_{2.5}$ emissions. Therefore, please see previous discussion regarding the inadequacy of the current NOx limit of 0.05 lb/MMBtu as BACT, not just for NOx but also in its role as precursor for secondary $PM_{2.5}$ emissions. Similarly, SO_2 emissions are also precursors for secondary $PM_{2.5}$ formation. Therefore, please see previous discussion regarding the inadequacy of the current SO_2 limits as BACT, not just for SO_2 but also in its role as precursor for secondary $PM_{2.5}$ emissions.

EPD Response: Please refer to the Division's response to GreenLaw's Comment 1, Section E regarding SO_2 BACT limits.

Fourth, the applicant proposed a filterable $PM_{2.5}$ BACT emissions limit using particle size distribution data from AP-42, Table 1.1-6 for the case of coal combustion with a baghouse and its proposed filterable PM_{10} BACT limit of 0.012 lb/MMBtu. Hence, the filterable portion of $PM_{2.5}$ (as a fraction of PM) is assumed to be 53%. But this is inadequate. The filterable fraction as well as the control efficiency (and therefore the outlet emission rates) of the various sizes of PM, including $PM_{2.5}$, will depend on the type of bag materials that are selected.

The media Ryton, for example, is commonly used in similar applications for PM control. This media removes 99.9% of larger particles, but operates at far lower efficiencies for the smaller particles. Thus, other media must be considered in a $PM_{2.5}$ BACT analysis. Filtration media are available that allow 99.99% of the $PM_{2.5}$ fraction to be removed. These include Daikin's AMIREXTM, PTFE membrane filters, and W.L. Gore's L3650. See summary of U.S. EPA's ETV test results in Ex. 41. Thus, the size distribution of filterable $PM_{2.5}$ emissions will be different for different types of bags. Therefore, the applicant should have obtained the particle size distribution data and the baghouse outlet emission rates from baghouse vendors for the various types of bags available, as opposed to just relying on AP-42 to characterize filterable $PM_{2.5}$ BACT emissions for Plant Washington.

The company should have evaluated the various types of bags available in its top-down BACT analysis for $PM_{2.5}$. A bag leak detection system should also be considered as part of the BACT determination.

EPD Response: An analysis of the impacts of use for various types of filter bags was evaluated and discussed by the facility in the $PM_{2.5}$ BACT submitted to the Division in May 2009 (Exhibit F). Please refer to page 35 in the preliminary determination. Also, Condition 5.2 requires Plant Washington to install a CEMS for direct measurement of filterable PM emissions. Since a bag leak detection system is used as a surrogate monitoring strategy for excess PM emissions and the facility plans on installing a CEMS for filterable PM emissions, it makes a permit condition requiring a bag leak detection system redundant.

Also, bag leak detection systems are part of the standard specifications for new baghouse units. It is therefore likely that the baghouse that will be installed at Plant Washington will be equipped with baghouse leak detection systems.

> Other technologies that control $PM_{2.5}$ emission exist and are readily available today. For example, a wet electrostatic precipitator (WESP) placed after a fabric filter would eliminate significant amounts of $PM_{2.5}$ emissions. Ex. 42. The applicant failed to evaluate this combination of controls for $PM_{2.5}$ BACT. EPA and others have recognized that wet ESPs reduce $PM_{2.5}$ emissions. Exs. 43 and 44. Indeed, "the WESP is the ultimate device capable of . . . removing ultrafine particles". Ex. 43 at 6-7.
>
> Examples of facilities using wet ESP technology include: (1) Xcel Energy, Sherburne County, Units 1 and 2; (2) First Energy, Mansfield, Unit 2; (3) Duke Power, Cliffside, Units 6 and 7; (4) AES, Deepwater (operating since 1986), Ex. 42 at 9, 10; and (5) New Brunswick Power, Coleson Cove, Ex. 43 at 6.

EPD Response: The Wet ESP has been identified and evaluated as a $PM_{2.5}$ control technology in section 4.3.1 of the application (Refer to pages 31 to 35 in the preliminary determination). Per Exhibit 42, Mr. Hal Taylor, an individual hired by groups challenging the air permit issued to Highwood Generating Station in Montana, stated that a wet ESP placed after the fabric filter would eliminate up to 99% of the filterable and condensable $PM_{2.5}$ emissions. Mr. Taylor, however, did not cite to any technical data or otherwise reliable source to support this statement, nor did he offer any other references in Exhibit 42 that would demonstrate the effectiveness of a Wet ESP when installed after the fabric filters. The First Energy Mansfield Unit 2 site listed as using a Wet ESP actually utilized a Wet ESP unit for a short period during a pilot testing study, and does not use a Wet ESP for normal operation. The Cliffside Units 6 and 7 listed as using Wet ESP are permitted units that have not yet been constructed. Use of Wet ESP units at the Xcel Energy, AES Deepwater, and New Brunswick Power sites was evaluated and discussed in Section 4.3.7 of the application.

> In addition to the wet ESP, other options are available to reduce $PM_{2.5}$ emissions. For example, the EPA's Environmental Test Verification (ETV) program recently verified the performance of the "Advanced Hybrid Particulate Collector" (AHPC) system "as providing the lowest filter outlet concentrations for both $PM_{2.5}$ and total mass concentration". The AHPC system was installed at Otter Tail Power's Big Stone plant in South Dakota. Analyzing the performance of the system at that plant, the US Department of Energy explained that:
>
> > The Advanced Hybrid™ consists of alternating electrostatic precipitation and fabric filtration elements in a single casing to achieve exceptional removal of particulate matter (PM) in a compact unit. Very high removal is achieved by removing at least 90% of the PM before it reaches the fabric filter and using a membrane fabric to collect the particles that reach the filter surface . . . . Combining precollection with the ESP elements and membrane filter bags results in a small, economical unit that can achieve very high collection of all particle sizes.
>
> Power4Georgians improperly eliminated this technology as not being available, but it was installed on a full-scale basis at Big Stone and, thus, is a commercially available technology.

EPD Response: The Division reviewed the referenced document on the performance of the Advanced Hybrid Particulate Collector (*Demonstration of a Full-Scale Retrofit of the Advanced Hybrid Particulate Collector Technology*, February 2007). Page 34 of this referenced document clearly discusses how Big Stone abandoned the technology due to technical issues with its operation, and that significant issues still

exist with the technology and the demonstration project failed to demonstrate commercial viability. Therefore, the Advanced Hybrid Particulate Collector technology is still not a commercially available technology as GreenLaw's comments contend.

> A 2005 report prepared for the EPA listed numerous innovative control techniques that yield high $PM_{2.5}$ emissions reductions. Included in the list of controls are: (1) Compact Hybrid Particulate Collector, Ex. 44; (2) Indigo Particle Agglomerator, Ex. 44, 45, 46; (3) Wet ESP, Ex. 47; and (4) Wet Membrane ESP, Ex. 44. Neither Powre4Georgians nor EPD fully evaluated these technologies for limiting $PM_{2.5}$ emissions from Plant Washington.
>
> In summary, Power4Georgian's and EPD's BACT analysis for $PM_{2.5}$ is significantly flawed. Rather than conduct an independent BACT analysis for filterable $PM_{2.5}$, the company and EPD simply relied on the BACT analysis for filterable PM_{10} and improperly derived a filterable $PM_{2.5}$ limit which EPD wrongfully did not even propose as a BACT emission limit. As we have shown above, there were several $PM_{2.5}$ controls that Power4Georgians and EPD failed to fully evaluate. Further, the proposed total $PM_{2.5}$ BACT limit is based on BACT determinations for VOCs, H_2SO_4, SO_2, and NOx which are also flawed as discussed in these comments. Thus, the proposed emission limits both the filterable and total $PM_{2.5}$ fractions fail to reflect BACT and must be re-analyzed.

EPD Response: Pages 32 to 35 of the Preliminary Determination and the $PM_{2.5}$ BACT analysis submitted by the facility (Table F-4 $PM_{2.5}$ BACT Analysis submitted May 2009) discuss the control technologies listed by GreenLaw (i.e. Wet ESP, Indigo Particle Agglomerator, Wet Membrane ESP) and any additional control technologies specifically identified and evaluated for the filterable $PM_{2.5}$ BACT assessment. As previously stated, EPD will add the proposed filterable $PM_{2.5}$ BACT limit of 0.00636 lb/mmBtu in the final permit as proposed by the facility in the $PM_{2.5}$ BACT analysis. Please also refer to the Division's response to GreenLaw's Comment 1, Sections D, E, H and I, regarding NOx, SO_2, VOC and H_2SO_4 BACT determinations.

H. Proposed VOC Emission Limit is Not BACT

> The proposed VOC BACT emission limit is 0.0030 lb/MMBtu on a 3-hour average basis. Although it is a slight improvement from the initially proposed limit of 0.0034 lb/MMBtu, our conclusion is that this limit still does not represent BACT for VOCs.
>
> Just like the so-called NOx versus CO trade-off (shown to be incorrect in the previous NOx discussion), the application argues that the VOC limits should be sacrificed in favor of NOx, which is more aggressive. However, this argument is especially egregious for VOC because many facilities with lower VOC limits also have lower NOx limits than proposed for Plant Washington, e.g., Parish Unit 8; Toquop, Exs. 161A and 161B; Desert Rock, Ex. 162; and Trimble Unit 2.
>
> A well controlled boiler should be able to achieve low VOC and low NOx emission levels. There is no basis for rejecting lower VOC emission limits such as 0.0027 lb/MMBtu for the Intermountain Power Generating Station in Utah, Ex. 160, or the limit of 0.0024 lb/MMBtu for the Santee Cooper Cross Generating Station in South Carolina.
>
> BACT for VOC should be 0.0024 lb/MMBtu on a 3-hour average basis.

EPD Response: GreenLaw states that there is no trade-off between NOx emissions and CO/VOC emissions. As discussed in Sections 4.3.2, 4.3.3, and 4.3.4 of the facility permit application, as well as

previously discussed regarding comments to the NOx BACT analysis, a trade-off does in fact exist between NOx emissions and CO/VOC emissions.

However, based on comments received and the Division's review of other coal power plant permits (see Appendix C), the Division has decided to lower the VOC limit for Plant Washington from 0.0030 lb/mmBtu (3-hour average) to 0.0024 lb/mmBtu (3-hour average). Compliance with the VOC BACT limit will be determined by an initial performance test required in accordance with Condition 6.3.a. Therefore, EPD will modify Condition 2.13.i as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

i. Contain Volatile Organic Compounds (VOC) in excess of 0.0024 lb/MMBtu on a 3-hour average.
[40 CFR 52.21(j)]

I. Proposed H_2SO_4 Emission Limit is Not BACT.

We conclude that the proposed limit of 0.004 lb/MMBtu on a three-hour average basis does not represent BACT for H_2SO_4. Although the application goes through the motions of a top-down BACT analysis, it ultimately plucks the excessively high SAM BACT limit of 0.004 lb/MMBtu out of thin air. While recognizing that " . . . multiple facilities have proposed or achieved emission levels lower than that proposed for Plant Washington, this level (i.e., 0.004 lb/MMBtu) of control was determined to be the maximum amount of control achievable for Plant Washington . . ." This is not carefully supported analysis. It is the exact opposite and an arbitrary selection of BACT.

First, the BACT analysis fails to carefully consider several options to minimize H_2SO_4 emissions such as: (1) proper (i.e., low conversion) SCR catalysts; (2) a more efficient SO_2 scrubber; (3) air heater additives; and (4) combinations of these methods plus those identified, among others.

Second, while that application notes that most of the Illinois #6 coal is washed, the permit does not require that any Illinois #6 coal that will be used as part of the blend be washed.

EPD Response: Please refer to pages 24 to 27 of preliminary determination. Coal washing of Bituminous Coal (Illinois # 6) is a BACT for SO_2. EPD will modify wording in Condition 2.11 to require the facility to burn only <u>washed</u> Illinois #6 coal in the 50/50 blend. Condition 2.11 is modified as follows:

2.11 Except as provided in Condition No. 2.12, the Permittee shall only fire sub-bituminous coal (Powder River Basin, or PRB coal), or up to a 50/50 blend (by weight) of sub-bituminous and bituminous coal (washed Illinois #6) in the Coal Fired Boiler S1. Firing of bituminous and sub-bituminous coals with equivalent characteristics of PRB and Illinois #6 is permitted.
[40 CFR 52.21(j) and 391-3-1-.02(2)(g)(subsumed)]

Third, the application erroneously eliminates circulating dry scrubbers because they have not yet been demonstrated on a coal-fired boiler greater than 250 MW. Circulating dry scrubbers are currently being bid at up to 440 MW and suppliers claim there is no technical obstacle to a single-module CDS absorber up to 700 MW. Ex. 152. Regardless, two 425 MW units in parallel could be used at the facility.

EPD Response: Circulating dry scrubber (CDS) technology has yet to be demonstrated in practice for units up to 700 MW for coal fired boiler. In the United States, CDS applications are limited to two small units burning low sulfur coal, plus a 2 x 250 MW installation in Puerto Rico. Three additional units (104 MW, 150 MW and 2 x 330 MW) are currently under construction in the United States. CDS systems are closely coupled to the fabric filter since the CDS requires a high recirculation of ash from the fabric filter to the CDS reactor. This recirculation is normally accomplished using material moving equipment such as an air-slide. A fabric filter on a unit the size of Plant Washington will require two casings, and accordingly, two or more CDS reactors. With multiple CDS reactors, the capital cost and complexity of the CDS increases significantly. It should also be noted that the operating costs of a CDS are higher than a wet FGD, the CDS produces more waste product than a wet FGD, the CDS prevents the sale of ash products which results in more byproduct landfill waste, and the SO_2 capture rate of the CDS is lower than wet FGD. For all these reasons, CDS technology was properly eliminated from Plant Washington's BACT analysis for H_2SO_4.

> Fourth, Step 3 fails to provide <u>any technical basis</u> for the ranking of the technologies that were selected. The control efficiency of the wet scrubber for H_2SO_4 will depend on its design and various operational parameters. However, these are not discussed. Similarly, the degree of reduction of H_2SO_4 using sorbent injection will depend on the type of sorbent selected, the injection rate, the location of injection, etc. These are not discussed either. Thus, there is no demonstration that the emission limit based on the maximum degree of reduction has been selected.

EPD Response: The effects of SCR catalysts selection, ammonia slip, and alkaline ash scrubbing on the control efficiency of the wet scrubber have been discussed in H_2SO_4 BACT in Section 4.3.7 of the application. In addition, Table 4-22 in the application shows the effects of the type of sorbents evaluated, location of sorbent injection, and the degree of H_2SO_4 reduction. Condition 5.8 in the permit requires the facility to continuously monitor the sorbent injection rate and Condition 6.10 requires the facility to conduct a performance test for H_2SO_4 emissions and to establish a minimum value for the sorbent injection to maintain on going compliance. These permit conditions will ensure that the facility can comply with the H_2SO_4 limit.

> Fifth, the cost-effectiveness analysis provided by the applicant for rejection of wet-ESPs is unsupported. No design information for the wet-ESP provided. Clearly, the cost and expected performance of any control device will depend, at a minimum on its design. Yet, the capital cost of the wet-ESP is assumed to be $290 million and its efficiency is assumed to be 98%. As such, this "analysis" should be set aside until supporting data are provided.

EPD Response: According to the applicant, the WESP removal efficiency of 98 percent was selected based on an analysis of the available technologies, the limited experience of installing WESP on coal fired boilers the size of Plant Washington, and the proposed permit limits for $PM_{2.5}$, H_2SO_4 mist, and condensible particulates. The particulate capture in a WESP can vary with the design (plate or tubular, for example), number of fields, specific collection area, field voltage, gas velocity, wetted surface provisions, washing, pH control, and other design parameters. As the removal requirements increase above the 98 percent range, the WESP cost will increase exponentially. The cost estimate of the Wet ESP unit ($290 million) was also provided by a design engineering company familiar with the design and pricing of Wet ESP units. Since the environment in the WESP is highly corrosive, the cost includes the use of high grade corrosion resistant alloys for wetted components in the gas stream.

> Sixth, as the application itself notes, numerous facilities have limits lower than 0.004 lb/MMBtu. Yet, no reasoned explanation is offered for why this facility cannot meet these lower limits.

Let us examine the likely H_2SO_4 emissions starting from the sulfur in the fuel. Using a sulfur content of 0.32% in the PRB coal results in an uncontrolled SO_2 emissions rate of 0.75 lb/MMBtu from the boiler assuming the heating value of PRB assumed in the design basis. Assuming a 1% conversion of SO_2 to SO_3 and thence to H_2SO_4 (as assumed by the applicant), the uncontrolled H_2SO_4 rate is 0.0092 lb/MMBtu. Assuming a 98% removal efficiency using the combination of sorbent injection and wet FGD controls (which is low and very conservative), the controlled H_2SO_4 emission rate is 0.00018 lb/MMBtu. Compared to the limit of 0.004 lb/MMBtu, this rate is almost 22 times higher. Starting from the sulfur content of the blend of 50:50 PRB/Illinois #6 coals, the resulting maximum H_2SO_4 emissions are 0.00085 lb/MMBtu. Again, an efficiency of 98% was conservatively used. Even in this case, the emission limits is almost 5 times higher.

There is simply no basis and no justification for the 0.004 lb/MMBtu BACT emission rate. We recommend a limit of 0.001 lb/MMBtu as being consistent with the BACT standard. As noted, many other facilities have been permitted with similar limits, lower than the applicant‘s proposed limit of 0.004 lb/MMBtu. The Newmont Mining plant in Nevada has a BACT limit of 0.001 lb/MMBtu. Ex. 163. The NRG Parish Unit 8 in Texas has a limit of 0.0015 lb/MMBtu. The Santee Cooper Cross plant has a limit of 0.0014 lb/MMBtu.

EPD Response: The Newmont Mining plant in Nevada utilizes a dry scrubber system and has a sulfuric acid mist emission limit of 2.06 lbs/hr. Due to the process technology differences, the sulfuric acid mist control effectiveness of a dry scrubber system is superior to that of a wet scrubber system (such as Plant Washington). Also, the Newmont boiler (200 MW) is much smaller than the size of Plant Washington boiler (850 MW). At the maximum rated heat capacity of Newmont boiler (2030 MMBtu/hr), this lb/hr BACT emission rate is equivalent to 0.001 lbs/MMBtu. Thus, if the source was operating at a lower load, the emission rate can exceed 0.001 lb/MMBtu while maintaining compliance with an emission limit of 2.06 lbs/hr.

The NRG Parish Unit 8 facility has a sulfuric acid mist emission limit of 10.10 lbs/hr, and utilizes a wet scrubber for control of SO_2 emissions. At the maximum rated heat capacity of the Unit 8 boiler (6700 MMBtu/hr), this lbs/hr emission rate is equivalent to 0.0015 lbs/MMBtu. The lbs/MMBtu emission rate from Unit 8 could easily be higher than 0.0015 lbs/MMBtu if the source was operating at a lower load, while maintaining compliance with an emission limit of 10.10 lb/hr.

Santee Cooper Cross Unit 3 and Unit 4 have an emission limit of 0.0014 lbs/MMBtu on a 365 day rolling average, taken as part of a PSD avoidance limit. Both Unit 3 and Unit 4 utilize a wet scrubber for control of SO_2 emissions. Unit 3 conducted an initial performance test in January 2007 and had a 3-run average tested result of 0.00021 lb/MMBtu. However, Unit 4 conducted an initial performance test in July 2008 and had a 3-run average tested result of 0.003 lb/MMBtu using Test Method 8A. Therefore, although both boilers have the same emission limit (0.0014 lb/MMBtu) and only one of the two boilers demonstrated compliance with this limit on a short term basis. This is a demonstration that the results of a singular performance test should not be taken as a clear indication of compliance with a low emission limit. The test report for Unit 4 is included in GreenLaw’s Exhibit 75.

Based on the Divisions review, 0.004 lb/MMBtu on a 3-hour average is the correct BACT emission limit for H_2SO_4. Please refer to pages 43 to 46 in the preliminary determination for more details.

J. The Permit Must Not Exempt Plant Washington from BACT or MACT Limits During Startup and Shutdown.

Condition 7.23.a. of the draft Plant Washington permit provides that:

> "Excess emissions resulting from startup, shutdown, malfunction of any source which occur though ordinary diligence is employed *shall be allowed* provided that …" certain operational conditions are met.

This provision must be modified to clearly state that no exemption from meeting the BACT or MACT limits is allowed. BACT and MACT are defined under the Clean Air Act as "emission limitations" (CAA §169(3), 40 C.F.R. 52.21(b)(12), 63.41) and "emission limitation" is defined as a requirement "which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis". CAA § 302(k). The EAB has found on numerous occasions that BACT must be met on a continuous basis, and that The U.S. Court of Appeals has also vacated the provision of 40 C.F.R. §63.6(e)(1) allowing for an exemption from emission standards during startup and shutdown.

Specifically, the EAB has concluded that, in order to provide for any different requirements than BACT emission limits for periods of startup, shutdown, and malfunction, state and local permitting authorities must first make a determination available to the public for review and comment, and show that compliance with BACT emission limits during startup, shutdown and malfunction is infeasible. In addition, permitting authorities should, in such cases, establish secondary numerical emission limits or work practice standards that the agency must justify as satisfying BACT. Further, the agency must show that such secondary requirements or standards will provide for compliance with NAAQS and the PSD increments. In cases where a permitting agency would allow the development and submittal of a plan to address emissions during startup, shutdown, and malfunction, the EAB has stated that the contours of plans be noticed and fully subjected to public review and comment as well as to right to appeal such a plan. See In Re Tallmadge Generating Station, PSD Appeal No. 02-12, at 24-28 (EAB, May 21,2003)(Ex. 9); In Re Indeck-Niles Energy Center, PSD Appeal No. 04-01, at 15-18 (EAB, September 30, 2004) (Ex. 10); In Re RockGen Energy Center, 8 E.A.D. 536, at 551-555 (EAB, August 25, 1999) (Ex. 11).

As recently as September 10, 2008, EPA reaffirmed and expounded upon these longstanding legal principles in the context of issuing an order granting, in part, a challenge to a combined PSD and Title V operating permit for a coal-fired power plant in Trimble County, Kentucky. In the Matter of Louisville Gas and Electric Company, Trimble County, Kentucky, Title V/PSD Permit #V-02–043 Revision 2, at 9-11 (EPA September 10, 2008) (attached as Ex. B). In EPA's Trimble Order, it stated in pertinent part:

> EPA's long held interpretation is that emission limitations in PSD permits apply at all times and may not be waived during periods of startup and shutdown. See, e.g., Memorandum from John B. Rasnic, EPA Stationary Source Compliance Division, to Linda M. Murphy, EPA Region 1, Automatic or Blanket Exemptions for Excess Emissions During Startup, and Shutdowns Under PSD (January 28, 1993); see also Tallmadge Energy Center, slip op. at 24. A PSD BACT limit must apply at all times, unless the permitting authority determines the need to establish alternative BACT limits for periods of startup or shutdown, and justifies such limits as part of a complete BACT analysis. RockGen Energy Center, 8 E.A.B. at 554. To establish a work practice standard as an alternative BACT limit during such periods, the permitting authority must determine that technological or economic limitations on the application of a measurement methodology to a particular unit would make the imposition of an emissions standard infeasible during such periods.

Id. at 10 (emphasis added). EPA then went on to conclude in the Trimble order that the permitting authority had not provided "a sufficient analysis to justify [the] exemption as an alternative BACT limit for periods of startup and shutdown". Id.

Therefore, the Plant Washington permit must make clear that no excess emissions are allowed from BACT or MACT emission limits. If EPD intended to allow for any exemptions from meeting BACT limits during periods of startup or shutdown, EPD must show that meeting BACT or MACT during those periods is infeasible, and EPD must propose other emission limitations for public comment that truly reflect BACT or MACT for those periods of operation in the Plant Washington permit.

EPD Response: The BACT and MACT limits in the permit apply at all times, including startup and shutdown. Georgia Rule 391-3-1-.02(2)(a)7(i) provides that excess emissions during startup and shutdown "shall be allowed" provided that certain criteria are met, (1) the best operational practices to minimize emissions are adhered to, and (2) all associated air pollution control equipment is operated in a manner consistent with good air pollution control practice for minimizing emissions and (3) the duration of excess emissions is minimized. No changes are made to the permit based on this comment.

K. The Application Failed To Evaluate IGCC as BACT.

The draft permit improperly failed to consider Integrated Gasification Combined Cycle (IGCC) coal gasification technology as part of its BACT analysis. IGCC is an available control technology (with top-of-the-line pollution control efficiencies) that the Applicant should have fully considered in the application's BACT determination for each of the PSD-regulated pollutants. The necessity of considering IGCC as part of a BACT analysis has been an issue in Georgia played out in the litigation over the Longleaf PSD permit. In that litigation, the Georgia Court of Appeals ruled that the ALJ in the Longleaf matter correctly ruled that EPD did not need to consider IGCC as part of the BACT determination in Longleaf. The Court of Appeals' decision, however, was completely reliant upon a misinterpretation of EPA's redefining the source policy. EPA has now clarified the parameters of that policy, and correct application of the policy requires consideration of IGCC as part of the BACT determination in this matter.

By way of background, the Clean Air Act requires that a permit issued to a major new source of air pollution in an attainment area include an emission limit that reflects the installation of BACT for each regulated air pollutant. 42 U.S.C. §§ 7471, 7475(a)(2), 7479(3); 40 C.F.R. 51.166(j), (q), and 52.21(j). Georgia incorporates by reference the federal definition of BACT, found at 40 C.F.R. § 52.21 (b)(12). BACT is defined as an emission limitation . . . based on the maximum degree of reduction for each pollutant . . . which the [agency] . . . determines is achievable after ―taking into account energy, environmental and economic impacts and other costs. 42 U.S.C. § 7479(3); 40 C.F.R. 52.21(b)(12). Such maximum degree of reduction is to be achieved through application of *production processes* or available methods, systems, and techniques, including *fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques*. *Id(emphasis added).* As this definition makes clear, BACT requires a comprehensive analysis of all potentially available emission control measures, expressly including input changes (such as fuel cleaning or the use of clean fuels), process and operational changes (including innovative combustion techniques), and the use of add-on control technology.

As the Court of Appeals stated in *Longleaf*, EPA policy is that a BACT determination does not require the permitting authority to redefine the source, but the Court of Appeals' decision failed to explore the proper application of that policy. EPA's Environmental Appeals Board has now filled that void in In *re Desert Rock Energy Company, LLC*, PSD Appeal No. 08-03, 2009, 14

E.A.D. __, slip op. at 56-78 (EAB Sept. 24, 2009), Ex. 153. In this opinion, the EAB acknowledged that under EPA policy, in setting BACT emission limits, a balance must be struck. On the one hand, the statute mandates that alternative processes and innovative combustion techniques must be considered. On the other hand, the EAB acknowledges the permit applicant's prerogative to define certain aspects of the proposed facility. *Id*. The EAB went on to conclude that there was no question that EPA had the authority to limit redefinition of the source, but that there was also a real question on how the interpretation should properly be applied. Id. at 62-63.

EPA answered this question by saying that the "redefining the source" policy requires that a permitting agency examine "which design elements are inherent for the applicant's purpose and which design elements may be changed to achieve pollutant emissions reductions without disrupting the applicant's ***basic business purpose*** for the proposed facility. *Id*. at 64 (quoting *In re Prairie State Generating Co*., PSD Appeal No. 05-05, slip op. at 30 (EAB Aug. 24, 2006) (emphasis added).

In this permitting action, there has been no analysis whether use of IGCC would disrupt the applicant's basic business purpose. In fact, it would not. In *Desert Rock*, the applicant itself believed that IGCC was consistent with the proposed facility's purpose, objective, or basic design. *Desert Rock*, slip op. at 65. That the applicant in *Desert Rock* should so conclude is not surprising given a review of the legislative history underlying the BACT definition. This history shows that as far back as *1977*, Congress intended permitting agencies to evaluate IGCC as BACT for power plants. In particular, as shown by the relevant portion of the Congressional debate excerpted below, Congress added the phrase innovative fuel combustion technique to clarify that gasification technology is included within BACT:

> Mr. HUDDLESTON. Mr. President, the proposed provisions for application of best available control technology to all new major emission sources, although having the admirable intent of achieving consistently clean air through the required use of best controls, if not properly interpreted may deter the use of some of the most effective pollution controls. The definition in the committee bill of best available control technology indicates a consideration for various control strategies by including the phrase through application of production processes and available methods systems, and techniques, including fuel cleaning or treatment. And I believe it is likely that the concept of BACT is intended to include such technologies as low Btu gasification and fluidized bed combustion. But, this intention is not explicitly spelled out, and I am concerned that without clarification, the possibility of misinterpretation would remain. It is the purpose of this amendment to leave no doubt that in determining best available control technology, all actions taken by the fuel user are to be taken into account--be they the purchasing or production of fuels which may have been cleaned or up-graded through chemical treatment, gasification, or liquefaction; use of combustion systems such as fluidized bed combustion which specifically reduce emissions and/or the post-combustion treatment of emissions with cleanup equipment like stack scrubbers. The purpose, as I say, is just to be more explicit, to make sure there is no chance of misinterpretation. Mr. President, I believe again that this amendment has been checked by the managers of the bill and that they are inclined to support it.
>
> Mr. MUSKIE. Mr. President, I have also discussed this amendment with the distinguished Senator from Kentucky. I think it has been worked out in a form I can accept. I am happy to do so. I am willing to yield back the remainder of my time.

In *Desert Rock*, the EAB reviewed this history and noted that [b]ased on Senator Huddleston's clarification and his explanation of the addition of the language innovative combustion techniques' to CAA section 169, it appears that the amendments were intended to broaden the definition of BACT so that actions such as the production of gas from coal via gasification would generally be considered in the BACT analysis. While the redefining the source policy may play a role in determining on a case-by-case basis what technologies should be considered in a BACT analysis for a facility, as the Seventh Circuit intimated in *Sierra Club v. EPA*, an interpretation that would completely read a statutory term out of the BACT definition would be questionable. *Desert Rock*, slip op. at 77-78, n. 82 (*citing Sierra Club v. EPA,* 499 F.3d 653, 656 (7th Cir. 2007)).

Given the plain language of the Act, the relevant legislative history, and the proper interpretation of EPA's redefining the source policy as reflected in *Desert Rock*, and given the applicant's apparent business purpose, IGCC should be considered as part of any BACT determination for this project.

When IGCC is considered, the applicant should be aware that the U.S. EPA recognized that IGCC is a valuable method for cleaning coal and controlling air pollutants. For example, in its 2005 New Source Performance Standards rulemaking, the agency noted that SO_2 emissions can be reduced by pre-treating coal in one of two ways: physical coal cleaning and gasification. U.S. EPA, *Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978*, 70 Fed. Reg. 9706, 9710-11 (Feb.28, 2005). As the U.S. EPA explained,

> Coal gasification breaks coal apart into its chemical constituents (typically a mixture of carbon monoxide, hydrogen, and other gaseous compounds) prior to combustion. The product gas is then cleaned of contaminants prior to combustion. Gasification reduces SO_2 emissions by over 99 percent.

Id. Similarly, EPA officials have repeatedly stated that IGCC technology can lead to inherently lower emissions of nitrogen oxides, sulfur dioxides, and mercury from coal-fired power plants. Exs. 154 and 155. As such, IGCC plainly fits within the definition of control measures that must be evaluated during the BACT process.

<u>IGCC Meets the Criteria for BACT for Plant Washington.</u>

Had IGCC been included in the applicant's BACT analyses, it would have prevailed as the best available control technology. EPA and EPD require a top-down BACT analysis. The NSR Manual identifies five steps in a top-down BACT analysis:

1) Identify all control technologies;
2) Eliminate technically infeasible options;
3) Rank remaining control technologies by control effectiveness;
4) Evaluate most effective controls and document results; and then
5) Select BACT.

Ex. 156.

Step One: Identify All Control Technologies

IGCC technology is an available control technology now. Currently, there are around 130 gasification plants worldwide – fourteen are IGCC plants, with a capacity of 3,632 megawatts (MW) of electricity, worth nearly $8 billion, and using a variety of fuels such as oil residues, petroleum coke and coal. Currently, there are over thirty proposed coal-fired power plants in the U.S. using gasification technology. Ex. 164. These proposed plants include:

American Electric Power Company's 629 MW Great Bend IGCC plant, Ohio;
American Electric Power Company's 629 MW Mountaineer IGCC plant, West Virginia;
Duke Energy's 630 MW Edwardsport IGCC plant, Indiana;
Buffalo Energy's 1100 MW Glenrock IGCC plant, Wyoming;
ERORA Group's 630 MW Taylorville Energy Center IGCC plant, Illinois;
ERORA Group's 773 MW Cash Creek IGCC plant, Kentucky, Ex. 193;
Excelsior Energy's 1200 MW (two 600MW plants) Mesaba I & II IGCC plants, Minnesota, Ex. 190; and
Mississippi Power's 600 MW Kemper County IGCC plant, Mississippi.

The range of U.S. IGCC proposals includes those using petroleum coke, bituminous coal, subbituminous coal, and lignite. Ex. 165.

Step Two: Eliminate Technically Infeasible Options

As shown above, IGCC technology is a mature and available control technology. There are no physical, chemical, or engineering principles that would make IGCC technology infeasible for Plant Washington. First, recently built IGCC plants, such as the Salux 545 MW plant in Sardinia and the ISAB Energy 512 MW plant in Sicily, operate with more than 90% availability, using more than one gasification train. The demonstrated availability of these plants is on par with the availability of pulverized coal-fired power plants. Major vendors of IGCC plants such as GE, Shell and ConocoPhillips will warrant that new IGCC plants will achieve greater than 90% availability with a spare gasifier. Rickard Payonk, plant manager at the Wabash gasification plant, which has been operating for more than ten years, summed up the feasibility of IGCC, stating coal gasification power plants are absolutely reliable and can be scaled up in size, and critics of IGCC are using old data about the technology's reliability.

Additionally, the permit Applicant's plans to use PRB and Illinois #6 coal to fuel Plant Washington poses no barrier to using IGCC technology. In a June 2006 workshop on gasification technologies, Phil Amick, Chairman for the Gasification Technologies Council, called reports that gasification doesn't work with PRB coal a myth.

Step Three: Rank Remaining Control Technologies By Control Effectiveness

Had the Applicant included IGCC in the BACT analysis, they would have concluded that IGCC is far superior in controlling emissions of NOx, SO_2, and several other harmful pollutants. The table below shows the pollutant emission rates for three recently proposed IGCC plants. When compared to the proposed emission rates from Plant Washington, IGCC technology is shown to control emissions significantly better than the supercritical technology proposed.

Comparison of Emission Rates from Plant Washington with proposed IGCC plants.

Facility	*Technology*	*NOx* (lb/MMBtu)	*SO_2* (lb/MMBtu)	*PM* (lb/MMBtu)	*H_2SO_4* (lb/MMBtu)	*CO* (lb/MMBtu)	*VOC* (lb/MMBtu)
Plant Washington	Supercritical PC	0.05 (annual ave)	0.09 (12 month rolling ave); 0.12 (3-hr ave) (calculated from 996 lb/hr/ heat rate of 8300 MMBtu/hr.)	0.015 (filterable)	0.005 (3-hr ave)	0.15 (30 day ave) 0.30 (1-hr ave)	0.0034 (3-hr ave)
Taylorville Energy Center	IGCC	0.0246 (24-hr ave)	0.0117 (3-hr ave)	0.0063 (filterable) (3-hr ave)	0.0026 (3-hr ave)	0.036 (24-hr ave)	0.006 (24-hr ave)
Erora Cash Creek, Ex. 193	IGCC	0.0246 (24-hr ave)	0.0117 (3-hr ave)	0.0063 (filterable) (3-hr ave)	0.0026 (3-hr ave)	0.036 (24-hr ave)	0.006 (24-hr ave)
Mesaba I & II, Ex. 190	IGCC	0.057	0.025	0.009	--	0.0345	0.0032

Recent studies, which estimated emission rates from IGCC plants by examining literature reviews, including recent air permits, contracts with IGCC technology suppliers, and power generation modeling software, concluded that IGCC was clearly a better choice to control SO_2, NOx, and other dangerous pollutants such as CO, PM and VOCs, emissions than pulverized coal technology. *See* in Ex. 157.

Step Four: Evaluate Cost and Collateral Environmental Effects and Document Results

The NSR Manual describes the analysis to be undertaken in Step Four of the top-down BACT analysis as follows:

> After the identification of available and technically feasible control technology options, *the energy, environmental, and economic impacts* are considered to arrive at the final level of control. At this point the analysis presents the associated impacts of the control option in the listing. For each option the applicant is responsible for presenting an objective evaluation of each impact. Both beneficial and adverse impacts should be discussed and, where possible, quantified. In general, the BACT analysis should focus on the direct impact of the control alternative. If the applicant accepts the top alternative in the listing as BACT, the applicant proceeds to consider whether impacts of unregulated air pollutants or impacts in other media would justify selection of an alternative control option. If there are no outstanding issues regarding collateral environmental impacts, the analysis is ended and the results proposed as BACT. In the event that the top candidate is shown to be inappropriate, due to energy, environmental, or economic impacts, the rationale for this finding should be documented for the public record. Then the next most stringent alternative in the listing becomes the new control candidate and is similarly evaluated. This process continues until the technology under consideration cannot be

> eliminated by any source-specific environmental, energy, or economic impacts which demonstrate that alternative to be inappropriate as BACT. Ex. 156.

Applying this analysis confirms that IGCC is a superior alternative to conventional PC plants.

Energy Impacts

As shown in the table (please refer to GreenLaw comments in Appendix B), Ex. 157, IGCC technology is more efficient that the supercritical PC technology proposed for Plant Washington.

However, the efficiency of IGCC technology is expected to rise in the near future. Mitsubishi expects IGCC plant efficiency using its newly-developed gasification technology to be 43%. Ex. 166. Also, as advanced technologies for air separation and oxygen production, higher temperature gas cleaning methods, advanced gas turbines, and fuel cells are developed, thermal efficiency using IGCC technology could rise to 50% – 60%. Ex. 157.

Environmental Impacts

IGCC plants have a number of advantages over PC plants when evaluating the environmental impacts of a proposed plant. First, studies suggest that IGCC can capture and sequester CO_2 at significantly lower costs than PC technology. Additionally, IGCC technology is environmentally superior to PC technology for minimizing emissions of mercury and other toxic chemicals. According to the U.S. Department of Energy, a significant portion of mercury appears to be removed within the IGCC process, decreasing the amount contained in the stack gas. The mercury that remains can also be removed at about one-tenth the cost of PC based mercury control. Ex. 159.

Also, the waste leaving an IGCC plant is vitrified, thereby potentially reducing some of the solid waste disposal issues associated with coal combustion. Indeed, IGCC plants produce 30-50% less solid waste than PC plants. Lastly, an IGCC plant uses approximately one-half to two-thirds less water than a pulverized coal plant, a significant advantage in Georgia.

Economic Impacts

While it is true that construction of an IGCC plant can be more expensive, as noted in the January 31, 2007 National Park Service comments on the White Pine Energy Station draft permit, energy industry leaders expect the IGCC cost penalty to be reduced to no more than 10% once General Electric acquires the capability to build a complete 600 MW IGCC facility. Ex. 158. If a traditional PC plant was required to achieve the same emissions levels as an IGCC plant, IGCC would achieve cost parity. Ex. 167. Additionally, as additional emission restrictions are imposed on electricity generators, such as requirements for carbon capture and sequestration, IGCC is expected to become the lowest cost technology. Ex. 167. According to the EPA, there are only small differences between the operating costs between the two types of technologies. Ex. 157.

Additionally, obtaining financing for IGCC plants is becoming more attractive. In January 2007, GE Energy Financial Services, a unit of General Electric, recently announced that it is acquiring a 20% equity interest in The ERORA Group LLC‘s 630 MW Cash Creek IGCC facility in Kentucky, joining the New York investment firm D.E. Shaw group, which committed up to $500 million in October 2006 to build the Cash Creek plant. Ex. 169. In July 2006, independent power producer Tenaska, Inc. purchased a 50% development-stage interest in the proposed Taylorville

Energy Center.Furthermore, Mitsubishi has provided NRG Energy, Inc. with financial guarantees that its IGCC process proposed for NRG's IGCC plant in New York will work.

Step Five: Select BACT

IGCC is clearly superior to the proposed BACT controls for Plant Washington. IGCC technology is mature and available, as evidenced by the large number of proposed IGCC plants across the country and growing investor interest. While constructing an IGCC plant is more expensive than constructing a PC plant, the cost gap is quickly narrowing, and IGCC is expected to become the lowest cost technology when capturing and sequestering CO_2 is factored into the equation. Additionally, there is little difference in operating costs for both types of plants.

When compared with emission rates from recent permit applications, IGCC technology is shown to control emissions significantly better than the supercritical PC technology proposed for Plant Washington. Environmentally, IGCC is clearly a better choice, producing less mercury, among other emissions, and solid waste, and using less water. The overall superiority of IGCC technology in plant efficiency, controlling SO_2, NOx, and PM, as well as other toxic chemicals together with other environmental benefits clearly justifies the selection of IGCC technology over the supercritical PC technology proposed for Plant Washington.

EPD Response: IGCC is a physically and chemically distinct method of producing electricity that cannot be compared to the PC fired boiler proposed at the Facility without redefining the source. Neither federal law nor Georgia law requires the consideration of technologies that would redefine the proposed source. Also, please refer to Division's response to EPA Comment 2.

L. There is No BACT Determination for CO_2.

This permit is defective because it contains no BACT emission limits for CO_2. The Georgia Court of Appeals concluded in the *Longleaf* litigation that: [b]ecause no provisions of the CAA or the Georgia SIP control or limit CO_2 emissions, CO_2 is not a pollutant that otherwise is subject to regulation under the [CAA]. Since the Longleaf permit was issued however, regulations issued under the Clean Air Act that control or limit CO_2 emissions have been issued.

On June 30, 2009, EPA authorized the state of California to implement its motor vehicle greenhouse gas emission standards pursuant to Section 209(b) of the Clean Air Act, 42 U.S.C. § 7609(b), 74 Fed. Reg. 32,744 (July 8, 2009). As a result, CO_2 was immediately subject to emission limits not only in California, but also in ten of the 14 other states that have imposed these same standards pursuant to their independent authority under Section 177 of the Act, 42 U.S.C. § 7507. Therefore under the Court of Appeals analysis, carbon dioxide is now subject to regulation. Accordingly, CO_2 emissions from major emitting facilities are now unambiguously subject to best available control technology (BACT) emission limits. *See* 42 U.S.C. §§ 165(a)(4) & 169(3) (requiring BACT for all pollutants subject to regulation under the Act).

California's grams-per-mile standards (the ―CO_2 Emission Limits) are effective for model years 2009 through 2016:

> [California's] regulation covers large-volume motor vehicle manufacturers beginning in the 2009 model year, and intermediate and small manufacturers beginning in the 2016 model year and controls greenhouse gas emissions from two categories of new motor vehicles – passenger cars and the lightest trucks (PC and LDT1) and heavier light-duty trucks and medium-duty passenger vehicles (LDT2 and MDPV).

Id. at 32,746. Because Model Year 2010 began on January 2, 2009 (and Model Year 2009 began on January 2, 2008, *see* 40 C.F.R. § 85.2304), the CO_2 Emission Limits are currently in effect and govern CO_2 emissions from all new motor vehicle sales and registrations.

The CO_2 Emission Limits are in effect not only in California, but also in 10 other states that have also promulgated these standards for Model Years 2009 or 2010 as follows: Connecticut, Maine, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington.

Each of these states adopted the CO_2 Emission Limits pursuant to Section 177 of the Clean Air Act, 42 U.S.C. § 7507. Section 177 expressly grants other states the authority to adopt California's vehicle emission standards:

> Section 177 of the Act contains an opt-in provision that allows any other state to adopt and enforce for any model year standards relating to control of emissions from new motor vehicles if such standards are identical to the California standards for which a waiver has been granted for such model year and are adopted at least two years before commencement of such model year. 42 U.S.C. § 7507.

Am. Auto. Man'fs Assoc. v. Cahill, 152 F.3d 196, 198 (2d Cir. 1998).

States have been exercising their Section 177 authority for almost two decades beginning with New York which adopted California's original Low Emission Vehicle standards in 1992. *Motor Vehicle Mfrs. Assoc. v. New York State Dep't of Envtl. Conservation*, 17 F.3d 521, 529 (2d. Cir. 1994). Not only have states adopted these emission standards under their Section 177 authority, but each state has historically incorporated these standards into their State Implementation Plans (SIP) under Section 110 of the Act, 42 U.S.C. § 7410. *See*, *e.g.*, 40 C.F.R. § 52.370(c)(79) (EPA approval of §177-adopted standards as part of Connecticut's SIP); 40 C.F.R. § 52.1020(c)(58) (Maine); 40 C.F.R. § 52.1120(c)(132) (Massachusetts); 40 C.F.R. §52.1570(c)(84)(i)(A) (New Jersey); 40 C.F.R. § 52.2063(c)(141)(i)(C) (Pennsylvania). Once incorporated into a SIP, these requirements become CAA standards, and numerous provisions authorize both EPA and citizens to enforce such SIP requirements, *see e.g.*, 42 U.S.C. § 7413; 42 U.S.C. § 7604(a)(1), (f)(3).

Because the CO_2 Emission Limits are no different than any other vehicle emission standards that states have been adopting and enforcing under the Clean Air Act for decades, it is clear that CO_2 is now subject to regulation under the Act. In fact, two federal courts have found that these very CO_2 Emission Limits are indeed federal Clean Air Act standards. In *Central Valley Chrysler-Jeep, Inc. v. Goldstene*, 529 F.Supp.2d 1151, 1165 (E.D. Cal. 2007), the court rejected the notion that even when approved under Section 209 of the Act, the CO_2 Emission Limits are and remain state regulations and therefore subject to preemption by the federal Energy Policy and Conservation Act (EPCA), stating [t]he court can discern no legal basis for the proposition that an EPA-promulgated regulation or standard functions any differently than a California-promulgated and EPA-approved standard or regulation. *Id*. at 1173.

Faced with the identical argument, the court in *Green Mountain Chrysler v. Crombie*, 508 F.Supp.2d 295, 350 (D. Vt. 2007) (emphasis added), also rejected the idea that the CO_2 Emission Limits were not federal standards, concluding that the preemption doctrine does not apply to the interplay between Section 209(b) of the CAA and EPCA, *in essence a claim of conflict between two federal regulatory schemes*.

> Because carbon dioxide became subject to regulation under the Clean Air Act no later than June 30, 2009, Section 165(a)(4) requires permitting authorities, including Georgia EPD, to establish BACT emission limits for CO_2 emissions from facilities.

EPD Response: At this time, there are no regulations governing CO_2 emissions from any stationary source. When and if legislation is proposed and become effective, Plant Washington will have to comply with any and all applicable requirements.

The pending final regulations for CO_2 emissions, including the greenhouse gas emission standards, have not been promulgated yet and thus they are not effective. Therefore, CO_2 is not a regulated pollutant in the PSD program and the PSD permit is not required to include a BACT emissions limit to control the power plant CO_2 emissions. This is consistent with the recent decision from the Georgia Court of Appeals, *Longleaf Energy Associates, LLC v. Friends of the Chattahoochee*, where the Court agreed with EPD and stated that CO_2 is not a "NSR regulated pollutant" that otherwise is subject to regulation under the Clean Air Act.

In response to a series of questions related to EPA's intended path for regulating greenhouse gas (GHG) emissions, Lisa Jackson, EPA Administrator, sent a letter in February 2010 to Congress stating the agency's timeline is as follows.

- By April 2010, EPA intends to "take actions to ensure that no stationary source will be required to get a Clean Air Act permit to cover its [GHG] emissions in calendar year 2010."

- The agency will phase in the requirements for permits for large stationary sources in calendar year 2011.

- With respect to the phasing in of permitting, in the first half of 2011 "only those facilities that already must apply for Clean Air Act permits as a result of their non-[GHG] emissions will need to address their [GHG] emissions in their permit applications."

- GHG emissions from other large sources would be subject to permitting beginning in the latter half of 2011, and between the latter half of 2011 and 2013, Jackson expects that the "threshold for permitting will be substantially higher than the 25,000-ton limit EPA originally proposed."

- The smallest sources of GHG emissions would not be subject to permitting

Also, EPA has released its reconsideration of the December 18, 2008 Johnson Memo, which addressed when new pollutants, including greenhouse gases (GHGs), are subject to regulation under the Prevention of Significant Deterioration (PSD) program. EPA has now clarified that new pollutants are subject to regulation under PSD when a nationwide rule controlling emissions takes effect. If the GHG light-duty vehicle rule is finalized as proposed, PSD permitting for GHGs would be triggered starting January 2, 2011.

Comment 2 – GreenLaw Modeling Comments

Air Dispersion and Mercury Deposition Modeling

A. The Air Dispersion Modeling Results Are Invalid Due to Flaws in the Meteorological Data.

The Draft Permit relies on air dispersion modeling conducted using off-site meteorological data that do not represent conditions at the project site. As a result, the air dispersion modeling results do not accurately predict the project's air quality impacts and are invalid. In particular, the meteorological data used for the Plant Washington dispersion modeling are not representative of the meteorological conditions at the project site near Sandersville for the following reasons: (1) the upper-air data site is located at a significant distance from the project site even though a closer and more representative site exists and should have been chosen; (2) the surface characteristics at the AERMOD measurement site differ significantly from the project site; and (3) Plant Washington's proposed emission point is a 450-foot tall stack and the AERMOD data are based on surface measurements which do not represent meteorological conditions at or near plume height. Use of these non-representative data violate applicable EPA dispersion modeling guidance and skew the modeling results, rendering the modeled predictions inaccurate and invalid. *See* 40 C.F.R. § 51 App. W; *see also* Ex. 170. To correct these errors, Power4Georgians should conduct an on-site meteorological monitoring program to collect representative meteorological data for use and input to the Plant Washington air quality dispersion modeling. Commenters will first outline EPA's position regarding proper air dispersion modeling protocols and then describe the flaws in the meteorological data inputs that undercut Power4Georgian's air dispersion modeling results in greater detail below.

Meteorological Data Must Represent Conditions at the Project Site

To insure that air dispersion modeling results accurately predict the fate and transport of projected air pollution from a new source and its resulting air quality impacts, EPA has made it clear that all meteorological data used for air dispersion modeling must represent conditions at the project site and at all locations that may be affected by a proposed new source. For new source modeling, EPA has determined that it is important that [meteorological] data be representative of the atmospheric dispersion and climatological conditions at the site of the proposed source or modification, and at locations where the source may have a significant impact on air quality. Ex. 171. For this reason, EPA directs that site-specific data are preferable to data collected elsewhere. *Id.*

With specific reference to the AERMOD air dispersion modeling program used in this case, EPA guidelines provide:

> Regulatory application of AERMOD requires careful consideration of minimum data for input to AERMET. Data representativeness, in the case of AERMOD, means utilizing data of an appropriate type for constructing realistic boundary layer profiles. Of paramount importance is the requirement that all meteorological data used as input to AERMOD must be both laterally and vertically representative of the transport and dispersion within the analysis domain.

40 C.F.R. § 51, App. W § 8.3, Ex. 172.

> Several site-specific meteorological and geographic parameters are crucial for assuring the predictive validity of AERMOD dispersion modeling results. Specifically, measured profiles of wind, temperature, vertical and lateral turbulence may be required . . . to adequately represent the meteorology affecting plume transport and dispersion. *Id.* § A.1. Each of these variables is independently sensitive to the particular meteorological, geographic, and physical conditions of a particular site. EPA has determined that, since the spatial scope of each variable could be different, representativeness should be judged for each variable separately. *Id*. § 8.3. As an example, EPA notes that for a variable such as wind direction, the data may need to be collected very near plume height to be adequately representative, whereas, for a variable such as temperature, data from a station several kilometers away from the source may in some cases be considered adequately representative. *Id*. Thus, EPA has concluded that [s]patial or geographic representativeness is best achieved by collection of all of the needed model input data in close proximity to the actual site of the source(s). Site specific measured data are therefore preferred as model input. *Id*. § 8.3.3.1.
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> Contrary to EPA's directives, however, the meteorological data inputs for Plant Washington were collected from distant locations that are not representative of the meteorological, geographic, and physical conditions that will determine plume fate and transport at the Plant Washington site. The Plant Washington PSD permit modeling is based on surface meteorological data collected over a five-year period between 1987-1991 from Middle Georgia Regional Airport at Macon, GA, with upper air data collected from Centreville, AL. The Centreville, AL upper air site is approximately 250 miles (400 km) west of Sandersville; the Macon surface weather site is approximately 55 miles (90 km) west of Sandersville. Additionally, despite the fact that the proposed coal-fired boiler stack height at Plant Washington is designed to be 450 feet (137 meters) above grade, the Macon surface meteorological observations were collected at a height of 23 feet (7 meters). As demonstrated next, these spatial and vertical deviations make a difference in this case and translate into meteorological data inputs that do not represent conditions at the Plant Washington site, rendering the air dispersion modeling results inaccurate and invalid.

EPD Response: Georgia EPD finds that the surface data used to model Plant Washington is adequately representative of conditions at the project site. Guidance at 40 CFR 51, Appendix W, Section 8.3.a., gives the following criteria for representation:

Proximity – The meteorological monitoring site (Macon Regional Airport) is the closest National Weather Service (NWS) station to the Plant Washington Site. The airport and project site are located near the center of the state and so share similar climates and climatic influences. Their elevations are within approximately 100 feet of each other above mean sea level (AMSL).

Terrain influences – There are no significant terrain features separating the airport from the project site. Often, projects are required to conduct on-site meteorological monitoring due to such intervening mountain ranges.

Exposure – Exposure of the monitoring instruments to meteorological conditions is adequate to excellent at the airport. Exposure at the project site will be similar after the site is graded to a common, relatively high elevation compared to its surroundings. The current exposure of the project site is not as good as that at the airport, but the power plant will not be operating under the current exposure conditions.

Temporal representation – The period of the meteorological data set, 1987-1991, is not current. However, little change in surrounding land use appears to have occurred since that period and the present, at either the airport or the project site. Changes during the 1990's in the archiving of the NWS observations have resulted in decreasing the amount of data available for modeling (a change in the minimum "calm" wind

speed from 1 to 3 m/s, the lack of a wind direction when the direction varies more than 60 degrees over a five minute period). Most of these changes result in the deletion of low wind speed conditions from a potential modeling data set. Low wind speed conditions are usually those associated with high air contaminant concentrations. For these reasons, EPD considers the period of meteorological data to be as current, and as conservative, as practicable.

The Upper Air Data Site Does Not Represent Conditions near the Project Site

Obtaining accurate measurements of upper air level atmospheric conditions near the Plant Washington site is critical to determining the fate and transport of the air pollution that the plant will emit if constructed. The AERMOD program Power4Georgian‘s used in this case relies on the upper air sounding to define the temperature structure of the atmosphere at or near sunrise in order to estimate the convective boundary layer growth during the day. This, in turn, helps predict the effects of weather systems on the fate and transport of the plant‘s air pollution plumes. Despite the availability of more representative upper air data, however, Power4Georgians‘ used upper air data taken from the National Weather Station in Centreville, AL, which is located about 250 miles (400 km) from the project site in Sandersville, GA. But these data are not representative of the upper air level meteorology at the Plant Washington site, and the Draft Permit improperly relies on these readings for its AERMOD data inputs.

The large distance between Centreville and the project site in Sandersville introduces the potential for substantial errors in accurately defining the vertical temperature profile. Situations where significant errors may be introduced include periods of active weather where fronts or convective storms propagate from west to east. In these cases, the active weather may lie between Centreville and Sandersville at the time of the morning sounding, causing differences in important air mass characteristics between these two locations. The model will treat the Sandersville as if it lies behind the weather front, when in fact, the Sandersville would lie ahead of the weather front in a completely different air mass. The probability for such an occurrence increases with increasing distance between the project site and the measurement site.

This area of the state also regularly experiences backdoor cold fronts, which move into Georgia from the northeast. When these cold fronts slide south, the Appalachian Mountains act as a barrier to movement of the weather front so that these fronts typically do not move further west into Alabama. This also results in sharp differences in air masses between Centreville, AL and Sandersville, GA that in turn introduce errors in defining the vertical temperature profile used by AERMOD.

Instead of using the Centreville, AL upper air sounding to define the vertical temperature profile for the project site, Power4Georgians should have used the upper air sounding from Athens, GA, which would have minimized these errors. Based on the data archives at the National Climatic Data Center (NCDC), Athens has upper air data up through 1994, which falls in the 1987-1991 period used for this modeling study. Athens is approximately 75 miles (125 km) from Sandersville and the proximity of Athens compared to Centreville would minimize potential errors introduced by significant air mass differences. Despite this, however, the record does not describe or demonstrate the technical basis for selecting Centerville, AL over Athens, GA to represent the vertical temperature profile at the Plant Washington site.

EPD Response: On-site data were not involved in creating the modeled project meteorology. The distance of the upper air station from the project site is, therefore, only relevant if the upper air data are not considered representative of the surface station location and the structure of the atmosphere above it.

Selected Physical Characteristics of Meteorological Stations

NWS Station	Station Type	Latitude	Longitude	Elevation (Feet, amsl)	Distance to Macon (km)
Centreville, AL	Upper Air	32° 54' N	87° 15' W	456	342
Macon, GA	Surface	32° 41' N	83° 39' W	354	0
Athens, GA	Upper Air	33° 57' N	83° 20' W	802	141.5

Georgia EPD considers the Centreville, Al to be more reflective of conditions over the Macon, Georgia surface station because, as shown in the table above, those stations are located at about the same elevation, they are located at about the same latitude, they appear to be affected by similar climates. Use of the Athens station upper air data would result in a less continuous vertical atmospheric profile over the Macon station than use of the Centreville data due to the higher elevation of the Athens station. Centreville upper air data has been used by Georgia EPD meteorologists and modelers to characterize the atmospheric profile over Macon since 1995.

To address Greenlaw's concerns about the representativeness of the upper air data, the distances between NWS surface and NWS upper air stations in experiments used to develop the AERMOD model were assessed. Three of the eight pairs of stations were collocated. The others ranged in distance from each other between 91 and 308 km. Onsite surface data were collected during these experiments. The distances between the experimental on-site surface data station and the NWS upper air station it was paired with ranged from 120 to 296 km. The distance of the Centreville station to the Macon surface data station is 342 km and is considered by Georgia EPD to be sufficiently close for the construction of representative atmospheric profiles over the Macon station.

The Surface Air Data Site Does Not Represent Conditions near the Project Site

Surface characteristics at the data measurement site also influence boundary layer parameter estimates in AERMOD. As with upper air data, obtaining surface characteristics data that closely correlate to the conditions at the project site is vital to the predictive validity of the AERMOD results. EPA's modeling guidance requires that the characteristics of the measurement site should align closely with those of the project site where the data are being applied to insure the representativeness of off-site data. Otherwise, different data (or on-site data) should be used for input to AERMOD.

In this case, Power4Georgians used surface data from Middle Georgia Airport at Macon, GA, (Macon Airport) to define the surface winds and temperature data for input to AERMOD. The Macon Airport is about 55 miles (90 km) from the proposed plant site at Sandersville, GA, and appears to be the closest available National Weather Service (NWS) surface station with complete data. As demonstrated below, however, there are important differences in the surface characteristics between the Macon Airport measurement site and the Plant Washington site, which require using different data or on-site measurements in the AERMOD model.

Surface characteristic influences for the AERMOD model are quantified by three parameters: (1) surface albedo; (2) Bowen ratio; and (3) surface roughness length. Comparing the Macon Airport measurement site to the Plant Washington site, reveals important and unresolved differences in each of these three parameters.

Albedo is a measure of the total incident radiation that is reflected by the surface back to the atmosphere without absorption. Lower values mean that most of the radiation is absorbed, warming the near surface layers of the atmosphere, rather than reflected. Higher values mean that most of the incoming radiation is reflected and does not contribute to warming in the lower layers

of the atmosphere. Albedo varies by ground cover (*i.e.*, land use) and season. Albedo can increase significantly during the winter, either due to snow on the ground, which is highly reflective, or because vegetation is dormant or leafless, reducing its capacity to absorb incident solar radiation.

The Bowen ratio is the measure of the sensible heat flux to the latent heat flux and is a general indicator of low-level moisture. This parameter affects the planetary boundary layer during convective conditions. Again, this parameter tends to vary by season and by land use. A higher Bowen ratio typifies more arid (dry) conditions.

Tables 1 and 2 describe the recommended albedo and Bowen ratio input data from the *AERMET User's Guide*. Ex. 173. Following the User's Guide, winter conditions apply only during periods of snow cover and sub-freezing temperature. For Sandersville, GA, the winter conditions probably do not exist except on rare occasions.

Based on current EPA guidance, Ex. 170, both albedo and Bowen ratio are determined based on a simple unweighted arithmetic mean for a 10 km by 10 km domain centered on the site. This area is roughly approximated by a 3 km diameter circle. Figures 5-3 and 5-4 from the Plant Washington PSD permit application show an aerial photography of the Macon Airport measurement site and the Plant Washington site near Sandersville. The 3 km circle on each figure has been drawn in by the applicant. By using Google Earth, it is possible to compare these figures along with other aerial photographs of the Macon Airport site and the Plant Washington site to assess the surface characteristics of each.

AERMOD allows the user to subdivide the surface characteristics among different sectors where differences exist. In the permit application, each figure has been broken into four sectors. The identified sector differences are more evident at the Macon Airport site than the Plant Washington site, where the land use is more homogeneous.

At the Macon Airport, Sector 1 is predominantly airport property (best described as grasslands), with some buildings associated with airport operations (best described as urban). There is also significant coverage by deciduous trees in the northern part of Sector 1. In Sectors 2 and 3, the coverage is mostly buildings (urban) along with deciduous trees. Sector 4 also has significant coverage from deciduous trees, particularly to the south of the Houston-Bibb County line.

At the Plant Washington site, on the other hand, the land use as determined using aerial photography is fairly uniform, consisting of mostly cultivated lands. There is some minor coverage by deciduous trees along a small creekbed cutting through Sections 1 and 2 and also a small industrial property in Section 4 (since the industrial site has been cleared of vegetation, it may be best described as desert shrublands using the categories in Tables 1 and 2). However, the industrial site does not cover a significant fraction of the sector, so its influence would be minimal.

This review of surface characteristics demonstrates that much of the land use around the airport (urban and deciduous forest) yields a higher albedo and higher Bowen Ratio compared to the cultivated lands that typify the Plant Washington project site (*See* Tables 1 and 2). Therefore, the Macon Airport measurement site is not generally representative of the Plant Washington site in terms of land use and the resulting surface characteristics.

The final characteristic for determining surface characteristic data representativeness is surface roughness, defined as the height at which the mean horizontal wind speed drops to zero. Surface roughness is generally dependent on the height of nearby obstacles to the wind flow, such as trees

and buildings, and is approximated by one-tenth of the height of the obstructing objects. Following EPA's AERMOD Implementation Guide, surface roughness is determined using the land use in the nearest 1 kilometer (km) to the site. Also, these calculations are based on an inverse-weighted geometric mean, meaning that obstacles closer to the site are weighted more heavily in calculating of surface roughness. Table 3 contains recommended values for surface roughness from the *AERMET User's Guide*, based on land use and season.

In the nearest 1 km to the Macon Airport monitoring site, the land characteristics are mostly described by the open grounds of the airport property. The airport buildings appear to be outside the 1 km circle, so these buildings either would not affect surface roughness in Sector 1 or, if they did so, the impact would be felt over only a small part of the sector. There are some deciduous trees in Sector 2, but these trees occur near the 1 km limit such that these effects would not be heavily weighted in the surface roughness determination. However, Sector 4 shows significant growth of deciduous trees close to the monitoring site to the south and the surface roughness in this sector would be dominated by these trees. Overall, the surface roughness for the Macon Airport site is best characterized by grassland for Sectors 1, 2, and 3 (with typical surface roughness values ranging from 0.01 to 0.1 meters depending on the season) and by deciduous trees in Sector 4 (with typical surface roughness values ranging from 0.8 to 1.3 meters depending on the season).

By contrast, the project site at Sandersville is generally characterized by cultivated lands or low vegetation that appears similar to cultivated lands with crops. There are some deciduous trees covering parts of Sectors 2 and 3, but these are near the 1 km limit and would not weigh heavily in the calculation of surface roughness. Based on the prevailing land uses, the surface roughness for the Plant Washington site is in the range of 0.03 to 0.2 meters, depending on the season.

The Georgia EPD Technical Support Document and the applicant's PSD application contain only a cursory review of the relative surface characteristics between the two sites; the record does not demonstrate a rigorous analysis following EPA's AERMOD Implementation Guide. Table 5-4 in the PSD application contains the applicant's analysis of the relative surface characteristics. The applicant's analysis does not distinguish between different types of vegetation in assessing characteristics for albedo; it does not consider vegetative cover or land use in assessing Bowen ratio; and it appears to extend significantly beyond the recommended 1 km radius when assessing surface roughness. Based on these errors, Power4Georgians' comparison of surface characteristics, as documented by Table 5-4 of the PSD application, violates EPA guidance. *See* Ex. 170.

A proper assessment of surface characteristics following the procedures outlined in the applicable EPA guidelines (*e.g., AERMOD Implementation Guide* (Rev. March 19, 2009)) show that significant differences exist between the Macon Airport site where the meteorological data were collected and the Plant Washington site and near Sandersville. As a result, the Macon Airport surface meteorological data cannot be used for AERMOD modeling of Plant Washington emissions without introducing substantial error and uncertainty into the analysis.

EPD Response: Georgia EPD has indicated that, based on proximity, lack of an intervening mountain range, exposure, and contemporaneity, the airport meteorological observations are considered to adequately represent observations that would be made at the site after the site is graded to the intended 139 m elevation. Five years of hourly observations were collected and processed to create the modeled meteorology. This is considered to assure as at least as much conservatism that worst-case conditions are assessed for each applicable time-averaging period as the conditions which would be monitored over a period of one year at the site.

Georgia EPD believes the values of albedo and Bowen ratio determined by sector with a 3-km fetch used in the processing of the meteorological data would not be substantially different from the values of those parameters at the project site after grading. These values under the current AERSURFACE guidance (evaluated over a 10-km square area centered on the airport and the project site) would not change substantially at the airport, and would not change substantially at the project site, since the grading of the site would affect only a small portion of the currently recommended 10-km square area (AERSURFACE, 2008).

The characteristic of surface roughness has been shown to have the most influence on modeled concentrations. Georgia EPD considers the values of surface roughness used to process the meteorological data, as assessed utilizing a 3-km upwind fetch at the Macon Regional Airport (consistent with contemporaneous guidance), to be adequately representative of the project site conditions after the grading of the site. Georgia EPD notes that no revision of the AERMOD model or the AERMET processor was promulgated between January, 2007 and October, 2009 which would have altered the manner in which the model was affected by the issuance of the January, 2008 AERSURFACE utility and AERMOD Implementation Guidance. Georgia EPD also notes that the latest AERMOD Implementation Guidance (03/09) stipulates that:

The AERSURFACE tool is not currently considered to be part of the AERMOD regulatory modeling system, i.e. the use of AERSURFACE is not required for regulatory applications of AERMOD, the recommended methodology described in Section 3.1.2 [issued in January, 2008] should be followed unless case-by-case justification can be provided for an alternative method.

The Measurement Data Do Not Represent Conditions at the Emission Point

As with the upper air and surface data characteristics, the selected meteorological data must represent physical conditions at the actual emission point in order to assure accurate AERMOD predictions. For the Plant Washington modeling, the vertical representativeness is very important because the stack height for the coal-fired boiler is significantly higher than the measurement height for the surface meteorological station (450 feet vs. 23 feet).

AERMOD is designed to allow user-input of the vertical profile for winds, temperature, and turbulence parameters based on actual measurements. In this case, however, Power4Georgians relied solely on the Macon Airport surface data, and failed to use the advanced features developed specifically for AERMOD. Although AERMOD can model using only a single measured value to define the vertical profile for the meteorological parameters, without additional measured values to define the vertical profile of winds, temperature, and turbulence, AERMOD must construct a theoretical, idealized vertical profile for these parameters based on similarity theory. But EPA‘s Modeling Guidelines require use of actual data to define the vertical profile where such data are needed to accurately represent important meteorological variables. Even where not otherwise required, use of actual data to define the vertical profile is preferred and provides increased model accuracy.

The potential errors introduced into AERMOD by the lack of actual measurements in the vertical domain are exacerbated in this case by the tall stacks being simulated for the proposed facility. In this case, the proposed stack height is 450 feet, with plume heights extending significantly above the stack top height. Because emissions from the source in question are distributed across a very large vertical cross-section, the proper characterization of winds, temperature, and turbulence in the vertical domain are critical to an accurate modeling simulation. But this has not been done for the Plant Washington modeling, and the failure to do so creates significant uncertainty in the

modeling results. Further, some of the modeling results in this case show impacts that fall within a small percentage of the regulatory threshold (*i.e.*, 24-hour average PM10 of 4.951 vs. a significant impact limit of 5.0 micrograms per cubic meter). In light of this small range of deviation from the regulatory threshold, the uncertainties in model results introduced by the selected meteorological data undermine the validity of the regulatory conclusions on which the Draft Permit relies.

EPA has made clear its preference for on-site meteorological data to drive the model input. *See* Ex. 172. For most large emission sources, such as coal-fired power plants with stack heights significantly above ground-level, the emission sources routinely use on-site meteorological data for the PSD permit modeling. Relying only on surface data measurements for modeling major emissions points with stack heights of 450 feet is unusual and improper, principally due to the difficulty of making the necessary regulatory demonstration that surface data are representative of conditions at the emission point. The PSD application and Georgia EPD Technical Support Document describing the AERMOD modeling studies lack any demonstration or discussion of how the selected meteorological data are representative of the vertical profile for expected wind, temperature, and turbulence parameters.

Rather than relying on near ground-level data from the Macon Airport measurement site that has not been shown to duplicate conditions at the source stack height, the Georgia EPD should invoke its authority under the PSD program to require an on-site meteorological monitoring program. On-site measurements of key meteorological parameters should have been collected by Power4Georgians during the initial application process, either using an instrumented tall tower (100-meters) or through a remote sensing device like a Doppler acoustic SODAR. These technologies are widely used to collect data necessary to conduct an accurate and defensible dispersion modeling study for complex sources such as coal-fired power plants. Most other proposed coal-fired power plants undergoing PSD permit review have conducted on-site meteorological measurements, and Georgia EPD should require Power4Georgians to resubmit a revised application reflecting representative meteorological data. In fact, it would constitute clear error to issue a final permit based on AERMOD modeling that violates EPA modeling guidance by not requiring on-site, representative meteorological monitoring.

Therefore, Georgia should reject the Draft Permit and direct Power4Georgians to conduct an on-site monitoring program at the proposed Sandersville site. At the conclusion of the monitoring program, the dispersion modeling studies relied upon by Georgia EPD in issuing the proposed Draft Permit should be re-run and compliance with applicable air quality standards and increments validated using on-site data. All of these activities should be completed before a final permit is issued for the proposed plant.

EPD Response: The Plant Washington Project consists of several emission points, many of which are located near ground level. The AERMOD model projects the wind speed from the measurement height above ground level to the release height or stack tip of the applicable source under assessment.

In Georgia EPD's experience, nearly all tall stacks are modeled effectively using winds measured near the surface. The exceptions are those tall stacks located near mountains, or on the floor of deep valleys, with the potential to alter wind speed and direction from those projected from near the stack base elevation. No such terrain features exist near the Plant Washington site.

Conclusions

Power4Georgians has submitted, and the Georgia EPD has relied upon, dispersion modeling conducted using off-site meteorological data that does not meet the various tests for data representativeness required under applicable EPA dispersion modeling guidance. *See* Exs. 170 and 172. The meteorological data used for the Plant Washington dispersion modeling are not representative of the project site near Sandersville for the following reasons: 1) the upper-air data site is located at a significant distance from the project site even though a closer and more representative site exists and should have been chosen; 2) the surface characteristics at the AERMOD measurement site differ significantly from the project site where the modeling data have been applied; and 3) Plant Washington's proposed emission point is a 450 foot-tall stack and the AERMOD data are based on surface measurements which are not representative of meteorological conditions at or near plume height. As a result, the air dispersion modeling results do not accurately predict the project's air quality impacts and are invalid. Compliance with the EPA Air Dispersion Modeling Guidelines, Exs. 170 and 172, requires an on-site meteorological monitoring program to collect representative meteorological data for use and input to the Plant Washington air quality dispersion modeling.

EPD Response: Please refer to Division's response to GreenLaw Comment 2, Section A.

B. The Draft Permit Improperly Relies on PM_{10} Modeling That Violates EPA Guidelines.

Introduction

The PM_{10} modeling that forms the basis for the Draft Permit under-predicts actual PM_{10} emissions from Plant Washington and does not provide a legitimate basis for the Draft Permit for two major reasons. First, the emissions inventory used in the PM_{10} model fails to account for PM emissions under reasonable worst-case scenarios. As a result, the modeled results under-predict PM_{10} impacts attributable to Plant Washington. Second, various parameters selected for the AERMOD model are inconsistent and violate regulatory guidance and sound scientific practice. These inconsistencies and irregularities introduce errors into the analysis that cannot be quantified without correcting the model inventory inputs and running the model in accordance with accepted procedures. These errors are fatal to the validity of the Draft Permit, particularly because the modeled PM_{10} impacts purportedly fall below the significant impact level (SIL) by a razor thin margin, and any deviation would trigger a more comprehensive, cumulative impacts analysis.

The PM_{10} modeling described in the PSD permit application used the AERMOD dispersion model, which is the approved model for this situation based on the U.S. Environmental Protection Agency (EPA) *Air Quality Modeling Guideline*, promulgated at 40 C.F.R. § 51, App. W. Ex. 172. These comments focus on the 24-hour average PM_{10} modeling because the PSD application reports a maximum 24-hour average PM_{10} concentration of 4.951 μ/m3 (micrograms per cubic meter). The regulatory threshold used by the Georgia Environmental Protection Division (EPD) is 5.0 μ/m3, which represents the SIL that triggers a cumulative analysis of Plant Washington emissions with all other nearby PM10 emission sources. The 24-hour PM_{10} concentration listed in the PSD permit application and EPD application review is 99% of the regulatory threshold. This means that even a small error in the AERMOD modeling would alter EPD's regulatory conclusions reached in the PSD permit review.

As the technical review described more fully below demonstrates, the 24-hour PM_{10} concentrations reported for Plant Washington are inaccurate. When the modeling errors documented below are corrected, the resulting PM_{10} impacts from Plant Washington will exceed

5.0 μ/m3 for 24-hour average PM_{10} concentrations. Therefore, EPD should not issue the PSD permit for Plant Washington until a cumulative PM_{10} modeling analysis is performed for the project area.

Plant Washington's PM_{10} Inventory Does Not Reflect Peak Emissions

The PM_{10} emissions inventory used for the Plant Washington PSD modeling studies contain several errors and omissions that render the inventory unsuitable for a PSD permit analysis. To comply with preconstruction PSD requirements, the emissions inventory must represent the reasonably expected worst-case scenario in order to identify the peak daily PM_{10} emissions expected from Plant Washington emission sources. The Plant Washington PM_{10} inventory fails this basic test, as more fully explained below. EPD should direct Power4Georgians to correct any errors in the Plant Washington emissions inventory and then rerun the AERMOD analysis for PM_{10} before a final PSD permit can be issued. Specific problems with the PM_{10} emissions inventory are more fully explained below.

Paved and Unpaved Road Emissions Factors

The Plant Washington calculation for paved and unpaved road emissions relies on data from EPA's AP-42 emissions factor document. For these sources, the PM_{10} emissions are a function of several variables that are then used to calculate an emissions factor in units of pounds per vehicle miles traveled (lb/VMT). The PSD application, however, omits critical emissions data, which makes it impossible to independently verify all of the important data using the information in the PSD application or EPD analysis. As a result, the record does not adequately support important model assumptions, many of which are suspect, or the Draft Permit provisions on which those modeled results are based.

Specifically:

Mean Vehicle Weight: The AP-42 calculations for both paved and unpaved road emissions use the mean vehicle weight as a variable. This weight is listed in the PSD application as 12.5 tons on paved roads and 50 tons for the unpaved roads. The type of vehicle using these roads is not fully described in the PSD application, but it appears that the unpaved roads will be used for ash hauling to the disposal site. Traffic along the paved roads is not explained in the PSD application. Most importantly, the applicant's data does not demonstrate that the model inputs properly incorporated the weight added by the load carried by the truck, or whether they are based solely on the empty truck weight. The correct application of AP-42 requires that the average weight of the truck be calculated including the truck load where appropriate. For example, if the truck has an empty weight of 25 tons and carries a 50 ton load, then the 50 ton mean weight is appropriate assuming that the travel distances are equal for empty vs. full trucks. In order to support this important model assumption, Power4Georgians must demonstrate in the record all relevant details regarding the mean vehicle weight calculation in order to independently verify the accuracy of the AP-42 unpaved and paved road emissions factor.

Surface Material Silt Content (Unpaved Roads): The AP-42 calculations for unpaved road PM10 emissions uses the silt content of the roadbase as a variable in the emissions equation. Based on data in the PSD permit application, the silt content value used by Plant Washington is 6%. The applicant cites AP-42, Table 11.9-3 (Bulldozers-Coal) as the source of this information. Ex. 174. According to the AP-42 document, however, the

source in question (Bulldozers – Coal) actually represents data from bulldozers working an active coal pile. Consequently, the silt content used by Power4Georgians in the PM_{10} emission calculations is actually the silt content for a coal pile and not that for the roadbed of an unpaved road. Furthermore, the applicant's choice of 6% is actually the low end of the range for the AP-42 Bulldozers – Coal data. Thus, even if Power4Georgians properly used the Bulldozers – Coal silt content table, it misapplied the AP-42 data by selecting a silt content value at the lowest end of the range. The appropriate choice for silt content of the road base would be from AP-42 Table 13.2.2-1, which lists relevant data for a variety of industries. Most of the AP-42 data from Table 13.2.2-1 would suggest that the road base silt content is over 6%. Therefore, Power4Georgians underestimated the unpaved road PM_{10} emissions factor.

Vehicle Miles Traveled (VMT) Data: Power4Georgians' PM_{10} emissions data specify the VMT based on the road distances and an assumed number of vehicle trips. However, Power4Georgians does not explain how it derived the number of vehicle trips figure. The number of trips should be estimated using the expected volume of materials to be shipped in and out of the facility and the average vehicle load per trip. Additionally, since the modeled PM_{10} emissions are based on the worst-case 24-hour emissions, the number of truck trips should not be annualized, but instead should represent a worst-case day. Power4Georgians, however, does not demonstrate whether the truck traffic VMT estimate is annualized or for a worst-case day. This omission introduces significant potential error in the modeling. For example, if certain activities do not occur on weekends or holidays, then the daily number of truck trips needs to be adjusted upward so that the required annual volume can be delivered on just the operating days. Power4Georgians must document in the record the details of the VMT calculations to allow an independent verification of these data.

Paved Road PM_{10} Emissions Mitigation

To calculate the PM_{10} modeling inventory for Plant Washington PM_{10}, Power4Georgians has assumed a 90% control efficiency for dust control from truck traffic on paved roads. The Draft Permit record does not document the proposed emissions controls that will purportedly achieve a 90% reduction in PM_{10}. Instead, the Draft Permit (Condition 2.22) merely requires Power4Georgians to take all reasonable precautions to prevent fugitive dust from becoming airborne for a variety of emission sources including roadway particulate sources. Further, Condition 7.17 of the Draft Permit requires Power4Georgians to develop and implement a Dust Suppression Plan.

The absence of concrete, enforceable permit conditions to achieve a 90% level of dust control renders the Draft Permit unlawful. Attaining 90% control of fugitive dust emissions from paved roadways represents an extremely aggressive emissions mitigation program. Because the Draft Permit does not detail specific control measures that will reliably yield a 90% fugitive dust control level, it is impossible to confirm Power4Georgians' fugitive dust control plan will actually achieve the level of control stated in the Draft Permit. Nevertheless, the PM_{10} dispersion modeling assumes and depends on achieving a 90% level of fugitive dust control. Thus, it is critical that the Draft Permit specify and require the emissions controls that will achieve the 90% control level used in the dispersion modeling. Power4Georgians must describe the specific controls planned for mitigating fugitive dust from paved roadways. These proposed controls should be subject to review by the public to allow an independent assessment of whether the 90% emissions control level can actually be achieved. And, assuming Power4Georgians can demonstrate that a 90% fugitive dust emissions control level can be consistently maintained, the controls that yield those results should be included as enforceable permit conditions.

If, on the other hand, the proposed controls are not capable of achieving a 90% reduction of fugitive dust emissions from paved road surfaces, then Power4Georgians has underestimated the emissions, making unreliable the modeling results which do not demonstrate that the 24-hour PM_{10} impacts will be less than the 5.0 μ/m3 SIL concentration.

Furthermore, the modeled emissions are required to represent the worst-case 24-hour average emissions. As a result, the frequency and consistent efficacy of the applied mitigation measures for fugitive dust control is critical. If the mitigation actions are not applied with sufficient frequency to achieve a 90% reduction in PM_{10} emissions consistently every day, then Power4Georgians cannot use the 90% control number for the 24-hour PM_{10} modeling. The 24-hour PM_{10} modeling must use the lowest control value achieved by the applicant's fugitive dust control plan on any given day. The record, however, does not demonstrate compliance with this fundamental modeling requirement.

Finally, the AP-42 equation used to calculate paved road emissions uses the road surface silt loading (sL) as a variable. Ex. 175. In the uncontrolled equation, Power4Georgians assigned a value of 8.2 grams per square meter to define the silt loading. In the AP-42 equation, PM_{10} emissions are related to sL to the 0.65 power. ***Id.*** Due to this nonlinear relation, the actual silt loading of the road surface must decrease by substantially more than 90% in order to achieve a 90% reduction in PM_{10} emissions. If a 90% control value is assigned to reflect the applicant's dust mitigation strategy, the controlled silt loading calculated using AP-42 equates to 0.12 grams per square meter. ***Id.*** This corresponds to a reduction of approximately 98.5% from the uncontrolled silt loading of the road surface. Such an extraordinarily high level of emissions control is very difficult, if not impossible, to achieve. Conversely, if Power4Georgians' mitigation measures reduce the silt loading value by 90% from the uncontrolled level, the PM_{10} emissions control actually equates to 77.6% based on AP-42. ***Id.***

Since Power4Georgians has calculated the controlled silt loading value using the AP-42 emissions equation, the Draft Permit should require that Power4Georgians sample the paved road surface for silt content using the Methods appearing in the AP-42 Appendix to verify that the proposed paved road PM10 controls are actually achieving the 90% emissions reduction goal. The sampling frequency for this testing should be sufficiently frequent to provide confidence that the silt loading limit (0.12 grams per square meter) is being achieved for each and every 24-hour period that truck traffic occurs. If the measurements show a silt loading above 0.12 grams per square meter along the paved road surface during any test, then the fugitive dust control program would not meet the required 90% level of PM_{10} control.

The bottom line is the PM_{10} emissions modeled in the AERMOD analysis for paved road emissions are not consistent with the Draft Permit conditions. The paved road emissions input to the model are based on a very aggressive program for reducing fugitive dust that is not reflected in the stringency of the Draft Permit requirements. Either the permit should be corrected to add testing and monitoring to verify that a 90% PM_{10} emissions control is consistently being achieved at this source, or the PM_{10} emissions from the paved roads must be revised upwards to reflect a more realistic control level for the emissions mitigation actually proposed by the applicant. The Draft Permit must require monitoring and testing to verify that the planned fugitive dust controls are effective and achieve the assumed level of control. The recordkeeping requirements in the Draft Permit will not effectively demonstrate whether the fugitive dust control plan achieves the required level of stringency assumed in Power4Georgians' emission inventory calculations.

Inappropriate Application of the AP-42 Precipitation Mitigation Factor

Power4Georgians erroneously applied annual precipitation mitigation factors to estimate 24-hour PM_{10} emissions. The AP-42 emissions factor equations for paved and unpaved road emissions applies a correction factor to account for the effect of precipitation on PM_{10} emissions. Exs. 175 and 176. For unpaved roads, the equation estimates the number of days with 0.01 inches or greater of precipitation and assumes that no road dust emissions would occur on such days. Ex. 176. The paved road mitigation factor is more complex, but is also based on the number of days in a year with precipitation of 0.01 inches or more. Ex. 175.

However, it is inappropriate to use these AP-42 emissions factor equations to compute 24-hour PM_{10} emissions. The AP-42 calculation is based on the annual occurrence of precipitation. As a result, the precipitation correction factor is inappropriate for use in estimating the PM_{10} emissions over a 24-hour period. Based on the number of precipitation days reported for the Plant Washington site (120 per year), there are also 245 days in each year during which no precipitation occurs with no corresponding emissions mitigation. The 24-hour average PM_{10} modeling is supposed to be based on the peak 24-hour PM_{10} emissions period. Therefore, the emissions inventory for paved and unpaved roads should not include the precipitation correction factor when modeling PM_{10} emissions on a 24-hour basis. This error significantly underestimates the PM_{10} emissions from paved and unpaved roads for the Plant Washington 24-hour modeling.

The Draft Permit Improperly Uses Annualized Emissions

Information for the 24-hour PM_{10} Modeling Analysis

The Plant Washington AERMOD modeling incorrectly uses the same PM_{10} emissions rate for the annual modeling and 24-hour average modeling at several emission sources. The specific sources in question are:

Transfer Point for PRB Coal (A6, A8)
Transfer Point for Illinois Basin Coal (A7, A9)
Limestone Transfer Point (A10)
Bottom Ash Transfer Point (A3)

The emission calculations for each of the above point sources are expressed as a lb/ton emission factor times the annual production for each point. This is improper. Under normal operating conditions over the course of a year, daily emissions are not equally distributed with the same production and throughput for all 365 days in a calendar year. These emissions should instead be estimated based on the peak daily production for each emissions point. By failing to do so, the Draft Permit, relies on PM_{10} modeling results that underestimate actual peak daily PM_{10} emissions. Because Plant Washington's PM_{10} modeling results fall below EPA's SIL by such a slim margin, even a very small error undermines the basis for EPD's regulatory conclusion that PM_{10} concentrations are below the SILs.

The PM_{10} Emissions Data Are Incomplete

Because of the very small compliance margin for the 24-hour PM_{10} concentrations at Plant Washington, it is vitally important that the PM_{10} inventory is accurate and complete. Even minor PM_{10} emission sources from processes normally considered as insignificant activities must be

included in the PM_{10} modeling analysis because of the razor-thin margin of compliance. Any failure to include minor PM_{10} emissions could invalidate EPD's PM_{10} modeling conclusion.

Power4Georgians AERMOD modeling, therefore, must consider all PM_{10} emission sources associated with operation of Plant Washington, regardless of emissions magnitude. The Draft Permit depends on Power4Georgians' demonstration of PM_{10} compliance without the need for a more extensive cumulative emissions modeling study, and there is no margin of error in the current modeling.

But Power4Georgians has failed to account for all PM_{10} emission sources. Examples of minor emission sources that may contribute to the 24-hour PM10 impacts, but which are not factored into the PM_{10} source modeling inventory, include back-up generators, fire water pumps, and other emergency equipment. Although such equipment does not normally operate for extended periods (except during emergency situations), the associated emissions would occur periodically during testing of the unit. In this case, in particular, emissions associated with any equipment testing should be part of the worst-case 24-hour PM_{10} emissions inventory considered in the Plant Washington modeling. Operation of any emergency equipment for testing should also be limited in the final PSD permit based on the modeling assumptions used (otherwise the PM_{10} model results will be invalid).

Other potential PM_{10} emission sources include the coal stockpiles. In Power4Georgian's PM_{10} inventory, the emissions account for load-in to the stockpiles (via conveyor or other means) along with wind erosion. But there are no emissions associated with material load-out from the stockpiles. Thus, it must be assumed the stockpile load-out emissions are controlled via the baghouse emission points. The Draft Permit, however, does not require these controls. There are no fugitive emissions in the AERMOD model associated with any of the coal handling and transfer operations other than load-in to the stockpile which, to qualify as a valid assumption, would require total enclosure of any material transfers along the conveyor system. The Draft Permit includes no such requirements. The final PSD permit must explicitly require total enclosure of these coal transfer operations and establish a no visible emissions standard for these points as part of the required Best Available Control Technology (BACT) controls.

Additionally, the Plant Washington modeling analysis does not include any fugitive emissions associated with coal stockpile maintenance. This means that no equipment (such as graders or front-end loaders) will ever be used by Plant Washington for stockpile maintenance or coal handling. If any such emissions are expected by Plant Washington, the associated PM_{10} emissions must be included in the emissions inventory and any associated PM_{10} modeling. These types of emissions are common at locations that have open coal storage piles. Therefore, the final PSD permit must explicitly prohibit use of such equipment for coal handling and stockpile maintenance at Plant Washington unless the associated PM_{10} emissions are disclosed and modeled.

Finally, the Draft Permit lists the inactive stockpiles as having no PM_{10} emissions from wind erosion. The only modeled PM_{10} emissions are associated with loading coal to the inactive piles. Since Power4Georgians has assigned 100% control on wind erosion emissions to the inactive piles, the final PSD permit must establish a no visible emissions standard under the PM_{10} BACT requirements for these sources. If the Power4Georgians' mitigation truly achieves 100% control, no visible emissions should occur at any time from the inactive stockpiles.

Even so, however, at some point, Power4Georgians' certainly will reclaim coal from the inactive stockpiles for short time periods. The PM_{10} emissions associated with reclaiming coal from the

inactive piles have not been quantified in the Draft Permit. These types of activities at the inactive stockpiles will produce higher emissions compared to normal operations. The PM_{10} modeling must factor the potential emissions associated with periodic coal reclaim activities on the inactive stockpiles. Otherwise, the Plant Washington PSD permitting analysis is incomplete and inaccurate.

EPD Response: This allegation suggests that Plant Washington failed to conduct a worst-case analysis for PM_{10}. Georgia EPD will point out that, in accordance with 40 CFR 51, Appendix W, Section 8.1.2.a., Plant Washington did conduct an evaluation of several operating load conditions for the main boiler. This is the only substantial source likely to operate with alternate emissions characteristics on site. Other sources are likely to operate at 100% of capacity, or not operate. The final significance modeling was conducted with the main boiler operating at the worst-case (100% capacity) load.

The applicant assessed many fugitive PM_{10} emission rates in accordance with conservative Georgia EPD procedures used to evaluate crushed stone producing facilities. These rates were derived in accordance with conservative, EPA-approved emission factors and equations. As Greenlaw stipulates, Condition 7.17 of the draft permit requires the development and implementation of a Dust Suppression Plan. This Plan will address the means by which Plant Washington will demonstrate compliance with the modeled emission rates.

C. AERMOD Modeling of PM_{10} Emissions

In addition to the above-described errors in developing an appropriate PM_{10} emissions inventory, the PM_{10} modeling in this case was applied in a manner that violates AERMOD implementation guidelines and sound scientific practice. Ex. 170. As a result, the modeled predictions are inaccurate and do not form a valid basis for the Plant Washington PSD permitting decision.

Modeling Line Sources with the Volume Source Approach

The Plant Washington AERMOD modeling for paved and unpaved roads violates EPA guidance for modeling of line sources using multiple volume sources. Properly applied, AERMOD modeling using the volume source approach is an appropriate and common technique for modeling line source emissions, such as traffic on paved and unpaved roads. The Plant Washington PM_{10} modeling uses these methods to model both the paved road and unpaved road PM_{10} emissions.

The volume sources used to define the road emissions in the Plant Washington PM_{10} modeling are spaced at intervals of approximately 30.5 meters (100 feet) along the road. The modeling assumes that emissions will occur equally along the road, as all volume sources are assigned the same PM_{10} emissions for a given road segment. This approach, however, does not comply with EPA guidance for modeling of line sources using multiple volume sources. The recommended approach is illustrated in Figure 1-8 of the *Industrial Source Complex (ISC) Model User's Guide – Volume II*. Ex. 177. Since the spacing between individual volume sources is 30.5 meters (100 feet), the implied road width based upon EPA's guidance for line source represented by separated volume sources is 15.25 meters (50 feet). But this overstates the true road width for a typical two-lane road. By overestimating the road width, the model dilutes the PM_{10} emissions and, thus, underestimates modeled PM_{10} concentrations.

Additionally, the implied road width calculated from Power4Georgians' volume source spacing does not match the implied road width based on Power4Georgians' choice of the initial sigma-y parameter. The guidance for calculating the initial sigma-y is found in the *AERMOD Model*

User's Guide, Table 3-1. Ex. 178. Following this guidance, the initial sigma-y should be the center-to-center distance between volume sources divided by 2.15. *Id.* Based on Power4Georgians' volume source spacing, this would yield an initial sigma-y of 14.19 meters. But Power4Georgians' AERMOD input for initial sigma-y is 4.48 meters. Assuming that Power4Georgians derived this initial sigma-y value, then the implied road width would be 4.82 meters (15.8 feet), which is appropriate for a single lane of traffic, but not for a two-lane road.

Furthermore, Power4Georgians also applied an incorrect initial sigma-z parameter. Power4Georgians' set the initial sigma-z value at 1.7 meters, which following the applicable guidance in the Table 3-1 of the *AERMOD Model User's Guide,* results in an implied volume depth of 3.655 meters (12 feet). *Id.* This appears to be reasonable. But Power4Georgians then selected the PM_{10} source release height at 2.44 meters (8 feet). As a result, the selected release height is above the mid-point of the volume source. The proper modeling practice for a surface-based emission source is to use the mid-point of the volume as the release height, which in this case would generate a release height of 1.83 meters (6 feet). In fact, for a surface-based emission source, more emissions will occur in the lower part of the volume. Thus, the proper release height for grade-level or near grade-level roadway emission sources should be below the mid-point of the volume, not above it. This is significant, because a lower release height would produce higher PM_{10} modeled concentrations.

Instead, by selecting a release height above the mid-point of the volume source, the Plant Washington road dust emissions profile is actually lifted off the ground by 0.61 meters (2 feet). This is totally inappropriate for surface-based emission sources; it violates all technical, scientific, and regulatory protocols.

Overall, the volume source parameters Power4Georgians selected for the AERMOD modeling are internally inconsistent and violate established scientific practices and applicable regulatory guidance. These problems introduce an unknown error into the PM_{10} modeling analysis. Given the small margin for compliance (AERMOD predictions are 99% of the significant impact level) and also because road dust emissions appear to be a significant contributor to the modeled PM_{10} concentrations, EPD should direct Power4Georgians to correct the Plant Washington PM_{10} modeling and re-submit AERMOD modeling results prior to issuing a final PSD permit. If the new results increase the predicted PM_{10} concentrations, EPD should require Power4Georgians to conduct a cumulative PM_{10} modeling analysis before issuing a final PSD permit.

EPD Response: Plant Washington implemented the Georgia EPD procedures for modeling PM_{10} emissions from road traffic. Many states do not require modeling of PM_{10} emissions from road traffic over the 24-hour averaging period. By contrast, Georgia EPD has a specific modeling protocol for the assessment of such emissions. This protocol has been in effect with minor changes for the past 20 years.

EPA has established a Haul Road Workgroup, led by an EPA Regional Modeling Contact, supported by members of the EPA Office of Air Quality Planning and Standards Air Quality Modeling Group and members of the Clearinghouse for Emission Inventories and Emission Factors (CHIEF), and composed of state and local agency air dispersion modelers, to propose recommended methods for modeling road traffic emissions. Each dispersion modeler currently at Georgia EPD is a member of that workgroup. Several approaches are being assessed. The parameters under assessment include:

Haul Roads Workgroup Draft Source Parameters for Evaluation

Parameter	Range of Values					
Top of plume ht	0m	1m	3m	5m	7m	10m
Sigma z	Top of plume height / 2.15					
Sigma y	3m/2.15		10m/2.15		16m/2.15	
Release ht	Top of plume height / 2					

There are no specific recommendations at present. However, the table above indicates there is a wide range of potentially acceptable approaches under consideration.

The Draft Permit Modeling Violates EPA's *AERMOD Implementation Guide*

The *AERMOD Implementation Guide* contains EPA-recommended procedures for the application of AERMOD in regulatory analyses. Ex. 170. The Plant Washington PM_{10} modeling does not conform to the current EPA guidelines in the *AERMOD Implementation Guide*. Specifically, the *AERMOD Implementation Guide* includes appropriate modeling techniques for terrain-following plumes in sloping terrain. ***Id.*** For Plant Washington, many of the PM_{10} emission sources are fugitive in nature and are released at or near ground-level ***e.g.,*** paved and unpaved roadways. These emissions are the type of terrain-following emissions covered by the *AERMOD Implementation Guide*. ***Id.***

Under the AERMOD default option, PM_{10} concentration calculations are performed as the weighted sum of two plume states: 1) a horizontal plume state, where the plume elevation is calculated using the release height and plume rise effects; and 2) a terrain-responding plume state where the plume is assumed to be terrain-following. ***Id.*** According to the *AERMOD Implementation Guide*, for situations such as Plant Washington where the receptor elevations are lower than the base elevation of the source, AERMOD will predict pollutant concentrations that are lower than would be estimated from an otherwise identical flat-terrain situation. *Id*. The flat terrain modeling approach better represents situations with terrain-following plumes. In order to correct for these situations, the *AERMOD Implementation Guide* recommends applying AERMOD's non-default option to assume flat and level terrain. ***Id.*** But Power4Georgians did not follow this EPA modeling guidance in the Plant Washington PM_{10} modeling.

Based on the Plant Washington AERMOD output files, the worst-case receptor (with a predicted 24-hour average PM_{10} concentration of 4.951 μ/m3) occurred at a receptor with UTM coordinates of 337337 E by 3660911 N and an elevation of 132.98 meters. This receptor is below the base elevation for all Plant Washington PM_{10} emission sources (all Plant Washington emission sources were modeled as having a base elevation of 139.3 meters125). The *AERMOD Implementation Guide* anticipates these types of scenarios in which the worst-case receptor location is below the base elevation of all PM_{10} emissions sources, and Power4Georgians should have followed the appropriate EPA regulatory guidance, but did not. ***Id.*** Given the Plant Washington situation, where only some of the emission sources release terrain-following plumes, the correct approach would be to model PM_{10} using both the conventional (default) approach and the non-guideline approach according to the *AERMOD Implementation Guide*. *Id*. EPD should then use the worst-case AERMOD result to define the maximum PM10 concentrations.

EPD Response: Greenlaw alleges that Georgia EPD violated the AERMOD Implementation Guide (AIG) in that the AIG suggests, for model scenarios involving terrain-following plumes (fugitive dust plumes), the model might be run a second time assuming a flat terrain for sources and receptors.

Georgia EPD did not re-run the model using a flat terrain assumption for a number of reasons:

1. The terrain is not flat between the sources and receptors.

2. Modeling using a flat terrain artificially decreases the vertical distance between the receptors and the centerlines of stack-released plumes, artificially increasing the contribution from those sources, the plumes of which are not terrain-following.

3. On the day (March 25, 1989) of the maximum 24-hr PM_{10} concentration, the wind was blowing generally from the south for a substantial part of the day in order to cause that concentration. The surface roughness length used to process southerly winds at the Macon airport was 0.1 meters. By contrast, during operation of Plant Washington, such winds will have to pass around and/or over the main boiler building and other structures, which at present exist only on paper. For the stack-emitted plumes, the aerodynamic effects of these structures are simulated by the building downwash algorithm. The AERMOD model is unable to simulate the aerodynamic effects of such structures on fugitive sources. EPD believes that laminar, undisturbed southerly winds caused very conservative concentrations to be predicted for the fugitive sources north of the facility structures as originally modeled.

D. AERMOD Does Not Account for Secondary Particle Formation.

Although AERMOD is the approved EPA regulatory model for near-field (within 50 km) dispersion modeling analyses, AERMOD does not account for secondary particle formation. Based on data in EPD's files, Ex. 179, the secondary $PM_{2.5}$ concentrations associated with the Plant Washington emissions could exceed 4.0 μ/m3 (24-hour average) in the near-field. In light of the fact that AERMOD predicts primary PM_{10} concentrations at 4.951 μ/m3, any contribution from secondary particle formation will cause an exceedance of the 5.0 μ/m3 regulatory threshold. Therefore, EPD should consider the CAMx model results for secondary $PM_{2.5}$ and PM_{10} before issuing a final PSD permit. If modeling all PM_{10} emission sources and including secondary particle formation demonstrates that PM_{10} concentrations will exceed regulatory significance levels, EPD should require Power4Georgians to conduct cumulative impact modeling to include all nearby PM emissions sources.

EPD Response: At present, EPA has not promulgated final PSD Increments or Significant Impact Levels (SILs) for $PM_{2.5}$. Instead, PM_{10} modeling is used as a surrogate for $PM_{2.5}$ modeling. EPA published the proposed rule for "Prevention of Significant Deterioration (PSD) for Particulate Matter Less Than 2.5 Micrometers ($PM_{2.5}$) - Increments, Significant Impact Levels (SILs) and Significant Monitoring Concentration (SMC)" in FR 54149 (Vol. 72, No. 183) on September 21, 2007. The proposed rule states that "if the emissions increase of direct $PM_{2.5}$ emissions from the new stationary source alone or the net emissions increase of direct $PM_{2.5}$ emissions from the modification alone would cause, in all areas, air quality impacts less than the following amounts…[proposed SILs listed]". This proposed rule clearly states that only direct $PM_{2.5}$ should be considered when comparing to the $PM_{2.5}$ proposed SILs. In the near-field, there will be a much higher percentage of direct $PM_{2.5}$ compared to secondary $PM_{2.5}$ since it takes sufficient time for precursors to convert to secondary $PM_{2.5}$ species. Since the majority of project-emitted PM_{10} is primary, it would be appropriate to conclude that only direct PM_{10} should be considered when comparing to the current PM_{10} SILs. Assessing both PM_{10} and $PM_{2.5}$ SILs with only direct emissions is considered an appropriate technique since the SILs are assessed with project-only emissions which consist of predominantly direct PM constituents in the vicinity of the project site. Refined $PM_{2.5}$ modeling, which would include emissions of regional sources located at some distance from the project site, is to be assessed conservatively (see Model Clearinghouse Memo dated Feb 26, 2010) in order to

account for secondary PM species formed during transport over distances potentially ranging from 50 km or more.

E. Power4Georgians' PM_{10} Modeling Lacked Sufficient Receptors.

Additionally, Georgia regulations for PSD modeling for PM_{10} and $PM_{2.5}$ specify that receptors must be spaced less than 100 meters apart. Power4Georgians' PM_{10} modeling violated this requirement. The PM_{10} modeling input files includes only 90 fence line receptors. Computing the distance between Power4Georgians' receptor points (336599.6, 3660653) and (337166.2, 3660850), however, results in receptor spacing nearly 600 meters apart. The excessive spacing between receptors dilutes and underestimates PM_{10} impacts. EPD should require Power4Georgians to re-run its PM_{10} modeling using an appropriate number of fence line receptors spaced in accordance with Georgia air dispersion modeling requirements.

EPD Response: Power4Georgians' PM_{10} model receptors, along the site boundary, show no distance in excess of 100 m from one receptor to the next (Please see Figure in Appendix D). Greenlaw must not be evaluating adjacent receptors.

F. Conclusion

Power4Georgians' PM_{10} dispersion modeling suffers from fundamental errors involving the selection of improper PM_{10} emissions data for model input and from basic errors in the application of AERMOD. Additionally, the Plant Washington PM_{10} modeling fails to conform to accepted scientific practice and applicable EPA regulatory guidelines for use of AERMOD. In this case, any modeling error is fatal to the Draft PSD permit. The EPA PM_{10} SIL is 5.0 μ/m3. The Plant Washington AERMOD dispersion modeling predicts a maximum 24-hour average PM_{10} concentration of 4.951 μ/m3. Thus, the predicted concentration from AERMOD is 99% of the regulatory significant impact threshold. Correcting the emissions and modeling errors described above would yield a different conclusion regarding compliance with the significant impact threshold for PM_{10}. Given the small compliance margin based on the current Plant Washington PM_{10} modeling analysis, even small errors would alter EPD's regulatory conclusion and all such modeling errors must be corrected before EPD can legitimately render a PSD regulatory decision.

Therefore, EPD should direct Power4Georgians to correct the errors summarized above and provide a revised PM_{10} modeling analysis which should include a comprehensive cumulative modeling study for PM_{10} emissions including nearby emission sources for public review and comment before issuing a final PSD permit for Plant Washington.

EPD Response: Please refer to Division's response to GreenLaw Comment 2, Sections B through E.

G. $PM_{2.5}$ Emissions Will Exceed Significant Impact Levels.

The Draft Permit ignores record evidence that Plant Washington's emissions of particulate matter (PM) pollution exceed significant impact levels (SILs) and will cause or exacerbate $PM_{2.5}$ nonattainment. There is no question that Plant Washington's projected emissions of PM pollution trigger full PSD review. The PSD review process for PM require, among other things, air quality modeling to determine if increased ambient PM concentrations due to emissions from the facility will exceed PSD SILs. The applicable SILs for PM are listed in Table 1, below.

Table 1 USEPA Prevention of Significant Deterioration Significant Impact Levels		
Pollutant	Averaging Period	Significant Ambient Impact Level 3 (g/m3)
$PM_{2.5}$	24-hour	1.20
	Annual	0.30
PM_{10}	24-hour	5
	Annual	1

EPD Response: The SILs listed in Table 1 for $PM_{2.5}$ are not promulgated SILs. EPA has proposed a range of $PM_{2.5}$ SILs. The lowest proposed annual SIL was 0.30 μg/m^3 while the highest was 1.0 μg/m^3. The lowest proposed 24-hour SIL was 1.20 μg/m^3 while the highest was 5.0 μg/m^3. Table 1 only lists the lowest proposed values. Since, $PM_{2.5}$ SILs have not been promulgated yet, they should not be considered for regulatory purposes

In an effort to demonstrate compliance with this PSD modeling requirement, Power4Georgians used EPA's AERMOD model to determine maximum 24hr and annual PM impacts for Plant Washington. According to the results of the screening model used to justify the Draft Permit, listed in Table 2 below, the projected $PM_{2.5}$ and PM_{10} concentrations would not exceed the PSD SILs.

Table 2 AERMOD Screening Run Model Results for Plant Washington		
PM 24-hour Results		
Year of Model Run	Maximum $PM_{2.5}$ (μg/m3)	Maximum PM_{10} (μg/m3)
1987	1.17	3.19
1988	1.08	3.52
1989	1.01	4.57
1990	1.11	2.97
1991	1.10	3.25
PM Annual Results		
Year of Model Run	Maximum $PM_{2.5}$ (μg/m3)	Maximum PM_{10} (μg/m3)
1987	0.15	0.57
1988	0.14	0.65
1989	0.16	0.71
1990	0.15	0.65
1991	0.15	0.51

But these results do not fully account for Plant Washington's $PM_{2.5}$ impacts and do not provide an adequate basis for the Draft Permit.

EPD Response: Georgia EPD followed EPA modeling guidance to obtain the values listed in Table 2.

In fact, the full body of evidence in the record refutes Power4Georgians' claim that Plant Washington's projected $PM_{2.5}$ and PM_{10} concentrations will not exceed the PSD SILs. The record includes a draft PowerPoint presentation by Georgia EPD describing CAMx modeling results for Plant Washington, which demonstrates that $PM_{2.5}$ impacts from Plant Washington will exceed SILs and will cause or exacerbate $PM_{2.5}$ nonattainment problems. Ex. 179. Figures 1, 2, and 3, below, are taken from that presentation. These CAMx modeling results demonstrate that emissions from Plant Washington will produce annual and 24-hour $PM_{2.5}$ increases in large areas

that will be greater than PSD SILs, with maximum projected 24-hour $PM_{2.5}$ impacts of 7 μg/m3 near the plant.

EPD Response: Eularian photochemical grid-based models (like CAMx) should not be applied the same way that non-reactive dispersion models (like AERMOD) would be applied. The modeled uncertainties associated with CAMx are much larger than the modeled uncertainties associated with AERMOD. EPA modeling guidance (Guidance on the Use of Models and Other Analyses for Demonstrating Attainment of Air Quality Goals for Ozone, $PM_{2.5}$, and Regional Haze, EPA-454/B-07-002, April 2007) states that the absolute model output from photochemical grid-based models should not be used directly for evaluating impacts. Instead, the model results should be used in a relative fashion by scaling the speciated $PM_{2.5}$ observations by relative response factors (RRFs), where the RRF is the ratio of modeled ambient concentration with Plant Washington divided by the modeled ambient concentration without Plant Washington. This procedure will minimize the biases caused by model over/under predictions. In addition, the Guidance states that multiple days (minimum of 10 days) should be used when evaluating emission impacts. The reason for using multiple days in the analysis is because the uncertainties associated with averaging multiple days is much smaller than the uncertainty associated with a single modeled day.

The Technical Support Document (TSD) prepared by Georgia EPD to support the Draft Permit presents only a limited subset of these data. But the information in the TSD is incomplete and, as a result, mistaken, because it omits important and valid $PM_{2.5}$ modeling that refutes the conclusions that underpin the Draft Permit. The TSD (*See* Table 2, App. E) does not discuss Plant Washington's projected near-field impacts on ambient $PM_{2.5}$ concentrations. Instead, the TSD provides information on $PM_{2.5}$ only for the more remote Federal Reference Method (FRM) monitoring locations, and then only for mean annual $PM_{2.5}$ levels the TSD does not present projected changes in 24-hour $PM_{2.5}$ concentrations.

EPD Response: EPA modeling guidance (EPA-454/B-07-002, April 2007) for Eularian photochemical grid-based models (like CAMx) states that the Speciated Model Attainment Test (SMAT) should be applied to quantify emission impacts. This test requires that the model results be used in a relative fashion by scaling the speciated $PM_{2.5}$ observations by relative response factors (RRFs). Therefore, only grid cells that contain FRM monitoring locations can be evaluated. Other grid cells that do not have a FRM monitoring location do not have enough information to be evaluated. Any assessment of near-field impacts on ambient $PM_{2.5}$ concentrations in grid cells that do not contain measurements and are based absolute modeled impacts on a single day would be unreliable and highly uncertain.

The TSD did present 24-hour $PM_{2.5}$ impacts at the Sandersville FRM monitor. The daily $PM_{2.5}$ concentration increase due to Plant Washington was estimated at the Sandersville monitor (13-303-0001). This monitor is the closest monitor and represents the worst case impacts of 0.407 $\mu g/m^3$.

CAMx modeling results demonstrate that predicted $PM_{2.5}$ increases from Plant Washington exceed EPA's SILs and exacerbate nonattainment problems in existing nonattainment areas. Ex. 179. On September 21, 2007, EPA proposed SILs for average 24-hour $PM_{2.5}$ impacts ranging from 1.2 to 5.0 μ/m3. Figure 2 from the CAMx modeling presentation demonstrates that modeled 24-hour $PM_{2.5}$ increases from Plant Washington would cause impacts ranging from 1.2 to 2.0 μ/m3 in Newton and Henry Counties in the Greater Atlanta $PM_{2.5}$ non-attainment area and also a small sliver of Bibb County in the $PM_{2.5}$ non-attainment area near Macon. *Id.* Based on the lower range of the 2007 SILs proposed by EPA, the Plant Washington emissions would be predicted to have a significant impact on $PM_{2.5}$ non-attainment in areas already designated as exceeding the $PM_{2.5}$ NAAQS.

EPD Response: Please see comment above regarding the use of Eularian photochemical grid-based models (like CAMx) to quantify emission impacts at locations that do not have any $PM_{2.5}$ measurements.

> Additionally, according to the readings contained in Georgia's *2007 Georgia Ambient Air Surveillance Report*, Sandersville exceeded the annual mean $PM_{2.5}$ NAAQS for the 3-year average for the periods 2004-06 and 2005-07. The predicted increase in $PM_{2.5}$ attributable to Plant Washington (above 0.4 μ/m3) would be significant at the lower end of EPA's 2007 proposed annual SIL, which ranges from 0.3 to 1.0 μ/m3. Based on EPA guidance, if a source has a significant impact at a non-attainment receptor, that impact must be cured either through reductions in emissions at the source in question or from a neighboring source. Despite evidence that Plant Washington will have a significant impact on a non-attainment receptor, however, the Draft Permit does not require additional $PM_{2.5}$ emissions reductions from Plant Washington to cure those impacts, and the record does not demonstrate that additional reductions will be required from neighboring sources.

EPD Response: This comment has confused the 0.407 $\mu g/m^3$ value reported in the TSD as an annual impact when it is actually a 24-hour (daily) impact. This 24-hour impact is well below any of EPA's proposed SILs for $PM_{2.5}$ (range from 1.2 $\mu g/m^3$ to 5.0 $\mu g/m^3$). Therefore, there is no "evidence that Plant Washington will have a significant impact on a nonattainment receptor". Furthermore, the Sandersville monitor (13-303-0001) is not a nonattainment receptor since it is not located in a nonattainment area. The Sandersville monitor is currently showing attainment with the $PM_{2.5}$ ambient air quality standards.

> Moreover, the large maximum 24-hour increase in $PM_{2.5}$ modeled by CAMx in the immediate vicinity of the plant could create an additional $PM_{2.5}$ 24-hour non-attainment area in Sandersville. The current 24-hour standard for $PM_{2.5}$ levels in the ambient air is 35 μg/m3. The highest 24-hour PM2.5 measurement recorded at Sandersville in 2008 was 29.8 μg/m3, which is 5.2 μg/m3 below the 35 μg/m3standard. Meanwhile, the CAMx modeling results indicate that Plant Washington would contribute up to an additional 7.0 μ g/m3, thus exceeding the PM2.5 NAAQS on high PM days. Ex. 179.

EPD Response: Please see comment above regarding the use of Eularian photochemical grid-based models (like CAMx) to quantify emission impacts at locations that do not have any $PM_{2.5}$ measurements. The TSD presented 24-hour $PM_{2.5}$ impacts at the Sandersville FRM monitor following EPA's modeling guidance (EPA-454/B-07-002, April 2007) and using SMAT and RRFs. The daily $PM_{2.5}$ concentration increase due to Plant Washington was estimated at the Sandersville monitor (13-303-0001). This monitor is the closest monitor and represents the worst case impacts of 0.407 $\mu g/m^3$. $PM_{2.5}$ impacts of 0.407 $\mu g/m^3$ (24-hour basis) will keep the Sandersville monitor well below the NAAQS.

> But the Draft Permit does not account for these important CAMx modeling results. The Draft Permit ignores CAMx results that show Plant Washington's significant modeled $PM_{2.5}$ impacts on existing and potential nonattainment areas and relies, instead, on AERMOD results. This constitutes error in this case. The discrepancies between the AERMOD and CAMx modeled $PM_{2.5}$ impacts result from:
>
> 1. Inappropriate meteorological data used in the AERMOD modeling (discussed above); and,
>
> 2. The fact that AERMOD does not properly model secondary $PM_{2.5}$ impacts, which are much larger than the primary $PM_{2.5}$ impacts (Figure 3, below).

In light of these discrepancies and the greater predictive values CAMx modeling affords under these circumstances, it would be arbitrary, capricious, and not in accordance with the facts or the law to finalize the Draft Permit, which neither accounts for nor cures the CAMx modeled demonstration that Plant Washington's $PM_{2.5}$ impacts would exceed EPA's SILs and cause or exacerbate existing nonattainment for $PM_{2.5}$ pollution.

EPD Response: Georgia EPD followed EPA modeling guidance when available. Currently, there are no requirements for Georgia EPD to evaluate $PM_{2.5}$ impacts as part of the PSD permitting process. Georgia EPD did an in-house modeling exercise with the CAMx model to provide additional information beyond the information required by EPA. These modeling results were compared to EPA's proposed $PM_{2.5}$ SILs as a reference to give in-house guidance. Georgia EPD does not believe this project will exceed EPA's proposed SILs nor cause or exacerbate existing nonattainment for $PM_{2.5}$ pollution.

H. Class I Area Impact Modeling

Introduction

Power4Georgians relied on CALPUFF dispersion modeling to assess the impacts of Plant Washington emission sources to PSD Class I areas located more than 50 km downwind of the proposed source. CALPUFF is the EPA approved long-range transport dispersion model for receptors located more than 50 kilometers (km) from emissions sources. *See* Ex. 172. In particular, Power4Georgians used CALPUFF modeling to assess the impact of Plant Washington on the following PSD Class I areas located more than 50 km downwind:

Great Smoky Mountains National Park (NC/TN)
Cohutta Wilderness ((GA/TN)
Shining Rock Wilderness (NC)
Joyce Kilmer/Slickrock Wilderness (NC)
Cape Romain National Wildlife Refuge (SC)
Wolf Island National Wildlife Refuge (GA)
Okefenokee National Wildlife Refuge (GA)

As discussed more fully below, the CALPUFF modeling results reported for Plant Washington are inaccurate and invalid, particularly for visibility impacts to Class I areas. When the modeling errors documented below are corrected, the modeled visibility impacts will exceed the levels reported in the Plant Washington PSD application. As a result, EPD should not finalize the Draft Permit for Plant Washington until the visibility modeling is corrected and the revised results are subject to appropriate agency and public review.

Particle Speciation Profile

Following current Federal Land Manager (FLM) guidance for application of CALPUFF for visibility modeling analyses, the emissions inventory for the visibility modeling should include those particulate matter (PM) species that have significantly greater visibility impact as compared to standard PM emissions. FLM guidance for preparing the particle speciation emissions inventory is provided at the National Park Service website. Ex. 180.

For coal-fired boilers like that proposed for Plant Washington, the particle speciation approach requires consideration of both the filterable and condensable fraction of the PM_{10} emissions. Based on the proposed emission limits from the Draft Permit, Plant Washington will have

filterable PM_{10} emissions of 0.012 lb/MMBtu and condensable PM_{10} emissions of 0.006 lb/MMBtu. Thus, the condensable fraction will account for 33% of the total PM_{10} emissions from Plant Washington.

The filterable fraction of the emissions includes a small fraction of unburned fuel, which should be input to CALPUFF as elemental carbon (EC). EC has a light extinction coefficient of 10, compared to 1 for fine particulate matter (FPM), which means that the EC emissions have visibility impacts that are 10 times greater than FPM for an equal ambient pollutant concentration. The FLM guidance for coal-fired boilers directs sources to consider 3.7% of the filterable particulate matter fraction as EC. *Id.* Using the Plant Washington emissions data (0.018 lb/MMBtu total PM, which equates to 18.82 grams per second), the EC emissions following the FLM guidance should be 0.47 grams per second (g/sec). *Id.* But Power4Georgians quantified the EC input at 0.188 g/sec for the Plant Washington modeling. This error greatly under-predicted Plant Washington's Class I visibility impacts.

In the condensable fraction, the PM emissions are broken down into sulfates (with a light extinction coefficient of 3 times f(RH)) and secondary organic aerosols (SOA) (with a light extinction coefficient of 4). The FLM guidance designates the inorganic condensable PM mass as sulfate and the organic condensable PM mass as SOA. *Id.* In the absence of other data, the FLM recommends a condensable PM ratio of 80% inorganic (sulfate) and 20% organic (SOA). *Id.* For the Plant Washington modeling, the sulfate emissions can be estimated directly using the permit limit for sulfuric acid mist (0.004 lb/MMBtu). This limit equates to approximately two-thirds of the condensable PM total. Adjusting for the molecular weight difference between sulfate (SO_4) and sulfuric acid (H_2SO_4), the calculated sulfate emissions are 4.10 g/sec. This modeled value for sulfate appears correct in the Plant Washington CALPUFF modeling.

But Power4Georgians has not included any SOA in the particle speciation profile for Plant Washington. To comply with FLM requirements for Class I modeling, Power4Georgians should have designated all remaining condensable PM not accounted for as sulfate as SOA in the visibility modeling. *Id.* The calculated SOA emissions under this approach would be 2.17 g/sec.

Based on the PSD permit application, Plant Washington appears to have justified not modeling SOA emissions based on a comment about the difficulty of modeling SOA made in the VISTAS modeling protocol. This is not an acceptable response. Ignoring the potential adverse visibility effects of these emissions is contrary to the current FLM guidance on visibility modeling. *Id.* Furthermore, the CALPUFF data cited in the revised draft Georgia State Implementation Plan (SIP) for regional haze135 demonstrates that SOA emissions are routinely included in the Best Available Retrofit Technology (BART) modeling for Georgia emission sources. As such, Power4Georgians' failure to include SOA emissions is contrary to recent Georgia EPD practice for application of CALPUFF in visibility assessments.

Thus, as discussed above, the Plant Washington CALPUFF modeling contains two significant emissions inventory errors failure to account for properly EC and SOA emissions in the visibility modeling which result in an underestimation of visibility impacts at nearby Class I PSD areas. The EC and SOA emissions both have more pronounced impact on visibility degradation compared to other pollutants, so properly accounting for these emissions is vital to an accurate assessment of visibility impacts at nearby Class I areas. EPD should require Power4Georgians to correct the PM speciation profile used in the CALPUFF modeling and update the visibility impact modeling for nearby Class I areas. Any updated CALPUFF modeling should be made available for public notice and comment prior to issuing a final PSD permit.

Background Ammonia Concentration

Selecting the correct background ammonia concentration is one of the most important inputs to the CALPUFF model. Ex. L; *see* CALPUFF Input Group 11. Power4Georgians selected a background ammonia value of 0.5 parts per billion (ppb) for the Plant Washington modeling. Power4Georgians apparently based this selection on guidance from the *Interagency Workgroup on Air Quality Modeling (IWAQM) Phase II Report*, Ex. 181, which suggests a background ammonia concentration based on the land use of the area. A value of 0.5 ppb corresponds to areas described as forested by IWAQM. *Id.*

Power4Georgians' PSD application did not present any meaningful discussion or other technical information to support its choice of 0.5 ppb as a background level for ammonia. In fact, there is no technical basis to support this choice. Aside from some Class I PSD areas in the Appalachian Mountains, there is no technical basis for selecting predominantly forested as the land use for the CALPUFF modeling. A more appropriate choice for the background ammonia concentration using the IWAQM Phase II Report is 10 ppb, which represents areas described as grasslands. *Id.* Agricultural lands, the land use category that best describes the majority of the Plant Washington CALPUFF modeling domain (particularly to the east and south of the proposed project site), most closely correlates to the grasslands designation with a 10 ppb ammonia background value pursuant to IWAQM. *Id.*

Actual ambient ammonia measurements collected in North Carolina also support selecting a higher background level for ammonia. Ex. 182. These measurements indicate that the background ammonia concentration averages between 2 and 15 ppb. The 10 ppb background ammonia suggested by the IWAQM Phase II Report falls in the mid-range of available background ammonia measurements from North Carolina.

As shown above, Power4Georgians should have selected a background ammonia value of 10 ppb, rather than 5 ppb, following the IWAQM Phase II Report. EPD should require Power4Georgians to repeat the CALPUFF modeling using 10 ppb as the appropriate background ammonia level. Using this higher, more representative background ammonia concentration will demonstrate more severe Class I visibility impacts from Plant Washington.

Background Visibility Conditions

The visibility modeling analysis also requires specification of the background visibility conditions. Use of the correct background visibility is critical because the impact of the project in question is determined as a percentage change in visibility relative to the selected background. Any error in estimating the background concentrations translates into error in assessing the project impacts.

Power4Georgians' selected its visibility background conditions for the CALPUFF visibility modeling from Table V.1-2 of the draft *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Guidance Phase I Report – Revised June 2008* (FLAG 2008). It is important, however, that the background concentrations listed in the draft FLAG 2008 guidance are intended for use in the modified IMPROVE equations for calculating the reconstructed aerosol extinction. But the modified IMPROVE equations have not yet been adopted into the Method 2 and Method 6 calculations Power4Georgians used in its CALPUFF modeling. As a result, Power4Georgians has mixed apples and oranges in performing the visibility calculations, thereby introducing an unknown rate of error into the analysis.

Instead, EPA's, *Guidance for Estimating Natural Visibility Conditions under the Regional Haze Rule*, *EPA-454/B-03-005, September 2003,* Ex. 183, specifies the proper method for establishing the natural background visibility for input to the CALPUFF model. Power4Georgians should have, but did not, follow this EPA guidance to establish the background visibility for the Plant Washington CALPUFF modeling.

Commenters analyzed the effects of this error at the Cape Romain National Wildlife Refuge, which is the Class I area which showed the highest visibility impacts from Plant Washington in the PSD permit application, to determine the direction of the error. For the CALPUFF inputs at Cape Romain, the errors in establishing the background visibility would overestimate the background light extinction compared to the EPA guidance. *Id.* Since Power4Georgians' approach overestimated background visibility, the CALPUFF results underestimated the resulting visibility impacts (measured as a percent change against the background visibility). *Id.*

Additionally, Power4Georgians improperly used the annual mean background visibility in the Plant Washington modeling. Instead, Power4Georgians should have used the average for the cleanest 20% days to establish the background visibility in order to quantify the visibility impacts on the clearest days in the visibility record where the impacts from other anthropogenic emission sources are minimal. The Clean Air Act's national visibility goal is to remedy existing visibility impairment. When Clean Air Act measures have achieved this goal, background conditions represented by the cleanest 20% days will represent actual background conditions. By not assessing the Plant Washington impacts against targeted future conditions that represent a clean environment, it is not possible to accurately assess whether or not the Plant Washington emissions will interfere with attaining the Clean Air Act's national visibility goal.

Modeling of Ammonia as a Pollutant

Power4Georgians incorrectly included ammonia as a specific pollutant in the CALPUFF modeling for Plant Washington. Modeling ammonia as a specific pollutant introduces uncertainty into the model's use of ammonia concentrations to establish the ambient background concentration. Under the POSTUTIL program, the user has the option of selecting the modeled ammonia concentrations as the background value for model calculations in lieu of the background data entered through Input Group 11.

Using modeled ammonia concentrations for ambient ammonia background will significantly understate the background ammonia level. This, in turn, will significantly underestimate the resulting sulfate and nitrate formation and result in significant underestimates of the associated visibility and deposition impacts from Plant Washington emissions.

The Plant Washington PSD permit record contains no POSTUTIL files that would allow a reviewer to assess whether or not the CALPUFF visibility modeling was performed using the proper ammonia background levels (the only POSTUTIL files found in the permit record appear related to the deposition modeling). EPD should require Power4Georgians to provide evidence that the CALPUFF modeling calculations used the appropriate ammonia background levels. Otherwise, the CALPUFF modeling results for visibility impacts are suspect. Alternatively, EPD could direct Power4Georgians to provide a case-study where the modeling was performed without the ammonia emissions input in order to verify that the results would not change from the CALPUFF modeling submitted with the PSD permit application.

Visibility Impacts Were Not Evaluated Against the Proper Metric

The record developed in support of the Draft Permit does not contain information required by currently applicable guidance to allow the FLM to make an informed decision regarding Plant Washington's potential air quality impacts to Class I areas. The Federal Land Managers' Air Quality Related Values Workgroup (FLAG) 2000 Guidance currently applies to major source permitting that may adversely affect air quality related values in Class I areas. Ex. 184.

The FLAG 2000 guidance directs Power4Georgians to provide the CALPUFF visibility results for all modeling periods, indicating the magnitude and frequency of any visibility impacts above established thresholds. *Id.* The guidance further requires that Power4Georgians provide the number of days in each modeling period that may exceed a 5% and 10% threshold for change in light extinction. *Id.* Power4Georgians has not complied with this requirement for Plant Washington. As a result, the record does not afford the appropriate FLMs the mandated opportunity to review the magnitude and frequency of the predicted impacts to ascertain whether the proposed emissions would adversely impact the Class I areas in question.

Instead, the PSD permit application and the accompanying EPD technical review only report data for the 98th percentile visibility impacts for the Class I areas of interest. The 98th percentile represents the eighth-highest visibility impact in each year. The 98th percentile visibility metric was established for the Best Available Retrofit Technology (BART) applicability modeling to assess whether an existing emission source is required to undergo BART review. While appropriate for BART, the 98th percentile visibility metric currently is inappropriate for PSD permitting such as that at issue here.

By reporting only the 98th percentile visibility impact, Power4Georgians has unilaterally decided that potential impacts to visibility that occur up to 2% of the time (seven days per year) is an acceptable level of visibility impact at each Class I area. This approach violates the currently applicable FLAG 2000 visibility modeling guidelines. Power4Georgians must report all visibility impacts to the Class I areas in question in the PSD permit application in order to permit the appropriate FLMs to make informed and technically sound judgments about the potential visibility impacts from the Plant Washington project. The Clean Air Act has reserved to the appropriate FLMs the regulatory authority for judging visibility impacts to Class I areas. Power4Georgians' modeling approach inappropriately usurps this authority.

Conclusions

The CALPUFF modeling for Plant Washington contains several errors that undermine the validity and accuracy of the modeling results, particularly for Class I visibility impacts. EPD should require Power4Georgians to revise and re-run the CALPUFF modeling to: 1) use the FLM-recommended particle speciation profile that properly accounts for EC and SOA emissions; 2) use an appropriate background ammonia concentration (10 ppb) based on the proper land use category for the CALPUFF modeling domain; 3) use the approved EPA methodology to determine the background visibility conditions for the cleanest 20% days; and 4) provide CALPUFF results without explicitly modeling ammonia emissions.

Unless and until the CALPUFF modeling is revised and subjected to additional public comment and review, the CALPUFF results reported in the Plant Washington PSD application are inaccurate and significantly underestimate impacts to Class I areas.

EPD Response: The applicant contacted the US Fish & Wildlife Service (US F&WS) and the US Forest Service (USFS) air permit application reviewers. The US F&WS air permit reviewers were asked on three occasions in early 2009 if they intended to review the Plant Washington application. No response is in EPD's record. The USFS conducted an assessment of Plant Washington's Class I area impacts at the Shining Rock Wilderness Area in North Carolina (the closest Class I area of USFS purview). The USFS sent Georgia EPD a letter confirming their finding of no significant impact.

Georgia EPD modeling staff took these actions as an indication that the project was acceptable as submitted to these Federal Land Managers.

I. Mercury Deposition Modeling

Introduction

Plant Washington is located in close enough proximity to the Upper Ogeechee River Watershed that its air emissions of mercury will cause measurable impairment of water quality in those waters. *See* Exs. 185 and 186. The Ogeechee River to the east of Sandersville is already listed as impaired for mercury; these waters are on the Section 303(d) list due to mercury concentrations in excess of water quality standards and currently are subject to Total Maximum Daily Load limitations for mercury. Exs. 187 and 188. Nevertheless, Power4Georgians did not provide mercury deposition modeling to demonstrate the effects of Plant Washington's emissions on this mercury impaired watershed. This omission undermines the basis for the Draft Permit.

Commenters have independently conducted an analysis and provide with these comments the results of mercury deposition modeling for Plant Washington. The methods, parameters, and results of this modeling, discussed below, demonstrate that Plant Washington will add mercury pollution to the already impaired waters of the Upper Ogeechee River watershed. Based on this fact alone, EPD should deny the Draft Permit and require Power4Georgians to further control and demonstrate that Plant Washington's mercury emissions will not contribute to mercury impairment of the Upper Ogeechee River watershed.

Modeling Approach

Commenters' mercury deposition modeling uses EPA's AERMOD model, and follows the same technical approach outlined in the Trinity Consultants report for Santee Cooper's proposed super-critical pulverized coal-fired power plant along the Pee Dee River near Florence, South Carolina. Ex. 189. Although most of the mercury emitted from coal-fired power plants deposits within 300 kilometers (km) of the emission source, Ex. 185, and the AERMOD model is generally applicable at distances closer than 50 km from the emission source, AERMOD, is listed by EPA as a guideline air dispersion model in 40 C.F.R. § 51 App. W, and is an appropriate dispersion model for this modeling exercise. The design parameters of Commenters' model calculations were limited to areas of the Upper Ogeechee River watershed that are within 50 km of the proposed Plant Washington site. This covers approximately 70% of the watershed area. Ex. 186.

Modeling receptors were placed on a Cartesian grid within the boundaries of the Upper Ogeechee River watershed at a horizontal spacing of 2 km. Receptor elevations were determined using the AERMAP processor, which is part of EPA's AERMOD modeling system, and digital elevation (DEM) files for 7.5 degree quadrangles.

Commenters used meteorological data consisting of five years (1987-1991) of surface weather observations collected by the National Weather Service (NWS) at the Middle Georgia Airport

located near Macon, GA, coupled with upper air sounding data from the NWS site at Centreville, AL. Power4Georgians used these same data for the Plant Washington PSD permit modeling.

Mercury Emissions Information

Commenters based mercury emissions inputs on the data contained in the Plant Washington PSD permit calculations. Based on these figures, the total mercury emissions for Plant Washington are estimated at 128 lb/year (0.00184 grams/sec).

Mercury speciation plays an important role in deposition modeling. Coal-fired boilers emit three species of mercury:

Gaseous elemental mercury – Hg(0) Elemental
Reactive gaseous mercury – Hg(II) RGM
Particulate mercury – Hg(p)

Mercury emissions speciation fractions depend on a number of factors including the type of coal being combusted and the pollution control systems in place at the coal-fired boiler. The Pee Dee Plant in South Carolina is similar in many respects to the proposed Plant Washington facility (super-critical pulverized coal-fired boilers with wet flue gas desulfurization), so Commenters used the speciation data from the Trinity Consultants report, Ex. T, as listed below.

Hg(particulate)	Hg(II) RGM	Hg(0) Elemental
0.36%	20.06%	79.58%

For the Plant Washington deposition modeling, Commenters simplified the mercury emissions profile to 80% Hg(0) Elemental and 20% Hg(II) RGM. Commenters did not separately consider particulate mercury in the analysis due to the small quantity of emissions.

The emissions and other plant data used in the Plant Washington mercury deposition modeling are summarized below.

Parameter	**Main Stack**	**Auxiliary Boiler**
Stack Height (m)	137.16	27.43
Stack Diameter (m)	9.14	1.52
Stack Velocity (m/sec)	18.55	19.8
Stack Temperature (deg K)	333	408
Hg(II) RGM Emissions (g/sec)	3.51E-4	1.82E-5
Hg(0) Elemental Emissions (g/sec)	1.39E-3	7.22E-5

Deposition Parameters

The AERMOD deposition calculations require data for various physiochemical parameters, described in the table below.

Deposition Parameter	Hg(II) - RGM	Hg(0) – Elemental
Diffusivity in Air (Da), cm2/sec	0.06	0.07
Diffusivity in Water (Dw), cm2/sec	5.20E-06	3.00E-05
Cuticular Resistance (s/cm)	1.00E+05	1.00E+05
Henry‘s Law Constant (H), Pa-m3/mol	7.19E-05	1.50E+02

The above data match those used in the Trinity Consultants report for the Pee Dee Plant in South Carolina. Ex. T.

Gaseous deposition is also a function of the available surface area for uptake of the pollutant in question. AERMOD defines the important parameters in terms of a seasonal vegetation category, which can vary by month. The inputs for the Plant Washington modeling are summarized below.

Month	Seasonal Category	Seasonal Code
January	Late Autumn after frost and harvest, or winter with no snow	3
February	Late Autumn after frost and harvest, or winter with no snow	3
March	Transitional Spring (partial green coverage, short annuals)	4
April	Transitional Spring (partial green coverage, short annuals)	4
May	Midsummer with lush vegetation	1
June	Midsummer with lush vegetation	1
July	Midsummer with lush vegetation	1
August	Midsummer with lush vegetation	1
September	Midsummer with lush vegetation	1
October	Autumn with unharvested cropland	2
November	Autumn with unharvested cropland	2
December	Late Autumn after frost and harvest, or winter with no snow	3

Finally, land use affects gaseous deposition by defining (among other things) the leaf area index (LAI), which is the ratio of leaf surface area divided by the ground surface area. In the AERMOD model, the land use category can vary by direction from the emission source. However, for the

Plant Washington modeling, Commenters treated the entire modeling domain as agricultural lands (Land Use Category 2), which best corresponds to the predominant land use in the applicable modeling domain.

Deposition Modeling Results

Commenters ran the AERMOD model separately to calculate the deposition for Hg(II) RGM and Hg(0) Elemental. *See* Ex. 191. Commenters then calculated total mercury deposition as the sum of the individual species. *Id*. The AERMOD model normally returns the deposition result in units of grams per year per square meter. In order to provide for added precision in the modeling result, Commenters input the emissions as nanograms per second, which resulted in the deposition values from AERMOD in nanograms per year per square meter. *Id.*

To assess the total deposition over the Upper Ogeechee River watershed, Commenters averaged the AERMOD results over all receptors (each receptor represents a 4 square km area of the watershed). *Id.* Commenters were then able to calculate the total mercury deposition as the average deposition value multiplied by the total area of the watershed. *Id.*

The AERMOD model result averaged over all receptors computed to 1.356E-02 micrograms of mercury per square meter per year. *Id.* The modeled area of the Upper Ogeechee River watershed is approximately 2,816 square km or 2.816+E09 square meters. Thus, the annual mercury deposition from Plant Washington with the potential to reach already impaired waters of the Upper Ogeechee River is 38.2 grams. *Id.*

The current TMDL for mercury in the Upper Ogeechee River is 1.7 nanograms per liter (parts per trillion). Ex. 188. Using U.S. Geological Survey National Water Information System stream flow data, the minimum annual average stream flow for the Ogeechee River at Midville, GA is approximately 600 cubic feet per second, which equates to about 17 cubic meters per second. At this stream flow, the annual water volume in the river would be 5.36E+11 liters.

Based on these parameters, Plant Washington‘s mercury emissions would increase the average mercury concentration in the Ogeechee River by 0.071 nanograms per liter, representing 4% of the total allowable mercury TMDL for the Upper Ogeechee River watershed. Ex. 191.149 This is a significant additional contribution of mercury from an individual emission source to a water body that already violates water quality standards for mercury. As part of the TMDL process, EPD must assure reductions of mercury loading to the Upper Ogeechee River watershed. Accordingly, EPD should require that Power4Georgians eliminate all mercury emissions from Plant Washington that have the potential to deposit in the Upper Ogeechee River watershed. Alternatively, EPD must develop a mercury reduction strategy and waste load and load allocations that include modeled mercury deposition from Plant Washington, and demonstrate that these reduction strategies will meet the mercury TMDL for the Upper Ogeechee River. EPD should complete and implement this process prior to issuing a final PSD permit for Plant Washington.

EPD Response: Plant Washington has reviewed the mercury deposition modeling and provides the following:

2. Greenlaw has inadvertently used the maximum annual average mercury deposition rate (1.356 nanograms per square meter per year) times the area of the river basin within 50 km of Plant Washington (2816 km^2) to arrive at the proposed 38.2 grams/yr of mercury contributed to the Ogeechee River due to operation of Plant Washington.

3. Greenlaw should have used the real and annual average mercury deposition rate factored by the 2816 km^2 to assess the amount of mercury deposited in the Ogeechee River within 50 km of Plant Washington. This deposition rate, provided by Greenlaw as 0.05048 nanograms per square meter per year, would have indicated the annual average amount of mercury deposited over the same area to be 0.142 grams per year.

4. Plant Washington has found this revision to the Greenlaw analysis would increase the average mercury concentration in the Ogeechee River by 0.000265 nanograms per liter. This corresponds to an increase of 0.0156% of the TMDL for mercury due to Plant Washington's operation, which is substantially less than the 4% increase of the Total Maximum Daily Load (TMDL) alleged by Greenlaw using the incorrect basin wide average deposition rate.

5. Plant Washington commented that Greenlaw modeled the mercury emission rate proposed in the air permit application rather than the emission limit required in the draft air permit. The application had proposed a mercury emission rate, which is at least 15% higher than the limit permitted.

6. Plant Washington also commented that the analysis used by Greenlaw conservatively assumes that all mercury deposited within that part of the Ogeechee River Basin, which is within 50 km of Plant Washington, winds up in the Ogeechee River. No basis for this assumption by Greenlaw was evident to Georgia EPD.

Comment 3 – GreenLaw MACT Comments

EPD's Proposed HAP Limits Fail to Reflect MACT for Plant Washington.

EPD has not proposed legally sufficient limitations for the Plant's emissions of hazardous air pollutants (HAP). Section 112 of the Clean Air Act requires every major source of hazardous air pollutants to limit its emissions of such pollutants to a rate consistent with the maximum achievable control technology (MACT). 42 U.S.C. § 7412 (d)(1).

Congress enacted the present version of Section 112 to address two central concerns. First, the air pollutants addressed by Section 112 are very toxic, pos[ing] a significant threat to public health. S. Rep. No. 101-228, 1990 U.S.C.C.A.N. 3385, 3517 (1989). When Congress amended the Act to create the currently applicable requirements, studies estimated that the cancer incidence attributable to toxic air pollution may be as high as 500,000 fatal cases for those Americans now alive. S. Rep. No. 101-225, 1990 U.S.C.C.A.N. 3385, 3514 (1989). Hazardous air pollutants also cause widespread environmental degradation. Lakes and rivers in more than 45 states and several tribes all across the United States are now posted with fish advisories and warnings for pregnant women and children because of high mercury levels in fish attributable to mercury emissions from coal-fired power plants.

Second, Congress amended section 112 in response to agencies' persistent failure and delay in regulating these air toxics. Congress described efforts to reduce hazardous air pollution as a record of false starts and failed opportunities and speculated that agency foot-dragging might be motivated by the fact that reductions might be potentially very costly for some source categories or pollutants. *Id.* at 3517-18. Those twin legislative concerns - enormously harmful pollutants, and regulatory agencies that had persistently failed to address them - resulted in a legal framework that demands strict limitations and provides agencies with little discretion to relax or avoid those limits.

EPA has listed oil- and coal-fired power plants as major sources of HAP, subjecting such plants (including Plant Washington) to Section 112's requirements. Regulatory Finding on the Emissions of Hazardous Air Pollutants from Electric Utility Steam Generating Units, 65 Fed. Reg. 79,825 (December 20, 2000). Coal-fired plants emit a significant number of the 188 HAP regulated by Section 112, including mercury, arsenic, chromium, beryllium, lead, manganese, selenium, dioxins, and a variety of acid gases (including hydrogen chloride and hydrogen fluoride). Each of those toxic pollutants poses substantial health concerns. For example, [o]ffspring born of women exposed to relatively high levels of [mercury] during pregnancy have exhibited a variety of developmental neurological abnormalities, including delayed developmental milestones, cerebral palsy, and reduced neurological test scores. *Id.* at 79,829. There is also new epidemiological evidence that high levels of mercury result in fatal and non-fatal heart attacks among adult males. Arsenic, chromium, dioxin and beryllium are all likely carcinogens, *id.* at 79,827, and acid gases cause respiratory disease and other illnesses.

A. MACT Limits for New Sources of Hazardous Air Pollution.

Section 112 prohibits any person from construct[ing] or reconstruct[ing] any major source of hazardous air pollutants, or modify[ing] such a source, unless the Administrator (or the State) determines that the source will meet the applicable MACT limits. 42 U.S.C. § 7412(g)(2). Where, as here, the United States Environmental Protection Agency (EPA) has failed to promulgate national MACT standards for the new source, EPA or the State must determine the applicable MACT standard for the source on a case by case basis. *Id.*

The MACT determination must achieve:

> the maximum degree of reduction in emissions of [hazardous air pollutants] which can be achieved by utilizing those control technologies that can be identified from the available information, taking into consideration the costs of achieving such emission reduction and any non-air quality health and environmental impacts and energy requirements associated with the emission reduction.

40 C.F.R. § 63.43(d)(2); *see also* 42 U.S.C. § 7412(d)(2). The Act and implementing regulations further sets a floor, establishing the maximum emissions that may be permitted as MACT:

> The MACT emission limitation or MACT requirements recommended by the applicant and approved by the permitting authority shall not be less stringent than the emission control which is achieved in practice by the best controlled similar source . . . .

40 C.F.R. §63.43(d)(1); *see also* 42 U.S.C. § 7412(d)(3). To reach that maximum degree of reduction, the permitting agency must examine methods, systems, and techniques of HAP-reduction, including, but not limited to, measures which:

> (A) reduce the volume of, or eliminate emissions of, such pollutants through process changes, substitution of materials, or other modifications,
> (B) enclose systems or processes to eliminate emissions,
> (C) collect, capture or treat such pollutants when released from a process, stack, storage, or fugitive emissions point,
> (D) are design, equipment, work practice, or operational standards (including requirements for operator training or certification) . . .
> (E) are a combination of the above.

42 U.S.C. § 7412(d)(2); *see also* 40 C.F.R. §63.41 (definition of control technology).

Furthermore, the permitting authority must set a MACT limit or requirement for each HAP to be emitted by the proposed facility. Section 112(d) requires the maximum degree of reduction in emissions of the hazardous air pollutants subject to this section. 42 U.S.C. § 7412(d)(2). Section 112 defines hazardous air pollutants to include *any* air pollutant listed pursuant to [Section 112(b)]. *Id.* § 7412(a)(6) (emphasis added); *see also Nat'l Lime Ass'n v. Environmental Protection Agency,* 233 F.3d 625, 633-34 (D.C. Cir. 2000).

EPD Response: Comment so noted.

B. The Draft Permit Fails to Set Adequate Limits for All Hazardous Air Pollutants Emitted by the Plant.

The draft permit provides direct MACT limits for mercury (Hg), hydrogen fluoride (HF), and hydrochloric acid (HCl). It further includes limits on filterable particulate matter as a surrogate for all non-Hg metal HAPs and on carbon monoxide (CO) as a surrogate for all organic HAPs. Those surrogates fail to adequately address all of the HAPs that will be emitted by Plant Washington.

As an initial matter, those limits fail completely to address radionuclides and hydrogen cyanide, both of which will be emitted by the Plant. Though EPA has suggested that Section 112 does not

apply to radionuclide emissions from power plants, the law demands a MACT limit for every HAP emitted by the Plant. *See* 42 U.S.C. § 7412(A)(6).

Furthermore, surrogate limits may be used in lieu of limits directly addressing each HAP only under limited circumstances. *Nat'l Lime,* 233 F.3d at 637-39; *Sierra Club v. EPA,* 353 F.3d 976, 982-985 (D.C. Cir. 2004) (*Sierra Club I).* A regulator may not arbitrarily identify a surrogate without specifically linking the surrogate with *each HAP* that it is intended to represent. *See Mossville Envtl. Action Now v. EPA*, 370 F.3d 1232, 1243 (D.C. Cir. 2004). Furthermore:

> [Particulate matter] is a reasonable surrogate for HAPs if (1) HAP metals are invariably present . . . in [particulate matter]; (2) [Particulate matter] control technology indiscriminately captures HAP metals along with other particulates; and (3) [Particulate matter] control is the only means by which facilities achieve reductions in HAP metal emissions.

Sierra Club I, 353 F.3d at 984 (quoting *National Lime,* 233 F.3d at 639).

Power4Georgians proposed, and EPD accepted, two surrogate scenarios, neither of which actually analyzed or justified the use of surrogates or established any correlation between the HAPs and the surrogates, as required under the MACT analysis. While Plant Washington's MACT Application asserts a relationship, the limited information provided by the company does not support such a relationship. Thus, the surrogate limits in the draft permit fail to meet those standards.

EPD Response: Links and relationships were established between each surrogate and its respective group of HAPs. As discussed in more detail below, each of the surrogate emission limits satisfy the legal standard for using a surrogate pollutant for a group of HAPs: (1) the HAPs are invariably present in the surrogate pollutants; (2) the control technology for the surrogate pollutant indiscriminately captures the HAPs along with the surrogate pollutant; and (3) the control for the surrogate pollutant is the only means by which facilities achieve reductions in emissions of the HAPs. *Sierra Club v EPA, 353 F3d 976, 984 (DC Cir 2004); National Lime Ass'n v EPA, 233 F3d 625, 639 (DC Cir 2000).*

The surrogate emissions limits satisfy the MACT requirements because they are not less stringent than the emission control achieved in practice by the best controlled similar source and they reflect the maximum degree of reduction in emissions that the EPD has determined is achievable by the proposed facility. The facility submitted the best controlled similar source analysis via email dated March 16, 2010.

1. Filterable Particulate Matter Is Not an Adequate Surrogate for All Non-Hg Metal HAPs.

a. HAP Metals Are Not Invariably Present In Filterable Particulate Matter.

The Notice of MACT Approval relies on filterable particulate matter (PM) as a surrogate for control of non-Hg metal HAPs. The Plant Washington application for MACT Approval identifies ten non-Hg metal HAPs that are expected to be emitted by a coal-fired power plant, including antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and selenium. *See* Table 10-13 of the December 2008 Plant Washington Permit Application at 10-50.

As early as 1993, EPA stated that [i]t has become widely recognized that some trace metals concentrate in certain waste particle streams from a combustor (bottom ash, collector ash, flue gas particulate), while others do not.… These elements are not all consistently present in particulate matter (that is, the particulates that arrive at the inlet to the particulate control device). Ex. 1 at

223-224; Ex. 2. Some are present as gases and as such are not removed by pollution-control devices that limit particulate matter. EPA divides the metals into the following groups: Class 1: Elements which are approximately equally distributed between fly ash and bottom ash, or show little or no small particle enrichment; Class 2: Elements which are enriched in fly ash relative to bottom ash, or show increasing enrichment with decreasing particle size; Class 3: Elements which are intermediate between Class 1 and 2; Class 4: Volatile elements which are emitted in the gas phase.

These substances are not all consistently present in particulate matter (that is, the particulates that arrive at the inlet to the particulate control device). Ex. 1, and Ex. 2. It is well known and has been widely reported that the metallic HAPs fall into three classes. Class I elements (*e.g.*, beryllium, manganese) do not volatilize during combustion and distribute more or less equally between bottom ash and flyash. Class II elements (*e.g.*, lead, cadmium, antimony, nickel) are vaporized in the boiler but are found mainly in the fly ashes after condensation on particles and nucleation mechanisms from decreasing temperature through the control train. Class III elements (*e.g.*, mercury, arsenic, selenium) are vaporized and condense only partially within the control train. *See* reviews in Exs. 1 and 3. In addition, mercury controls, including powdered activated carbon proposed to control mercury emissions from Plant Washington, have been demonstrated to increase the amount of chromium and nickel in stack gases, compared to no mercury control. Ex. 4. Thus, all the metal HAPs that EPD has proposed to be represented by particulate matter are not invariably present in particulate matter.

Some metal HAPs are present as gases, and as such are not removed by pollution control devices that limit particulate matter. Ex. 5. Selenium is the most problematic among the metals; 50% to 100% of the selenium in coal exists as a vapor in exhaust gases. Up to 52% of the arsenic also may be present as a gas. Furthermore, depending upon the fuel and control train, some of the otherwise nonvolatile trace metals, including cadmium, chromium and nickel, may be present in the vapor phase. Exs. 3, 6, 7A, 7B.

Finally, some of the particulate HAPs are present in the condensable fraction of PM_{10}. These include polycyclic organic matter (POM) and a significant fraction of the metals that exit the baghouse, especially the Class II and III metals. Condensable particulate matter is not included in the surrogate filterable PM proposed to be used for Plant Washington. Condensable particulate matter must be included because the regulated non-mercury metallic HAPs are the metal "compounds", *e.g.*, selenium compounds, arsenic compounds.

Power4Georgians asserts that [c]ompliance testing conducted at the Wygen II facility in Wyoming in January 2008 clearly demonstrated that those non-mercury metal HAPs evaluated were removed at high efficiencies based on stack testing data (> 90%) through use of a fabric filter baghouse, and therefore existed in the particulate phase as PM. December 2008 Plant Washington Permit Application at 10-40. First, the Wygen II test report did not show that all metal HAPs were removed at greater than 90% removal. For example, the Wygen II report showed only 48.55% removal of cadmium. *See* March 12, 2008 Wygen II Performance Test Report, cover letter at 2. Ex. 125 to this letter. Second, Power4Georgians failed to note that, although the Wygen II permit limits assumed 99.9% control of the metal HAPs (fairly consistent with the expected removal of particulate matter from a baghouse), the Wygen II testing showed less than 99.9% removal of metal HAPs for almost all of the metal HAPs tested. Third, this test report does not definitively demonstrate that the metal HAPs tested all existed in the particulate phase. The Wygen II report notes that the sampling ports at the inlet to the scrubber did not meet EPA's test method 1 specifications. *Id.* at 4. Thus, there is no assurance that the sampling accurately determined inlet concentrations which would in turn mean that removal efficiencies

determined might be in error. Also, as we already noted, the removal efficiencies of the metal HAPs were not as high as required by the permit and were not as high as the achievable PM control efficiency with a baghouse (as high as 99.99+%) which means that some of the metal HAPs were either escaping as gases or as fine particulate.

For the reasons discussed above, filterable particulate matter cannot serve as a viable surrogate for all of the non-Hg metal HAP compounds to be emitted by Plant Washington. At a minimum, as with mercury, selenium, arsenic, and chromium should be separately regulated, not lumped into a category that uses particulate matter as a surrogate.

b. The Particulate Control Device Does Not Indiscriminately Capture All HAP Metal Emissions.

As we demonstrate below, the particulate control device -- a fabric filter baghouse, does not indiscriminately capture all HAP metal emissions because these HAPs are concentrated in the smallest particles, which are not efficiently collected by the proposed particulate collection device or because they are present in condensables. Power4Georgians claims the opposite.

Metallic HAPs that are enriched in particulate matter are, as a general matter, volatilized in the boiler and condense as very fine particulate matter or nanoparticles (typically smaller than 1 micron) in the pollution control train. Exs. 8, 9, 10*; see also* Exs. 2 and 6. The highest concentrations of most metallic HAPs are consistently found in the smallest particles. Exs. 1, 11, 12, 13, and 14.

The metallic HAPs of greatest environmental concern are enriched in these tiny submicron particles. Ex. 1, at 222-223. These smaller particles also cause proportionately more of the adverse health impacts because they can penetrate deep into the lungs. Ex. 15. If particulate matter is used as a surrogate for any non-mercury metallic HAP, it should be based on the smallest size fraction feasible. Methods have been developed to measure particulate matter smaller than 2.5 microns or PM2.5, which is a better surrogate for metallic HAPs than PM or PM10. However, PM2.5 would only be a reasonable surrogate for Class III metallic HAPs.

Second, Power4Georgians claims that PM control technologies will be effective in removing trace metal HAPs. December 2008 Plant Washington Permit Application at 10-40. Power4Georgians cites to the Wygen II test data to support this which, as we discussed above, does not definitively prove this and, in particular, shows that cadmium is not well controlled in particulate control devices. Many other studies refute this claim. Particulate-matter control devices do not capture these smaller particles as efficiently as they capture larger particles. Ex. 16 (Table 1.1-6), 17 (Fig. 8), 7A, 7B. The larger particles contain far less metallic HAPs than smaller particles. As a result, particulate matter controls do not indiscriminately capture HAP metals at the same rate as other particulates; they favor the larger, non-metallic HAP-laden particles. For example, one study found that particles smaller than 1 micron made up 5% of the total particle mass before the particulate control device while after the device, they made up 50% of the mass. Ex. 6.

c. Facilities Achieve Reductions in HAP Metal Emissions By Means Other Than Particulate Matter Control.

Particulate matter control is not the only means by which facilities achieve reductions in metallic HAP. As the D.C. Circuit Court of Appeals has observed, in order for particulate matter to serve as an adequate surrogate for metal HAP:

> other inputs [such as fuel type] must affect HAP metal emissions in the same fashion than they affect the other components of [particulate matter]. Put another way, particulate matter] might not be an appropriate surrogate for HAP metals if switching fuels would decrease HAP metal emissions without causing a corresponding reduction in total [particulate matter] emissions. The reason is clear: if EPA looks only to [particulate matter], but HAPs are reduced by altering inputs in a way that does not reduce [particulate matter], the best achieving sources, and what they can achieve with respect to HAPs, might not be properly identified.

Sierra Club I, 353 F.3d at 985 (quoting *National Lime,* 233 F.3d at 639).

Several other inputs affect HAP metal emissions in a different fashion than they affect particulate matter emissions. *Id.* First, switching fuels would decrease HAP metal emissions without causing a corresponding reduction in total particulate matter. *Id.*

Different coals contain different quantities of metallic HAP but the same amount of ash, so that the particulate residue that results from burning different coals can contain more, or less, metallic HAPs. Accordingly, utilizing a cleaner coal (or less coal) can reduce metallic HAP emissions, without reducing particulate emissions.

The effect of fuel-related inputs on metallic HAP emissions differs from such inputs‘ effect on particulate matter for three reasons. First, the ash content of the coal used as a fuel determines the particulate matter concentration in a plant‘s flue gases. Ex. 18. A summary of Powder River coal quality (attached as Ex. 19) shows that the ash content remains stable across many coals, while the trace elements can vary significantly. For example, coal from the Jacobs Ranch mine contains about 5.5% ash and lower concentrations of antimony, arsenic, cadmium, chromium, lead and selenium than coal from the Cordero mine. Thus, lower stack emissions of these elements could be obtained by burning Jacobs Ranch coal instead of Cordero coal. Alternatively, Plant Washington could switch from a coal containing low amounts of HAPs, such as Jacobs Ranch, to a similar coal containing higher amounts of HAPs, increasing HAP emissions without affecting particulate matter emissions. Such alterations in fuel supply thus affect HAP metal emissions in a far different fashion than they affect particulate matter. *Sierra Club I,* 353 F.3d at 985.

In addition, the relationship between individual HAPs and particulate matter is different for the individual HAPs that are included in the collection of elements represented by the particulate matter surrogate. Exhibits 20A, 20B, and 20C show the relationship between ash content and selenium, lead, manganese, chromium, cadmium, beryllium, and arsenic for Kentucky bituminous coals. These charts show that there is a direct positive relationship between ash and the amount of selenium, manganese, and chromium in this coal, but no relationship between ash and the amount of lead, cadmium, beryllium and arsenic.

Further, the relationship between ash and metallic HAPs varies for different coals in unpredictable ways. The proposed MACT Approval does not totally restrict the specific coal that can be burned at Plant Washington beyond broad generic classifications of "bituminous" and "subbituminous." Exhibit 21 reports and analysis of the relationship between ash and metallic HAPs for Pittsburg 8 coals. This analysis found not only different relationships between HAPs and ash for each HAP (*see* equations for each HAP at bottom of page 8), but also different relationships for Kentucky coal in Exhibits 7A and 7B and Pittsburg 8 coal in Exhibit 21. Thus, particulate matter (which arises from coal ash) cannot be reliably used as an indicator of HAP emissions.

Finally, most of the particulate matter mass (98%) is bigger than 1 micron. Ex. 16, Table 1.1-6 of AP-42. Indeed, the sum of the non-mercury metallic HAPs in stack gases reported in lb/MMBtu is less than 1% of the filterable PM reported in the same units. The other 99% of the particulate mass is mostly oxides of silica, iron, sodium, calcium, and potassium. These substances are affected by different chemical and physical mechanisms than the metallic HAPs, which are controlled by volatilization and condensation reactions that concentrate them in the very smallest particles with the largest surface area. Thus, particulate matter per se is too diverse and the target HAP fraction too small to serve as a surrogate for less than 1% of the whole.

As explained above, the prescribed particulate matter limit could be met by removing these larger particles, without removing (or less efficiently removing) the smaller particles where the metallic HAPs are found. The removal efficiency of the two most common particulate matter control devices -- fabric filter baghouses and electrostatic precipitators -- have much higher control efficiencies for big particles than small particles. *See* references cited supra. The most commonly used particulate control devices, including the device proposed here to comply with MACT (a conventional baghouse designed to remove total filterable particulate matter) capture a large fraction of coarse particulates, but are far less effective in capturing finer particulates where the non-mercury metallic HAPs are found, thus providing low total particulate emissions but high metallic HAP emissions. An ESP and a baghouse designed to capture fine particulates might produce similar emissions of total particulates, but very different metallic HAP emissions.

d. BACT Does Not Equal MACT.

The Notice of MACT Determination concludes that MACT will be satisfied by the planned fabric filter baghouse, originally proposed to satisfy BACT for PM_{10}, and by a filterable particulate matter limit of 0.012 lb/MMBtu, 3-hour average, measured by a PM continuous emission monitoring system (CEMS). Notice of MACT Approval (in Appendix A of EPD's Preliminary Determination), at 24. However, different models of the same baghouse vary significantly in their performance. Different types of filtration media, cleaning practices, air-to-cloth ratios, and baghouse pressure drop, for example, can significantly affect the performance of baghouses. Ex. 22.

The particulate collection efficiency for conventional baghouses designed to collect PM_{10} is generally lower for the tiny particles than for larger particles. As a result, they capture particulate matter, while allowing most of the metallic HAPs (which exist primarily in smaller particles around 0.3 microns) to escape. Exs. 16, 15 at 1582 fabric filter system designed to meet BACT for PM, as is the case here, does not meet MACT for metallic HAPs. The maximum achievable control technology must include filtration media, cleaning procedures, and be designed to capture these tiny particles where most of the subject metallic HAPs reside. Furthermore, the MACT floor determination must consider wet electrostatic precipitators, which are designed to specifically remove the smallest particles and are used at a number of coal- and coke-fired electric generating units, including AES Deepwater, Northern States Power/Xcel Energy station, and New Brunswick Power Coleson Cove facility. This technology is permitted for use at other facilities, including Trimble Unit 2 and Dahlman Unit 4.

e. Conclusion

For all of these reasons, EPD's proposed MACT limit for Plant Washington using a filterable PM limit of 0.012 lb/MMBtu as a surrogate for non-Hg metal HAPs thus does not provide a legally sufficient surrogate MACT limit for non-mercury metallic HAP compounds. Any use of

particulate matter as a surrogate for non-Hg HAP metals would, first, need to be limited to only those HAP that are consistently present in particulate matter. Second, it would need to be based on the fine fraction of PM (PM less than 2.5 microns in diameter). As set forth above, including larger particulates disrupts the necessary relationship between the surrogate (particulate matter) and the regulated HAP (trace metals). In order to use particulate matter as a surrogate, accordingly, EPD should utilize PM2.5 rather than total particulates or PM10. Third, surrogate limits must be continuously monitored to serve as a continuous indicator of HAP emissions. This is consistent with what EPD proposed (i.e., use of CEMS to monitor compliance with the surrogate PM limit for non-Hg metal HAPs) and we think EPD should require such a CEMS to verify compliance with a PM2.5 limit for those non-Hg metal HAPs that are consistently present in particulate matter (i.e., at the inlet to the baghouse). The individual HAPs represented by the surrogate must also be separately monitored at least annually to establish a relationship between the surrogate and the HAPs and assure that it is maintained. Fourth, if surrogate MACT limits are used, they should address the three classes of HAPs. Particulate matter would only be a reasonable surrogate for Class I HAPs.

EPD Response: The use of PM as a surrogate for non-mercury metal (particulate) HAPs is reasonable based on the criteria established by the U.S. Court of Appeals for the D.C. Circuit: (1) non-mercury metal HAPs are invariably present in PM; (2) PM control technology indiscriminately captures non-mercury metal HAPs along with other particulates; and (3) PM control is the only means by which facilities achieve reductions in non-mercury metal HAP emissions. *National Lime, 233 F3d at 639; Sierra Club, 353 F3d at 984.*

First, EPD had to determine that non-mercury metal HAPs are invariably present in PM. PM generated by coal-fired combustion units invariably contains metal HAPs. Bituminous and sub-bituminous coals can contain antimony, arsenic, beryllium, cadmium, chromium, cobalt, lead, manganese, nickel, and selenium. These metal HAPs are released when coal is combusted. In elemental form, most of these metal HAPs have boiling points greater than 1,000ºF. The exceptions are lead with a boiling point of approximately 620ºF and selenium with a boiling point of approximately 420ºF. The exhaust gas temperatures in the fabric filter will be approximately 300ºF and in the wet FGD they will be approximately 130ºF. At these temperatures, metal HAPs will be solid and in a particulate form that can be removed from the exhaust gases prior to discharge out of the stack.

Second, EPD examined if the PM control device captures all non-mercury metal HAPs along with the particulate stream. The PM control required by the permit (a fabric filter) indiscriminately captures non-mercury metal HAPs along with other particulates, regardless of whether the fabric filter does not capture PM and some non-mercury metal HAPs at the same rate. When the fabric filter removes PM, non-mercury metal and particulate HAPs are also removed.

Also, GreenLaw does not identify any similar sources that, by switching fuels, achieve reductions in non-mercury metal HAPs emissions without a corresponding reduction in PM emissions. Similarly, EPD has not identified any such sources. PM is the only means by which similar sources achieve reductions in the emission of non-mercury metal HAPs, regardless of the potential variability of non-mercury metal HAPs in different fuels. The criteria for the reasonable use of PM as a surrogate for non-mercury metal HAPs are satisfied.

Third, EPD researched other guidance and regulations where PM is used as a surrogate for non-mercury metal HAPs. The EPA has used filterable PM as a surrogate for non-mercury metal HAPs from various source categories, including glass manufacturing facilities, chemical manufacturing areas, mineral wool production facilities, secondary aluminum facilities, lime manufacturing facilities, and hazardous waste combustors. *72 Fed Reg 73,180 (Dec. 26, 2007); 72 Fed Reg 38,884 (July 16, 2007); 64 Fed Reg 29,491*

(June 1, 1999); 65 Fed Reg 15,690 (March 23, 2000);69 Fed Reg 394 (January 5, 2004); 64 Fed Reg 52,828 (September 30, 1999). Other states have used filterable PM as a surrogate for HAP metal emissions in their case-by-case MACT determinations.

EPA has stated that arsenic, beryllium, cadmium, chromium, lead, and manganese exist primarily in particulate form and readily controlled by PM control devices.[1] The Hazardous Waste Combustor (HWC) MACT standard details which metals are present and specifies information about the volatility of these metals and the effect on the ability to control them in pollution control devices for PM. The following is an excerpt from Technical Support document for the HWC MACT Standards[2]:

> PM is used as a surrogate for the "nonenumerated" metal HAP of antimony (Sb), cobalt (Co), manganese (Mn), nickel (Ni), and selenium (Se). Direct "numerated" MACT standards are not set for these nonenumerated metal HAP because we generally lack sufficient compliance test emissions data to assess the relevant best performing sources. Test condition ratings for nonenumerated metals shown in table 3-1 indicated that there is very little compliance test data available for these metals.
>
> The nonenumerated metals of Co, Mn, Ni, and Sb are classified as low volatile metals (LVMs). For all combustion source types, they are generally contained in the bottom ash or entrained PM, and are well distributed through the various entrained PM size distribution. They are not generally volatile at combustion of APCD[3] temperatures.
>
> Although Selenium is a borderline semi-volatile/high-volatile metal it is generally classified as a semi-volatile metal because
>
> - It is volatile in the combustor (little remains in the bottom ash), condenses fully in the downstream air pollution control system, and is contained primarily in the enriched, fine-size entrained PM.
>
> - Selenium condensation and enrichment in particles is thermodynamically very sensitive to the air pollution control device temperature. However, even in some coal combustors using hot ESPs, enriched Se has been caught in the ESP's. In lower temperature ESP/FF[4] and especially in wet scrubbers, Se will be contained and removed in the fine particles to some greater degree.
>
> - Data from the HWC database presented in background documents for the 1999 final rule indicate that for limited cases for which Se is spiked in the hazardous waste, greater than 99% removal is achieved. Thus, Se is in particulate form at temperature of the APCD and is readily controlled by controlling PM.
>
> The use of PM as a surrogate for HAP metals has numerous precedents outside the HWC source categories. For example, the Agency uses PM surrogate for metal HAP in the

[1] Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units – Final Report to Congress, EPA-453/R-98-004a, February 1998, Volume 2, Page 13-22

[2] Revised Technical Support Document for HWC MACT Standards Volume III: Selection of MACT Standards, EPA-HQ-OAR-2004-0022-0634 October 2008, page 3-1 and 3-2.

[3] APCD – Air Pollution Control Device

[4] ESP – Electrostatic Precipitator, FF – Fabric Filter

> Industrial, Commercial, and Institutional Boiler and Process Heater MACT rule [rule has been vacated by D.C. Circuit Court], the Lime Manufacturing MACT rule, and the Portland Cement Manufacturing MACT rule.

The MACT Standard for Lime Manufacturing also cites using PM as a surrogate for non-mercury metal HAPs. In EPA's response to comments for this MACT, the issue of using PM as a surrogate was addressed and the following is the response listed:

> Response: By limiting emissions of PM, the final rule will reduce emissions of non-volatile and semi-volatile metal HAP, which are a subset of PM, and are necessarily removed when PM is removed by air pollution control equipment. As stated in the preamble to the proposed rule, air pollution controls for HAP metals are the same as the PM controls used by the lime manufacturing industry, i.e., FF, ESP, and wet scrubbers. These controls capture nonvolatile and semi-volatile metal HAP non-preferentially along with other PM, thus making PM an acceptable indicator of these HAP metals. Particulate matter control technology, thus, indiscriminately captures HAP metals along with other particulate. Consequently, it is an appropriate indicator when the technical basis of the standard is performance of back-end particulate control technology. Another reason for using a surrogate is the lower cost of emissions testing and monitoring for PM as compared to the cost of emissions testing and monitoring for multiple metal HAP that will be required to demonstrate compliance. Because PM control devices control metal HAP to the same efficiency and because of the associated cost savings associated with emissions testing and monitoring, the Agency has promulgated several other NESHAP where PM is a surrogate for non-volatile and semi-volatile metal HAP. Regarding the commenter's second point concerning regulating emission of HCl, the preamble to the proposed rule explained in detail the Agency's decision not to regulate HCl emissions from lime kilns. To summarize that discussion, the EPA determined that, under the authority of section 112(d)(4) of the CAA, no further control was necessary because HCl is a threshold pollutant, and HCl levels emitted from lime kilns are below the threshold value within an ample margin of safety to humans and to the environment, and considering the possibility that facilities that currently have wet scrubbers for PM emissions control may switch to dry PM controls. (The CAA section 112(d)(4) analysis also considered the potential for environmental harm posed by HCl emissions from these sources.)

Finally, EPA has established in numerous regulations and technical documents that non-mercury metal HAPs are present including the entire list of such metals that was detailed in the Notice of MACT Approval. EPD has established that these pollutants are invariably present in the particulate matter, that the pollution control device will remove the pollutants and that the MACT limit established is appropriate for this facility.

2. Carbon Monoxide is Not an Adequate Surrogate for All Organic HAPs.

a. Organic HAPs Are Not Invariably Present in Carbon Monoxide.

EPD has proposed a limit of 0.010 lb/MMBtu on carbon monoxide (CO□) emissions as a surrogate limit for all organic HAPs to be emitted by Plant Washington. Notice of MACT Approval (in Appendix A of EPD's Preliminary Determination), Table I and at 32. However, carbon monoxide is not an adequate surrogate for all organic HAPs. First, organic HAPs are not present in CO at all. Carbon monoxide emissions indicate incomplete combustion and thus provide an indication of whether a facility is fully combusting all of the organic compounds to carbon dioxide and water. Such an operational standard may be substituted for limits on actual

HAP emissions only where the permitting authority determines that it is not feasible to prescribe or enforce HAP limits. 42 U.S.C. § 7411(h). As a result, a CO based limit - which is, in essence, a surrogate for an operational standard cannot be used for organic HAPs, where HAP limits are feasible (and EPD has not made any findings that would indicate otherwise).

Second, there are three classes of organic HAPs that behave differently during combustion: (1) volatile organic compounds, which are gases; (2) semi-volatile organic compounds, which may be gases or solids, depending on where in the exhaust gas train they are; and (3) particulate organic compounds, such as polynuclear aromatic compounds and dioxins, which are present in the particulate fraction. See, for example, physical and chemical data for the subject organic HAPs as reported in standard handbooks. A single indicator, CO, cannot be used as a surrogate for these three diverse groups of chemicals because they are chemically and physically dissimilar.

Most of the particulate organic compounds, for example, form primarily downwind from a source in the atmosphere. Thus, filterable particulate matter collected within the stack would grossly underestimate, or not detect at all, these compounds which would most likely be found in the condensable fraction of particulate matter. Ex. 24. EPD did not include the condensable fraction of particulate matter in its particulate matter surrogate limit for the non-Hg metal HAPs.

Several of these compounds are not products of incomplete combustion, like CO, but rather are formed via distinct chemical reaction pathways. Polynuclear aromatic hydrocarbons are formed in condensation reactions. Dioxins are formed from the reaction of unburned hydrocarbons and chlorine. Dioxins form in the pollution control equipment at flue gas temperatures of 450 to 650 F. Low chlorine fuels, such as coke and subbituminous coals, would form less dioxins than bituminous coals, which contain much higher amounts of chlorine. Ex. 25. As a result, the Plant‘s dioxin emissions can vary *inversely* to the Plant‘s CO emissions. Altering the Plant‘s fuel-mix from all PRB coal, which contains low chlorine to a blend with higher chlorine Illinois #6 coal, for example, would decrease the Plant‘s CO emissions, but increase dioxins. The permit allows such fuel-blending, and thus such fuel-blending appears to be contemplated within the Plant‘s routine operations. The proposed MACT CO limit, accordingly, provides no assurance against emissions of the above-described HAP.

b. CO Control Does Not Indiscriminately Capture Organic HAPs, and Facilities Achieve Reductions in Organic HAP Emissions By Means Other Than CO Control.

There are pollution-control methods that would reduce the Plant‘s organic HAP emissions, without producing a corresponding reduction in the Plant‘s carbon monoxide emissions. Combustion optimization is the only means by which EPD and Power4Georgians propose to control carbon monoxide (and therefore organic HAPs). This includes changes in combustion residence time, turbulence, and temperature. December 2008 Plant Washington Permit Application, at 10-57, 10-60. Combustion optimization will increase some organic HAPs (such as polynuclear aromatic hydrocarbons), reduce some organic HAPs (such as VOCs), and have no significant effect on certain other organic HAPs (such as dioxin). Other carbon monoxide controls, such as substituting alternative fuels (natural gas, or distillate oil), would reduce organic HAPs at a far higher rate than carbon monoxide.

Beyond that, the draft permit uses as its surrogate limit the Plant‘s 30-day average CO emissions. Measured over such long periods, CO emissions lack the necessarily indiscriminating correlation with organic HAP emissions. *Sierra Club I,* 353 F.3d at 984. Those organic HAPs which do result from incomplete combustion can be typically produced in very large quantities during very short hot spot incomplete-combustion events, such as those that occur during burner malfunction,

startups and shutdowns, and shifts in fuel (*e.g.*, from coke to coal or different blends of coke and coal). A 30-day average fails to capture these hot-spot events, so that significant variations in HAP emissions may occur without causing a significant change in the 24-hour block average CO emissions. For all of these reasons, carbon monoxide is not an adequate surrogate for the Plant's organic HAP emissions.

c. Conclusion

For the reasons set forth above, CO cannot be used as a surrogate for organic HAP. Carbon monoxide is an acceptable surrogate only for those HAPs (if any) for which actual emission limits are demonstrated not to be technically feasible to monitor. Neither Power4Georgians nor EPD has made such a demonstration. Second, the Plant should be required to perform additional testing to confirm that reduced CO emissions would result in lowered amounts of organic HAP emissions and to identify the organic HAPs that are controlled by combustion optimization. The Plant should be required to test and assess the relationship between CO, combustion temperatures, and HAP emissions, placing special emphasis on evaluating and quantifying the relationship between combustion temperatures and the concentrations of CO and organic HAPs. The Plant's dioxin emissions, in particular, need to be quantified and addressed because of dioxin's high toxicity even at low concentrations. Third, any surrogate MACT limit for organic HAPs must be based on short-time average (of the order of one hour). Organic HAPs are produced at very high hot spot rates when combustion is poor. Very large quantities of HAPs can be produced, therefore, during very short periods of incomplete combustion. *See above.* As a result, low long-term average CO emissions may still not protect against very high HAP emissions.

EPD Response: CO is an appropriate surrogate for organic HAPs based on the three-part legal standard for surrogates. All organic HAPs from the proposed facility are invariably present with CO. As explained in the Notice of MACT Approval, organic HAPs are a subset of VOC and are produced during the combustion of coal. With combustion technology/design control, formation of CO and VOC in the boiler are minimized by good combustion efficiency through optimum design and operation. Therefore, organic HAPs and CO are produced as a result of incomplete combustion. Good combustion practices that promote complete combustion of coal in the boiler is an effective pollution control measure for CO and indiscriminately reduces both CO and organic HAPs. Third, similar sources do not use means other than good combustion practices to control organic HAPs. EPD has not identified facilities that employ such other means and GreenLaw has not identified any such facilities.

CO is formed as a result of incomplete combustion of a hydrocarbon fuel. The permit requires that Plant Washington demonstrate good combustion control by continuous monitoring of CO emissions. Continuous monitoring of CO emissions is used to, among other things, reduce the air to fuel ratio to ensure the maximum combustion of fuel, which in turn ensures minimum organic HAPs. In addition, continuous monitoring of CO assures minimization of organic HAP emissions at all times.

The feasibility of limits tailored to organic HAPs is not the legal standard for determining whether it is reasonable to use a surrogate emission limit for a group of HAPs. As discussed previously, the U.S. Court of Appeals for the D.C. Circuit has established a three-part legal standard for using surrogates. EPD has satisfied that standard in using CO as a surrogate for organic HAPs.

Specifically, the HWC MACT discusses the use of CO as a surrogate for organic HAPs and the following is an excerpt from Technical Support document for the HWC MACT Standards[5]:

> MACT standards for CO or HC[6] and DRE[7] are used as surrogates for the control of non-PCDD/PCDF[8] organic HAP. CO and HC are widely used and accepted indicators of combustion indicators of combustion conditions. Limits on CO or HC are effectively used to maintain combustion efficiency and overall reaction completeness, and so control emissions of organic HAP.
>
> - CO – CO is conservative indicator of deteriorating combustion conditions. Generally, when CO is low, waste destruction is high and HC emissions, including organic HAP, are low. When CO increases, increased frequencies of lower DRE and high HC emissions have been observed in numerous types of waste combustion system.
>
> - HC – HC is a direct indicator of inefficient combustion and emissions of products of incomplete combustion (PICs), potentially including organic HAP. Compliance with an HC standard alone (i.e., in place of a CO standard) is sufficient to ensure that organic HAP emissions are low. It is true that CO responds faster to a process upset than HC. This makes CO an advance indicator. High CO warns of process upset conditions that may lead to organic HAP emissions. As just noted above, it is quite possible to have high CO emissions but have low emissions of HC and organic HAP. Hydrocarbons include organic HAP. Thus HC emissions are a more direct indicator of organic HAP emissions. Thus, either a CO standard or an HC standard is an appropriate surrogate. Requiring a CO standard in addition to an HC standard would be overly conservative and burdensome. . . .

EPA has established that the use of CO as a surrogate for organic HAPs is appropriate and the use of CO CEMS can ensure continuous compliance with the applicable permit limits. The CO MACT limit will remain at 0.10 lb/MMBtu and the use of CO CEMS will ensure compliance with the permit limit.

C. EPD's MACT Limits Are Not Based on the Emissions Achieved in Practice by the Best Controlled Similar Source.

MACT determinations generally begin by establishing the MACT floor – the emissions control that is achieved in practice by the best controlled similar source. 42 U.S.C. § 7412(d)(3). EPD's MACT limits for the Plant do not begin at that necessary starting point.

First, EPD has not specifically identified the best controlled similar source for any of the HAPs emitted by the Plant. While Power4Georgians did identify a permit limit that it found to be the MACT floor for mercury, the Notice of MACT Approval does not indicate EPD's determination of best controlled similar source. Furthermore, Power4Georgian's analyses of best controlled

[5] Revised Technical Support Document for HWC MACT Standards Volume III: Selection of MACT Standards, EPA-HQ-OAR-2004-0022-0634 October 2008, pages 3-5 and 3-6.

[6] HC - Hydrocarbon

[7] DRE – Destruction and Removal Efficiency

[8] PCDD – Polychorinated dioxins; PCDF – Polychlorinated furans

similar source was a fairly limited review of available information. The law requires EPD to make a reasonable estimate of the performance of the best-controlled unit in the appropriate category. *Cement Kiln Recycling Coalition v. Environmental Protection Agency*, 255 F.3d 855, 861-62 (D.C. Cir. 2001). The draft permit's limits cannot, therefore, plausibly be at least as stringent as the emissions control that is achieved in practice by the best controlled similar source. 42 U.S.C. § 7412(d)(3).

Once a regulator has identified each HAP that a facility will emit, it must establish MACT *independently for each HAP*. That is, for each HAP, the regulator must identify the individual best performing similar source and identify the emission performance that that source achieves in practice. Accordingly, in this instance, EPD will need to identify the emission limitation achieved in practice by the single best performing similar source for each of dozens of HAP that Plant Washington is likely to emit.

EPD should re-issue the draft permit after conducting a formal MACT analysis based on a survey of the emissions limits achieved by other similar sources. That survey must include, at a minimum: documented inquiries of state and federal regulators who may be making (or have made) MACT determinations for such sources (or who may be imposing other non-MACT limits on HAP); contacts with vendors; inquiries of the Institute of Clean Air Companies and EPA's online clearinghouses on installed technologies and emissions limits achieved in practice, or other groups with information regarding pollution-control technologies; and any other sources of information on HAP emissions. *See* Ex. 26.191 That information needs to be made available to the public. Absent some knowledge of EPD's analysis, the public cannot reasonably understand the permit, participate in EPD's permitting process, or comment upon the draft permit.

Second, in proposing MACT limits for Plant Washington, EPD set different limits for HCl depending on whether the plant is burning subbituminous coal or a blend of subbituminous and bituminous coal. This approach to setting MACT limits contradicts the requirement that the MACT emission limitation be no less stringent than the emissions control achieved in practice by the best controlled similar source. Similar source is defined as:

> [A] stationary source or process that has comparable emissions and is structurally similar in design and capacity to a constructed or reconstructed major source such that the source could be controlled using the same control technology.

40 C.F.R. § 63.41. In promulgating that definition, EPA observed that:

> For purposes of section 112(g), two criteria should be used to determine if a source is similar: (1) whether the two sources have similar emission types, and (2) whether the sources can be controlled with the same type of control technology.

61 Fed. Reg. at 68,394. This rulemaking preamble goes on to clarify that classification of emission types should be based on the manner in which the source releases HAP to distinguish, *e.g.*, vent or stack discharges, from [e]quipment leaks or fugitive emissions, and from evaporation and breathing losses. *Id.* EPA also stated:

> The EPA believes that because the Act specifically indicates that existing source MACT should be determined from within the source category and does not make this distinction for new source MACT, that *Congress intends for transfer technologies to be considered when establishing the minimum criteria [i.e., the MACT floor] for new sources.* EPA believes that the use of the word similar provides support for this interpretation. The EPA

> believes that Congress could have explicitly restricted the minimum level of control for new sources, but did not. *The use of the term "best controlled similar source" rather than "best controlled source within the source category" suggests that the intent is to consider transfer technologies [across source categories] when appropriate.*

61 Fed. Reg. 68,384-385 (emphasis added).

Therefore, in setting the MACT floor and assessing potential beyond-the-floor reductions, EPD cannot ignore power plants burning alternative fuels, i.e., it cannot ignore subbituminous-fired sources when setting a limit for a bituminous coal, or vice versa. In other words, the law does not contemplate separate limits for each fuel type.

Furthermore, EPD cannot ignore sources using control technologies that may be transferable to the Plant, i.e., thermal oxidizers or carbon bed absorbers such as ReACT, or alternative combustion methods that may yield lower HAP emissions. The Clean Air Act includes process changes and design changes among the pollution-reduction methods that must be assessed as part of a MACT determination. 42 U.S.C. § 7412(d)(2). EPD cannot, consequently, define the term similar source to exclude such options especially since the U.S. EPA has concluded that the term similar source is meant to broaden, rather than limit, the MACT-floor analysis. *See* 61 Fed. Reg. 63,384-385. For example, circulating fluidized bed (CFB) units and pulverized coal units have the same emissions types and can be controlled with the same type of control technology. ***Id.*** They meet the regulatory definition of similar source 40 C.F.R. §63.41. Accordingly, the U.S. Environmental Protection Agency has refused to set separate MACT standards for CFBs and pulverized coal units when proposing or promulgating Clean Air Act standards for electric-generating units. *See* 69 Fed. Reg. 4,652, 4,657 (January 30, 2004); 70 Fed. Reg. 28,606, 28,609-10 (May 18, 2005). Thus, for the purposes of Plant Washington's MACT limits, the group of sources that could provide the best controlled similar source includes all electric-generating units burning coal of any type – and in some cases, EPD may be required to look beyond coal-burning plants. In the sections of these comments dealing with the HCl and mercury MACT limits, we have provided more detail on this topic.

Third, rather than identify the emissions control *achieved in practice*, ***id.*** (emphasis added), by other sources, EPD has essentially selected a purportedly appropriate control *technology*, and made its determination of MACT emission limits based on the expected performance of that technology. The MACT floor is not set by reference to particular technologies; rather, it must be set at the emissions level of the best-controlled similar source. *See Cement Kiln Recycling Coalition,* 255 F.3d at 862-67. Cost plays no role in that determination, nor does the ability of the proposed new source to meet the MACT floor (especially given that modifications to the planned new source can be made to meet the MACT floor, such as switching to a lower mercury content or a lower chlorine content coal). ***Id.***

Fourth, both Power4Georgians and EPD have implied that stack test data is not demonstrative of the emissions control of the best controlled similar source. That is wrong. Stack test data is valid data upon which to base a determination of the emissions control achieved by the best controlled similar source. Source-wide MACT standards for other categories of sources have long been based on stack tests. ***See, e.g.,*** 62 Fed. Reg., 960, 961 (Jan. 7, 1997). Indeed, EPA has formally stated that stack tests suffice to demonstrate continuous compliance with HAP emissions limits. ***See, e.g.,*** 69 Fed. Reg. 55,217, 55, 224 (Sept. 13, 2004). Further, the Permit itself uses stack tests to determine continuous compliance. Power4Georgians cannot have it both ways. Concerns regarding emissions variability at particular sources for specific pollutants may be addressed by

establishing longer averaging times or by applying statistical analyses to reflect variability in emissions.

In addition, EPD cannot ignore emission limits at sources that have not yet commenced operations. The regulatory authorities establishing those limits did so based on specific information which established (to that authority's satisfaction) that such limits could be continuously achieved. At a minimum, EPD is required to assess the information that the regulatory authority relied on in setting more stringent HAP emission limitations for other similar sources, even if that source is not yet operating.

There is a large amount of information that could have and should have been used by EPD to make a MACT determination for Plant Washington. This information includes stack tests conducted specifically to address the Clean Air Act Amendments of 1990 for 130 HAPs at 16 separate coal-fired power plants burning a range of coals and using a range of pollution control trains (*e.g.*, Exs. 27, 28), EPA's ICR data on mercury emissions, stack tests conducted to determine compliance with HAP limits in permits, and MACT analyses performed by permitting authorities from both before EPA delisted electric generating units as well as more recently.

The draft permit's MACT limits are, in defiance of these rules, based on the permit-applicant's preferred control technology to satisfy BACT. EPD thereby ignored a variety of means of reducing the Plant's pollution most notably, fuel-switching, or use of more efficient process methods rather than adhering to the Act's mandate to base its standards on, *inter alia,* measures which . . . reduce the volume of, or eliminate emissions of, [hazardous] pollutants through process changes [or] substitution of materials. 42 U.S.C. § 7412(d)(2). *See Cement Kiln,* 255 F.3d at 863. We have provided further details on these deficiencies in the pollutant-specific sections of our comments below.

EPD Response: EPD agrees that a best controlled similar source needs to be set for each pollutant. After further discussions with the facility, a best controlled similar source has been selected for each MACT pollutant. The facility submitted an analysis for best controlled similar source via email on March 16, 2010.

"Similar source" is defined in the federal regulations as "A stationary source or process that has comparable emissions and is structurally similar in design and capacity to a constructed or reconstructed major source such that the source could be controlled using the same control technology." 40 CFR 63.41. Plant Washington submitted additional information via email on March 16, 2010 (see Appendix D) detailing their methodology and analysis for determining a best controlled similar source for each pollutant. EPD has reviewed this information and has summarized important points from this submission and included EPD's decisions and findings.

EPD conducted our own review of the analysis submitted by the facility and of available information on permitted coal fired power plant projects. Based on that review, EPD identified the best controlled similar source for the primary fuel, which is PRB, for all MACT limits after extensive research. EPD's review included a thorough search of emission limits and test results, EPA's TTN RACT/BACT/LAER Clearinghouse (RBLC), proposed regulations, and literature. As discussed below, EPD correctly established MACT limits for the HAPs to be emitted from the proposed facility. This does not mean EPD did not review any facilities that burn bituminous coal; they were not included in the best-controlled similar source determination. EPD reviewed the available permits for bituminous coal fired units and used that information to assist in setting the appropriate permit limits for the 50/50 blend.

As noted above, a similar source is one that has comparable emissions and is structurally similar in design and capacity such that its emissions could be controlled using the same control technology. Control technology is not limited to add-on pollution control equipment. It includes the use of different processes and the substitution of materials. *National Lime, 233 F3d at 635, 639.*

Plant Washington's boiler is designed to burn 100% Powder River Basin (PRB) sub-bituminous coal, and a blend of PRB and bituminous coal that contains up to 50% bituminous coal. Sub-bituminous coal has a lower heat content (Btu/lb) and dictates the size of the boiler. Also, since the basis of the boiler design is for 100% sub-bituminous coal, the differences in the fuel characteristics (i.e., sulfur and chlorine content) affect the design of the boiler, the operational parameters, and the thermal cycle efficiency. Fuels such as bituminous coal and petroleum coke have higher sulfur content than sub-bituminous, and bituminous coal also has higher chlorine content. The air heater, flue gas duct work, boiler furnace walls, and superheater tube surfaces of the proposed facility are not designed to withstand the corrosion that would be caused by increased sulfur and chlorine content. In addition, the emission control equipment is not designed to withstand the resulting corrosion or sized to handle the higher sulfur and chlorine contents. The boiler design also does not account for the higher slagging potential from bituminous coals. EPD, therefore, determined that facilities that burn 100% bituminous coal are not similar sources. EPD, however, examined control technologies at other sources (i.e., carbon injection for mercury control) if they could be applied to the proposed facility without having to change the proposed facility's structural design.

The following table is a summary of the determined Best Controlled Similar Source emission limits with a comparison to the draft permit limits for Plant Washington

Best Controlled Similar Sources Compared to Plant Washington (Draft Permit)

Pollutant	Coal Type	Best Controlled Similar Source Limit (lb/MMBtu)	Facility Identified	Plant Washington **Draft Permit** Limit (lb/MMBtu)
HF	n/a	2.17E-04	Weston Unit 4	2.17E-04
HCl	PRB (sub-bituminous)	6.26E-04	Newmont TS Power	3.22E-04
Mercury	PRB (sub-bituminous)	1.7E-06	Walter Scott Jr. Unit 4	1.46E-06[1]
Non-Mercury Metal HAPs (Filterable PM Surrogate)	n/a	0.012	Wygen Unit 2	0.012
Organic HAPs (CO Surrogate)	n/a	0.15	Newmont TS Power	0.1

[1] 1.46×10^{-6} lb/MMBtu is equivalent to 13×10^{-6} lb/MW-hr

The best controlled similar source was defined for specific HAPs of interest as well as surrogacy pollutants of interest. This best controlled similar source analysis satisfies the requirements for 40 CFR 63 Subpart B.

D. The Proposed Limits For Plant Washington Do Not Represent Maximum Achievable Control Technology.

As a result, in part, of the above-described failings, EPD's proposed MACT limits fail to meet the requirements of law. The following sections explain the inadequacies in EPD's proposed MACT emission limits for Plant Washington, and identify similar sources that are meeting lower emissions levels and/or that have been permitted with lower emission levels than those proposed by EPD as MACT for Plant Washington. MACT may be lower than the emission limits that we identify below because we have not reviewed the entire universe of sources of relevant information in the short time allotted for review of EPD's MACT analysis. EPD is obligated to

consider this and all other available information in making its determination of MACT for Plant Washington.

1. Assuming It Is Appropriate to Establish a Particulate Matter Limit As a Surrogate For Non-Mercury Metallic HAPs MACT, EPD's Proposed Filterable Particulate Matter Limit Fails to Reflect MACT.

EPD's proposed MACT limit for non-mercury metal HAPs is a filterable particulate matter emission limit of 0.012 lb/MMBtu, based on a 3-hour average measured by PM CEMs. EPD Notice of MACT Approval, for Plant Washington (in Appendix A of EPD's Preliminary Determination) at 24. As discussed above, this determination is based on the false premise that particulate matter can serve as a surrogate for all non-mercury metallic HAPs. Even if particulate matter were an available surrogate for non-mercury metal HAPs, this proposed emission limit does not satisfy MACT. The proposed filterable particulate matter limit – 0.012 lb/MMBtu (3-hour average) is well above the emission rates being achieved in practice at similar sources. We reviewed a large number of permits and stack tests to determine the lowest filterable PM/PM10 emission rate that has been achieved in practice at a similar source. Tests results are consistently lower than the filterable PM/PM10 limits set in recent permits, as summarized in the table below.

Comparison of Permitted Filterable PM10 Emission Limits

(lb/MMBtu)Facility	Permit Lb/MMBtu	Test Lb/MMBtu	Ratio (Permit/ Test)	Exhibit Number
JEA Northside196	0.011	0.0107-0.002	1.03-5.5	64
Gilbert 3	0.015	0.005	3	65
Hardin	0.015	0.0072	2	66
Springerville 3	0.015	0.0020	8	67A, 67B, 67C
		0.0047 0.0013	3 12	68 69
Council Bluffs 4 5/07 Council Bluffs 4 8/07	0.018	0.003 0.008	6 2	70 71A, 71B, 71C
Weston 4	0.020	0.0147	1.4	72
Santee Cooper Cross 3	0.015	0.006 0.0099	2.5 1.5	73 74
Santee Cooper Cross 4	0.015	0.009	1.7	75
Wygen II	0.012	0.00094	13	76

This review indicates that the two CFB boilers located at the JEA Northside facility in Florida, Ex. 32, routinely achieve a lower filterable PM/PM10 emission rate than proposed as MACT for Plant Washington. Over fifty stack tests demonstrate a PM10 emission rate of 0.006 lb/MMBtu and a PM emission rate of 0.009 lb/MMBtu, based on a 3-hour average over the period 2003 to 2008. Ex. 31 at 63 to 66. These tests include detailed performance tests while burning 100% Pittsburgh 8 coal (0.004 lb/MMBtu), a 50/50 blend of Pittsburgh 8 coal and coke (0.0041 lb/MMBtu), 100% Illinois 6 coal (0.0019 lb/MMBtu), and an 80/20 blend of coke and Pittsburgh 8 coal (0.0024 lb/MMBtu). Ex. 32 at 31-38; Ex. 33; Ex. 34.

Similarly low particulate matter emission rates have been achieved at other circulating fluidized bed boilers including Northampton in Pennsylvania (0.0028, 0.0012 lb/MMBtu) burning waste coal, Ex. 35, 36, and Gilbert Unit 3 (0.005 lb/MMBtu) in Kentucky burning bituminous coal at the Spurlock Station. Ex. 37.

The low filterable PM test results are found at facilities burning subbituminous coal as well, including Hardin, Council Bluffs Unit 4, and Wygen II. Thus, based on the data attached and summarized above, the filterable PM MACT floor should be no greater than 0.006 lb/MMBtu, based on a 3-hour average. These limits are consistent with conclusions by others. For example, Matt Haber, EPA Region 9's BACT expert and current Deputy Director of the Air Division of EPA Region 9, concluded that BACT for filterable PM as of 2002 at two existing PC boilers firing PRB coal and equipped with a baghouse was 0.006 lb/MMBtu based on a 3-hour average and monitored via Method 5 and continuously using triboelectric broken bag detectors. Ex. 38.

A detailed beyond-the-floor analysis could well yield a final MACT limit that is lower yet. Other control alternatives, including a wet electrostatic precipitator (WESP) or a more efficient baghouse, could lower particulate matter emissions below the 0.006 lb/MMBtu floor. Because metallic HAPs in the particulate form are typically found in the 1 micron and smaller particles, any particulate matter surrogate should take the form of an emissions limit on the smallest particles that can be measured – particles smaller than 2.5 microns (PM2.5). EPD must, therefore, focus its beyond-the-floor analysis on control methods that effectively limit PM2.5.

Plant Washington will use a fabric filter baghouse to control PM_{10}. The design basis of this baghouse is unknown and must be disclosed. The filtration media determines the control efficiency of a baghouse for very small particles. There is a wide range of media that can be used, most of which are much more efficient for larger particles than smaller particles. The media Ryton, for example, is commonly used in similar applications for PM control. This media removes 99.9% of larger particles, but operates at far lower efficiencies for the smaller particles where metal HAPs are concentrated. Thus, other media must be considered in a beyond-the-floor analysis. Filtration media are available that allow 99.99% of the PM2.5 fraction to be removed. These include Daikin's AMIREXTM, PTFE membrane filters, and W.L. Gore's L3650. *See* summary of U.S. EPA's ETV test results in Ex. 41. A bag leak detection system should also be considered as part of the MACT determination.

Other technologies that control PM2.5 emission exist and are readily available today. For example, a WESP placed after a fabric filter would eliminate significant amounts of PM2.5 emissions. Ex. 42. EPA, and others, has recognized that wet ESPs reduce PM2.5 emissions. Exs. 43 and 44. Indeed, the WESP is the ultimate device capable of . . . removing ultrafine particles. Many industries are considering the WESP as the maximum achievable control technology (MACT). Ex. 43 at 6-7. Examples of facilities using wet ESP technology include: (1) Xcel Energy, Sherburne County, Units 1 and 2; (2) First Energy, Mansfield, Unit 2; (3) Duke Power, Cliffside, Units 6 and 7; (4) AES, Deepwater (operating since 1986), Ex. 42 at 9, 10; and (5) New Brunswick Power, Coleson Cove, Ex. 43 at 6.

In addition to the wet ESP, other options are available to reduce PM2.5 emissions. For example, the EPA's Environmental Test Verification (ETV) program recently verified the performance of the Advanced Hybrid Particulate Collector (AHPC) system as providing the lowest filter outlet concentrations for both PM2.5 and total mass concentration. The AHPC system was installed at Otter Tail Power's Big Stone plant in South Dakota. Analyzing the performance of the system at that plant, the US Department of Energy explained that:

> The Advanced Hybrid™ consists of alternating electrostatic precipitation and fabric filtration elements in a single casing to achieve exceptional removal of particulate matter (PM) in a compact unit. Very high removal is achieved by removing at least 90% of the PM before it reaches the fabric filter and using a membrane fabric to collect the particles that reach the filter surface . . . . Combining precollection with the ESP elements and membrane filter bags results in a small, economical unit that can achieve very high collection of all particle sizes.
>
> A 2005 report prepared for the EPA listed numerous innovative control techniques that yield high PM2.5 emissions reductions. Included in the list of controls are: (1) Compact Hybrid Particulate Collector, Ex. 44,219 (2) Indigo Particle Agglomerator, Ex. 44, 45, 46, (3) Wet ESP, Ex. 47, and (4) Wet Membrane ESP, Ex. 44. EPD did not consider any of these technologies for limiting PM2.5 emissions from Plant Washington. Indeed, EPD failed to conduct any beyond-the-floor analysis for the non-Hg metal HAPs to be emitted by Plant Washington and thus its MACT analysis for Plant Washington is significantly flawed.

EPD Response: The MACT emission limit should not be set at the lowest single test result ever achieved by a source category. The emission limit takes into account the fuels, operating scenarios, and the performance of control devices in order to set a limit that can be achieved in practice on a continuous basis while still meeting the maximum achievable control technology requirement. The MACT emission limit is not "far" higher than the emission limitation achieved in practice by the best controlled similar source.

Based on comments submitted by GreenLaw, EPD has decided to lower the filterable PM/PM_{10} limit to 0.010 lb/MMBtu on a 24-hour averaging period. Please refer to Division's response to GreenLaw Comments 2, Section F on PM/PM_{10} BACT.

Also, the stack test result for Santee Cooper's Cross Unit 3 of 0.0099 lb/MMBtu is one data point. If that test result were used to calculate a MACT limit, application of a margin of compliance to account for operational variability would result in a limit of greater than 0.010 lb/MMBtu. The Santee Cooper test result does not support a limit lower than 0.010 lb/MMBtu.

GreenLaw provided data on numerous facilities from stack testing data, which they claim demonstrates that a lower filterable PM limit should be established for Plant Washington. First, all the data provided is in reference to short term stack testing. Second, Plant Washington will utilize a continuous emissions monitoring system (CEMS) to demonstrate compliance continuously with a filterable PM/PM_{10} limit of 0.010 lb/MMBtu, per conditions established in the draft air permit. Therefore, the use of CEMS allows for Plant Washington to monitor PM emissions during transient conditions (i.e. load changes, soot blowing) that may not be accounted for in stack testing.

These issues were addressed in letters dated May 28, 2009 and October 27, 2009 to Georgia EPD concerning proposed PM emissions and comments on the draft permit respectively. Thus, the comparison provided by GreenLaw of stack testing to PM CEMS data is not an accurate means or basis of comparison especially since no PM CEMS data was submitted for comparison to support the claims.

The use of a WESP was evaluated as a part of the BACT determination and the following is from the preliminary determination.

> The applicant stated that Fabric Filter Baghouse, ESP and WESP are the top control options for PM/PM10 control. Fabric filter baghouse has additional benefits, as it is more effective in the control of metallic (i.e., Mercury, Lead) emissions. The applicant discussed energy impacts, environmental impacts and economic impacts of Fabric Filter

Baghouse, ESP and WESP and concluded the use of Fabric Filter Baghouse as the top control technology for PM/PM10 emissions. Please refer to pages 4-20 through 4-22 of the permit application. The applicant rejected WESP control technology due to significant incremental cost effectiveness and average cost effectiveness, and significant energy impact.

EPD believes that the MACT limit for PM is appropriate and the means in which EPD determined the limit are in accordance with the requirements in 40 CFR 63 Subpart B. Also, please refer to Division's response to GreenLaw Comment 2, Section F regarding PM/PM_{10} BACT analysis

2. Assuming It Is Appropriate to Establish A CO Limit As A Surrogate For Organic HAPs MACT, the CO Limit Fails to Reflect MACT.

EPD established a carbon monoxide emission limit of 0.10 lb/MMBtu, based on a 30-day average as MACT for organic HAPs. *See* EPD Notice of MACT Approval (in Appendix A of EPD's Preliminary Determination), at 1, 32. As discussed above, this determination is based on the false premise that CO can serve as a surrogate for organic HAP. Even if CO were a reasonable surrogate for organic HAPs, the proposed emission limit does not satisfy MACT.

We reviewed a large number of permits and stack tests to determine the lowest carbon monoxide emission rate that has been achieved in practice at a similar source. This review indicates that the circulating fluidized bed (CFB) boilers located at the Cedar Bay facility in Florida routinely achieve a lower carbon monoxide emission rate than proposed as MACT for organic HAPs from Plant Washington. Fifteen stack tests conducted between 2003 and 2008 demonstrate that Cedar Bay achieved a carbon monoxide emission rate of 0.05 lb/MMBtu based on a 3-hour average. These tests are summarized in the following table (*see* Ex. 49 as summarized in Ex. 31):

CEDAR BAY CO TEST RESULTS		
CO		
Unit	Date	lb/MMBtu
CBA	2/28/2006	0.022
CBA	2/22/2005	0.023
CBA	3/4/2003	0.063
CBA	2/20/2007	0.013
CBA	12/7/2007	0.0158
CBB	3/5/2003	0.03
CBB	2/23/2005	0.032
CBB	3/3/2004	0.032
CBB	2/21/2007	0.013
CBB	12/6/2007	0.0215
CBC	3/6/2003	0.051
CBC	2/24/2005	0.027
CBC	2/25/2005	0.027
CBC	3/4/2004	0.024
CBC	2/22/2007	0.014

The data indicates that these are far from anomalous emissions rates. Similarly low CO levels have been achieved at other circulating fluidized bed boilers. *See* Exs. 48, 34, and 33. These include at the JEA Northside circulating fluidized bed boiler, where detailed performance tests

were conducted for a range of fuels and at loads of from 40% to 100%. These data are summarized in the following table (*see* Ex. 32):

JEA NORTHSIDE CO TEST RESULTS			
Load	Fuel	Date	lb/MMBtu
100%	100% Pitts	1/13/2004 1/14/2004	0.026 0.027
100%	50/50 Pitt/Coke	1/27/2004 1/28/2008	0.015 0.016
100%	100% Illn 6	6/8/2004 6/9/2004	0.0198 0.024
100%	80/20 Coke/Pitt	8/10/2004 8/11/2004	0.0127 0.0081
80% 60% 40%	100% Pitts	1/15/2004 1/16/2004 1/16/2004	0.044 0.118 0.053
80% 60% 40%	50/50 Pitt/Coke	1/29/2004	0.024 0.0276 0.08
80% 60% 40%	100% Illn 6	6/9/2004 6/8/2004 6/9/2004	0.031 0.0338 0.138
80% 60%	80/20 Coke/Pitt	8/12/2002 8/13/2004	0.0147 0.0218

Thus, the CO MACT floor limit is no greater than 0.05 lb/MMBtu based on a 3-hour average, the highest reported CO value over the period 2003 to 2008. This is half of the value (0.10 lb/MMBtu) proposed by EPD as a MACT limit for organic HAPS and on a much shorter averaging time than the proposed 30-day averaging time.

EPD must also conduct a beyond-the-floor analysis, assessing, *inter alia,* whether combustion optimization and post-combustion controls, such as regenerative thermal oxidizers or activated carbon processes, such as ReACT (*see* Exs. 51A, 51B and 52), might allow for lower HAP emissions than 0.05 lb/MMBtu, on a 3-hour average. However, neither Power4Georgians nor EPD provided any beyond the floor analysis of MACT for the organic HAPs to be emitted by Plant Washington.

EPD Response: CO emissions from combustion sources are related to the overall performance of the boiler, levels of oxygen in the combustion chamber, and the use of good combustion practices. Typically, the organic content of sub-bituminous coal is higher than bituminous coal. CO emissions are controlled by good combustion practices rather than an add-on air pollution control device.

GreenLaw contends that no beyond the floor analysis was conducted by either Plant Washington or the Georgia EPD. However, discussions on this subject were clearly made in Section 10 of the Plant Washington permit application and in Appendix A (Notice of MACT Approval) of the EPD Preliminary Determination.

GreenLaw has submitted CO test data from the Cedar Bay facility and JEA Northside facility, which are both located in Florida. Both of these facilities utilize circulating fluidized bed (CFB) boilers, which are inherently different than the pulverized coal boilers proposed at Plant Washington. A CFB boiler

combusts fuel while it is in a dense bed of material consisting of fuel, fuel ash, limestone, and other inert bed materials. The bed is supported within with the furnace by air flowing into the bed from the bottom of the furnace. The airflow supports the bed and promotes mixing of the fuel and air to provide complete combustion. CFB facilities combust different types of coal by using a different mechanism than a traditional pulverized coal boiler. The innate design of the CFB systems makes them an ideal system for the combustion of fuels with low volatile matter content (such as anthracite coals and petcoke), high ash content (such as waste coal), and high sulfur content. EPD believes that the above stack test data from the two CFB facilities from Florida are not a similar source to Plant Washington and should not be used to determine the MACT limits for CO.

However, even if the CFB test data were used, they support the permit limits. This 3-hour average is derived for stack testing data, not taking into account the fact that the Plant Washington surrogate limit for CO emissions will be monitored on a continuous basis through use of a CEMS device. Therefore, transient conditions that will occur during normal source operation, such as boiler load changes, will be accounted for and measured by a continuous monitoring system. Further, there are two tests that exceed 0.10 lb/mmBtu and a third equal to 0.08 lb/mmBtu.

3. MACT For Individual HAPs

EPD established MACT limits for three individual HAPs -- hydrogen chloride, hydrogen fluoride, and mercury. It failed to establish MACT limits for the other 186 HAPs. There is a wealth of information that could have and should have been used to establish MACT for other individual HAPs, as discussed below. As set forth above in section II.A, the law requires a MACT limits for every HAP emitted by the Plant.

Further, EPD‘s proposed MACT limits for those HAPs that is did propose such limits for are flawed and fail to reflect the maximum achievable control technology at Plant Washington.

a. Hydrogen chloride

The EPD proposed separate MACT limits for hydrogen chloride (HCl): 0.000322 lb/MMBtu for subbituminous coals, 0.00136 lb/MMBtu when burning a 50/50 blend of subbituminous and bituminous coal, and 0.0024 lb/MMBtu for bituminous coals, based on a 3-hour average. These proposed limits do not represent MACT for Plant Washington.

h. The MACT Approval Fails to Identify Important Design Criteria for Plant Washington.

Chlorine originates in the coal. Essentially 100% of the coal chlorine is volatilized in the boiler and is converted to HCl gas. Very little of the chlorine is retained in the ash. Thus, emissions of HCl are determined by the chlorine content of the coal. Coal quality data is required to design a coal-fired boiler, is required to design pollution control equipment, and is required to determine MACT. It is impossible to evaluate whether the proposed MACT limits are reasonable without site-specific coal quality data.

Neither the MACT Application nor the Notice of MACT Approval reports the design basis coal chlorine content (i.e., the specific coal or range of coals that will be used to design Plant Washington's pollution control train), which is essential to determine appropriate HCl MACT limits. Instead, the MACT Application summarizes generic coal quality data for subbituminous and bituminous coal as reported in the U.S. Geological Survey COALQUAL database. December 2008 Plant Washington Permit Application at 10-6, 10-10 to 10-11, Exhibit A. As explained elsewhere in these comments, the very generalized COALQUAL data does not reflect the quality

of coal that will be burned by Plant Washington. Source-specific data is required to be part of the MACT application pursuant to 40 C.F.R. § 60.43(e)(2)(viii). There is no way EPD can propose an HCl emissions limit that truly reflects the maximum achievable control technology for Plant Washington without source-specific data.

EPD Response: The facility submitted as a part of the permit application the information that Greenlaw stated was not included. Table A-2 (Page A-8) of Exhibit A to the permit application, titled Coal Design Data, includes data for the design coal chlorine content. Table A-3 (Page A-31) of Exhibit A to the permit application clearly indicates in the footnote that the chlorine content of Illinois #6 (bituminous coals) was not based on data provided from the COALQUAL database, since there was limited data available in the database for the chlorine content of these types of coals. The chlorine content of Illinois #6 coals was based on discussions with coal experts familiar with the quality of coals from the Illinois basin.

ii. The MACT Limits Are Less Stringent than Several Other HCl Emission Limits for Coal-Fired Electric Utility Boilers.

EPD established separate MACT limits for hydrogen chloride (HCl) for three separate fuels:

(a) Subbituminous coal: 0.000322 lb/MMBtu, 3-hour average;
(b) Bituminous coal: 0.0024 lb/MMBtu, 3-hour average; and
(c) 50/50 Blend of Coals: 0.00136 lb/MMBtu

2009 EPD Notice of MACT Approval (in Appendix A of EPD's Preliminary Determination) at 26, Draft Permit at Condition 2.13.n. This is not MACT for hydrogen chloride for numerous reasons as follows.

It appears that Power4Georgians and EPD relied on other HCl permit limits to justify the proposed HCl MACT limits for Plant Washington. However, both Power4Georgian's identification of HCl permit limits in its MACT application and EPD's list of permit limits in its Notice of MACT Approval are incomplete. Lower limits have been permitted on similar sources, where similar source includes all coal-fired units (which is consistent with the regulatory definition of similar source). Longview in West Virginia was permitted at 0.00001 lb/MMBtu, 3-hour average, Ex. 53. Trimble in Kentucky, which will burn a blend of subbituminous and bituminous coal, has a lower HCl limit than the proposed 0.00289 lb/MMBtu at Plant Washington for a blend of coals, at 0.0005 lb/MMBtu, 3-hr average. Ex. 54. Both of these facilities would use a wet scrubber to control sulfur dioxide (SO2) emissions, which is the most effective control technology for acid gases such as HCl, as Plant Washington will use.

EPD Response: EPD and Plant Washington investigated the facilities listed above by GreenLaw and found the following information. The Longview HCl limit cited by, 0.00001 lb/MMBtu (3-hour), is not the same HCl limit reported on EPA's RACT/BACT/LAER Clearinghouse (RBLC). The RBLC reports an HCl limit of 0.0021 lb/MMBtu. Plant Washington contacted the West Virginia Division of Environmental Protection (DEP) permit engineer responsible for the Longview site, who reported that while the 0.00001 lb/MMBtu limit is the correct HCl limit, he indicated that the value was derived through a settlement, not through a MACT analysis. EPD and Plant Washington verified that the limit of 0.00001 lb/MMBtu was developed during a settlement agreement for MACT avoidance.

EPD investigated the feasibility of the Longview permit limit of 1×10^{-5} lb/MMBtu to see if this should be considered for MACT HCl limit at Plant Washington. The following table shows HCl stack test data from numerous coal-fired power plants throughout the country. Only one of the eleven listed facilities would be in compliance if they had in place the same limit as Longview. The remaining facility either

would be out of compliance or not enough information was available to determine compliance due to emission level was below the detection level. This information alone shows that maintaining compliance with such a low limit as in the Longview permit would be unlikely and thus is not representative of MACT. Further, the Longview facility is still under construction, so at this point it is unknown if they will be able to meet this limit.

HCl Stack Test Data from PRB-Fired Plants

Plant	Stack Test Date	Reported Emissions Lb/MMBtu
Wygen I	June 13, 2005	1.72×10^{-5}
Neil Simpson II	June 13, 2005	1.63×10^{-6}
Hardin	May 31, 2006	5.67×10^{-5}
MidAmerican - Walter Scott, Jr.	May 8-12, 2007	3.81×10^{-5}
MidAmerican - Walter Scott, Jr.	Aug. 14-18, 2007	5.77×10^{-5}
Wygen II	Jan 31, 2008	3.76×10^{-4}
Newmont Nevada TS Power Plant	April 6-14, 2008	4×10^{-4}
Weston 4	July 10, 2008	8.00×10^{-5}
OPPD	April 9, 2009	$<2 \times 10^{-4}$ (below detection limit)
Newmont Nevada TS Power Plant	April 24, 2009	1.2×10^{-4}
Holcomb 1	August 5-6, 2009	2.60×10^{-5}

The HCl limit listed by GreenLaw for Trimble County facility is not for a coal-fired boiler. Plant Washington and EPD verified that the limit is for the oil-fired auxiliary boiler and is not applicable in the development of MACT limits for the boilers at the facility.

iii. The MACT Limits Are Less Stringent than the HCl Limits Achieved in Practice by the Best Controlled Similar Source.

The proposed HCl MACT limits for Plant Washington are also not reflective of the MACT floor for HCl for coal-fired electric utility steam generating units. The floor should be based on the emissions rate achieved in practice at the best controlled similar source under the worst reasonably foreseeable circumstances. In determining MACT floor for HCl, EPD must not subcategorize sources by coal type or by type of electric generating unit. There is no justification for subcategorizing because the HCl emissions from coal-fired electric utility steam generating units can be controlled with the same types of control technology or methods regardless of type of coal or electric generating unit. *See* definition of similar source at 40 C.F.R. § 63.41. *See also* related discussion under Mercury MACT below. Any applicant for MACT Approval has a suite of tools that can be used to match an achieved-in-practice MACT floor and beyond the floor levels achieved at any plant, regardless of type of electric generating unit or coal. EPD made at least three major errors in setting the MACT limit for HCl: (1) failed to select a best controlled similar source that used wet scrubbing; (2) improperly relied only on permit limits; and (3) ignored stack test data that demonstrate lower limits have been achieved. These are discussed below:

(a) MACT Floor Did Not Consider Best Controlled Similar Source.

SO2, HCl, and HF are acid gases that are removed by similar chemical and physical mechanisms. Both HCl and HF are stronger acids and are thus more reactive than SO2 in scrubber systems. This would typically produce higher removal efficiencies for HCl and HF than for SO2, all other parameters being equal. Emission tests at facilities with wet FGDs found removals of both HF and HCl of over 99%. Exs. 55 and 56. In other words, if a scrubber is designed to remove 95% of the SO2, it would remove more than 95% of the HCl and HF. The best controlled similar source must include wet scrubbing, and acid gas emissions achieved by a wet scrubber represent the MACT floor.

The MACT floor must be based on the emissions control achieved in practice. Power4Georgians instead determined that 98.5% HCl control was achievable and then applied that to worst case subbituminous coal characteristics from COALQUAL to determine a subbituminous coal emission limit. It also appears that Power4Georgians relied on the proposed bituminous limit for HCl at Longleaf as defining MACT floor for Plant Washington when it burns bituminous coal. Not only does 98.5% HCl control not reflect the best controlled similar source as discussed above (Exs. 55 and 56), but actual test data show lower HCl emission rates have been achieved in practice. The Plant Washington Permit Application shows this, with Walter Scott, Jr., Unit 4 and Santee Cooper Cross Unit 3 both achieving lower HCl emission rates. *See* December 2008 Plant Washington Permit Application at 10-53. EPD's Notice of MACT Approval also shows that Weston 4 and Hardin achieved lower HCl emission rates than proposed as MACT for Plant Washington. *See* Appendix A to EPD's Preliminary Determination, at 25, 27.

Further, sources burning lower chlorine coals cannot be ignored in determining MACT floor. The 2007 brick kiln case, for example, requires that inputs, ***e.g.***, fuels, be considered in setting the MACT floor. *See Sierra Club v. Envtl. Prot. Agency*, 479 F.3d 875, 882-83 (D.C. Cir. 2007). EPD cannot ignore better performing sources with different inputs, ***e.g.***, sources burning bituminous coals to set a MACT limit for subbituminous coals. If a source emits a lower HCl emission rate due in part to lower chlorine content of the coal, that source's emissions still must be considered in evaluating the best controlled similar source. Separate limits based on fuel type, such as what EPD proposed for HCl MACT at Plant Washington, are inconsistent with this

framework. The EPA is following the brick kiln case in its currently proposed standard for the Portland cement manufacturing industry. Indeed, EPA rejected subcategorization based on inputs in its proposed standard for Portland cement manufacturers. 74 Fed. Reg. 21,136, 21,145-21,149 (May 6, 2009) (relevant excerpts attached as Ex. 79). This proposed rule for Portland cement manufacturing is EPA's latest statement on the appropriate method of performing a MACT evaluation.

EPD Response: EPD has set a best controlled similar source. Please refer to Division's response to GreenLaw Comment 3, Section C regarding discussion on best controlled similar source. EPD is proactive in setting emissions limitations and ensuring that the facility has the most stringent and comprehensive permit limits.

(b) EPD Improperly Relied On Permit Limits in Proposing Bituminous Coal MACT for HCl at Plant Washington.

Regulatory data, such as permit limits, can only be used to establish the MACT floor if these data approximate what is actually achieved in practice. Regulatory data is not a reasonable basis for the MACT floor if these data "are inherently such weak indicators of performance that using them is necessarily an impermissible stretch of the statutory terms." *Sierra Club & NRDC v. USEPA*, 167 F.3d 658 (1999).

Permit limits are typically higher than actual emission rates. The table below identifies other similar facilities that have tested at much lower HCl limits than permitted. Thus, EPD should not only rely on permitted emission limits in determining the level of HCl emissions control achieved by the best controlled similar source.

Comparison of HCl Permitted Limits and Test Results

Facility	Permit Lb/MMBtu	Test Lb/MMBtu	Ratio Permit/Test	Ex. Number
Hardin	0.00118	0.000050	24	66
Weston 4	0.000212	0.000091	2	72
Council Bluff 4 5/07	0.0029	0.000038	73	70
Council Bluff 4 8/07		0.000058	38	71A, 71B, 71C
Gilbert 3 (2005)	0.0035	0.000056	63	65
Gilbert 3 (2006)		0.00071	5	77
Gilbert 3 (2007)		0.00016	22	78
Santee Cooper Cross 3	0.0024	0.000277	9	73

Not only does the above table show that emission rates are typically much lower than permitted emission rates, it provides several examples of lower HCl emission rates that have been achieved in practice at similar sources as compared to the emission limits proposed by EPD as MACT for HCl at Plant Washington.

EPD Response: Testing results for HCl emissions from sources that could be identified as similar to Plant Washington's boiler are limited. Santee Cooper Cross tested a lower HCl emission of 0.000277 lb/MMBtu. However, that test result is only one data point. It does not represent the variability of

chlorine in coal and the variability of operating conditions. By itself, it is insufficient to establish a MACT limit.

EPD is aware of the Hardin facility and has reviewed the permit and available test data and listed the data as part of our initial review for the Notice of MACT Approval. At this point, EPD only has one test showing a lower HCl limit than the permit limit. It does not represent the variability of chlorine in coal and the variability of operating conditions. By itself, it is insufficient to establish a MACT limit.

EPD has reviewed the permit and testing data for Weston Unit 4. The permit states that the facility burns PRB coal and the HCl limit is 10.94 lb/hr. The test report referenced by Greenlaw contains three runs with the average run HCl concentration of 0.34 lb/hr, which is equivalent to 8×10^{-5} lb/MMBtu. The highest HCl concentration was 1×10^{-4} lb/MMBtu. EPD calculated the equivalent lb/MMBtu limit the facility would have if they do not have an lb/hr limit as stated in the permit. EPD has determined that 10.94 lb/hr is equivalent to 0.00211 lb/MMBtu and not 0.000212 lb/MMBtu as listed in the previous table. It appears as though GreenLaw has a math error in calculating the equivalent permit limit. The permit limit is higher than that of Plant Washington and test results vary thus making it difficult to make any determinations on long-term emission rates from the facility. Also, the facility does not have to comply with an lb/MMBtu limit, as Plant Washington is required to do so in the air quality permit.

MidAmerican Council Bluff is a facility burning PRB and their HCl permit limit is higher than Plant Washington while firing PRB. EPD was not aware of available test data from that facility and has considered it as a part of the final review.

Spurlock Station Gilbert 3 is a Circulating Fluidized Bed (CFB) boiler and as previously discussed is not considered a similar source. In addition, the test results range quite a bit from being out of compliance with Plant Washington permit limit to a low number of 5.6×10^{-5} lb/MMBtu. Data is inconclusive and due to not being a similar source, the information does not aide in setting a lower limit for Plant Washington.

(c) Ignored Stack Test Data

EPD and Power4Georgians did not consider actual test data for HCl. The only way to determine actual emissions is to measure them. EPD and Power4Georgians failed to collect stack test data available at pollution control agencies across the United States and use this data to establish a MACT floor. We have collected some of this data, which indicates that the proposed HCl MACT limits do not satisfy the MACT floor. EPD should collect additional stack test data and use it to make a MACT floor determination.

Stack tests conducted at units without any HCl limits indicate similarly low emissions to those reported above with limits. Wygen Unit I (2003) fires low sulfur subbituminous coal and is equipped with an SCR, dry FGD, and baghouse. It tested at 1.72×10^{-5} lb/MMBtu on average in 2005. Ex. 58. Neil Simpson II (1995) fires the same low sulfur bituminous coal as Wygen I and is equipped with a dry FGD and baghouse, but has no SCR. It tested at 0.163×10^{-5} on average in 2005. Ex. 59.

The U.S. Department of Energy measured HCl emissions from 16 different coal burning boilers, including those with and without various control options, such as reburn, low NOx burners and selective noncatalytic reduction. This study demonstrated that several of the older facilities emitted lower amounts of hydrogen chloride than EPD‘s proposed HCl limit for bituminous coal of 0.0024 lb/MMBtu and, in some cases, less than the proposed subbituminous coal limit of 0.000322 lb/MMBtu. These include Boswell (0.0000011 lb/MMBtu), Springerville (less than

0.000176 lb/MMBtu), Yates (0.000742 lb/MMBtu), Bailly (0.00102 lb/MMBtu), Burger using SNCR (0.00077 lb/MMBtu), Arapahoe uncontrolled (0.000630 lb/MMBtu), Arapahoe using SNCR (0.000720 lb/MMBtu), and Shawnee using lime injection with fabric filters (less than 0.000073 lb/MMBtu). Ex. 28, Table 2-6.2, pp. 44-45.

Thus, all of this actual emissions data must be considered in determining the MACT floor for the HCl to be emitted by Plant Washington.

EPD Response: EPD could not verify the information pertaining to Exhibit 28 that listed stack test data for the Shawnee, Burger or Arapahoe sites. The data presented for HCl emissions is not located on the page and table specified by GreenLaw. EPD has found chlorine data contained in Table A-7 in Appendix A of the document. The data contained in the table is in units of $\mu g/Nm^3$ and Greenlaw has not submitted calculations on how they determined the HCl emission rate for Bailly, Boswell, Yates and Springerville. EPD does not have enough information that can be used for the basis of comparison based on the information submitted.

iv. EPD Must Conduct a Revised and Proper MACT Floor Determination.

EPD concluded that MACT for HCl is an emission limit of 0.0024 lb/MMBtu, (bituminous coal) 0.000322 lb/MMBtu (subbituminous coal), and 0.00136 lb/MMBtu when burning a 50/50 blend of coals, based on a 3-hour average. Because it is improper to categorize based on coal type, MACT can be no higher than 0.000322 lb/MMBtu at the maximum. The stack test data that we were able to collect during the public comment period is sufficient to establish that EPD has not selected MACT for HCl. The 17 measurements summarized above average 0.00026 lb/MMBtu, which is a factor of nine lower than EPD's MACT determination for bituminous coal (0.0024 lb/MMBtu) and also lower than EPD's MACT determination for subbituminous coal (0.000322 lb/MMBtu). These data indicate that EPD should collect additional stack test data from other pollution control agencies and revisit its MACT determination using actual emissions data.

EPD Response: EPD does a thorough job in gathering as much information as possible as a part of permit application review. EPD stands by the information collected and used to determine the MACT floor. A facility has to be able to maintain compliance with the permit limit. Plant Washington's HCl limits are as low as EPD believes is possible allowing for a margin of compliance. Plant Washington's HCl limit while firing PRB is lower than all currently permitted coal fired power plants, such as Michigan's Consumers, SWEPCO John W. Turk, City Utilities of Springfield – Southwest Power Station, Rocky Mountain Power Harding Generating Station, LS Power Sandy Creek and Longleaf Energy Station. Plant Washington's HCl limit while firing the 50/50 blend is one of the lowest with the exception of the Longleaf Energy Station, which has a limit of 2×10^{-3}. Longleaf Energy Station HCl limit is lower because the facility can burn a different bituminous coal and the chlorine content is lower than the Illinois No. 6 at Plant Washington. A one-time test does not show continuing compliance with a permit limit.

v. EPA Failed to Fully Evaluate Beyond-the-Floor HCl Control Technologies for Plant Washington.

EPD did not adequately consider beyond-the-floor controls for HCl control at Plant Washington. EPD has proposed that hydrogen chloride would be controlled by the wet scrubber, the control designated for SO2 control. The beyond-the-floor analysis only considered the addition of a wet electrostatic precipitator to the BACT pollution control train. Plant Washington Permit Application at 10-55. There is at least one additional technology that should have been

considered. In addition, higher HCl control efficiencies with the wet scrubber should have been evaluated.

Wet scrubbers can achieve extremely high levels of HCl control. For example, Alstom submitted data to Duke Energy that indicated 99.7 – 99.9% HCl removal efficiencies have been achieved at two units with a wet scrubber designed to achieve high SO2 removal efficiencies. The Plant Washington Permit Application indicates that the proposed limits for HCl reflect 98.5% control. December 2008 Plant Washington Permit Application, at 10-56. The above-referenced documentation indicate that lower HCl limits could be achieved with a better-designed wet scrubber. Thus, EPD must evaluate higher levels of HCl control that are achievable with a wet scrubber in determining MACT for Plant Washington.

Second, a chloride prescrubber could be used to remove additional HCl. A prescrubber is located ahead of the FGD and uses a spray containing calcium chloride, limestone, or dilute hydrochloric acid to remove chloride. Prescrubbers are in use in the United States at the Philadelphia Electric Eddystone and Cromby plants as well as many others. They are also widely used in Europe. A prescrubber could be used at Plant Washington to reduce HCl emissions below the levels achieved using only a wet scrubber.

In summary, EPD must conduct a thorough evaluation of the MACT floor based on the HCl emission rates achieved in practice at coal-fired electric utility steam generating units and must also evaluate beyond the floor technologies and techniques in proposing an HCl limit that is truly reflective of the maximum degree of HCl emission reduction that is achievable. Furthermore, there is no justification for EPD to subcategorize the determination of MACT floor for HCl based on coal rank and thus EPD must propose one HCl limit for Plant Washington that is no less stringent than the MACT floor and that truly reflects MACT for HCl at Plant Washington.

EPD Response: EPD did complete a beyond the floor analysis and evaluated the use of a Wet Electrostatic Precipitator (WESP) and made a determination that it was not an acceptable option. In addition to the higher costs, the use of a WESP will cause additional environmental impacts. Specifically, it would place greater demands on the limited water supply in the region. As detailed in the BACT determination for PM/PM10 located in GreenLaw Comment 2, Section F, EPD believes that these cost, environmental impacts and increased energy demands do not justify the use of a WESP at the facility.

A prescrubber may be effective on HCl plants but there is no information that shows that this technology is technically feasible and commercially available for coal-fired power plants. Facilities that utilize the prescrubber also have high inlet SO_2 levels in the flue gas which makes the use of such a device much more cost effective and beneficial to the project.

b. MACT For Hydrogen Fluoride

EPD proposed a single MACT limit for hydrogen fluoride of 2.17×10^{-4} lb/MMBtu based on a 3-hour average. This is not MACT for hydrogen fluoride.

i. The MACT Approval Fails to Identify Important Design Criteria for Plant Washington.

Fluorine, like chlorine, originates in the coal, is volatilized in the boiler, and exits the plant in the gaseous state as hydrogen fluoride (HF). Thus, the amount of fluorine in the coal, coupled with the efficiency of the pollution control train, will determine HF emissions and MACT for HF.

Neither the Plant Washington Permit Application nor the Notice of MACT Approval reports the design basis fluorine content (i.e., the specific coal or range of coals that will be used to design Plant Washington's pollution control train) which is essential to determine an appropriate HF MACT limit. Instead, the MACT Application summarizes generic coal quality data for subbituminous and bituminous coal as reported in the U.S. Geological Survey COALQUAL database. December 2008 Plant Washington Application at 10-56 and Exhibit A. As explained in these comments, COALQUAL data does not reflect the specific quality of coal that will be burned by Plant Washington. Source-specific data is required to be part of the MACT application pursuant to 40 C.F.R. § 60.43(e)(2)(viii). There is no way EPD can propose an HF emissions limit that truly reflects the maximum achievable control technology for Plant Washington without source-specific data.

ii. The MACT Limit Is Less Stringent than Other HF Emission Limits for Coal-Fired Electric Utility Boilers.

EPD proposed a single MACT limit for HF of 0.000217 lb/MMBtu. Lower limits have been proposed and permitted on similar sources, where similar source is all coal-fired boilers, consistent with the regulatory definition as previously discussed. Two units have been permitted with lower HF limits – Longview in West Virginia at 0.00001 lb/MMBtu, 3-hour average, Ex. 53, and Thoroughbred in Kentucky at 0.000159 lb/MMBtu, 30-day average. Ex. 62. Both of these facilities would use a wet scrubber to control SO_2 emissions. EPD also proposed a slightly lower HF MACT limit for Longleaf of 0.0002 lb/MMBtu which was based on the use of a dry scrubber that would be less effective at controlling HF than the wet scrubber to be used at Plant Washington. The fluoride BACT analysis for Plant Washington also identified the Maidsville BACT limit for HF being lower than proposed for Plant Washington, at 0.0001 lb/MMBtu. December 2008 Plant Washington Permit Application at 4-120. Thus, EPD‘s proposed MACT limit is inconsistent with prior determinations of HF MACT and BACT for similar sources (including its own proposed MACT determination for Longleaf).

EPD Response: EPD and Plant Washington investigated the facilities listed above by GreenLaw and found the following information: The Longview HF limits cited by, 2.14×10^{-3} lb/hr and 1.00×10^{-5} lb/MMBtu, is not the same HCl limit reported on EPA’s RACT/BACT/LAER Clearinghouse (RBLC). The RBLC reports an HF limit of 0.0021 lb/MMBtu. Plant Washington contacted the West Virginia DEP permit engineer responsible for the Longview site, who reported that while the above limits are the correct HF limits, he indicated that the value was derived through a settlement, not through a MACT analysis. EPD and Plant Washington verified that the limits were developed during a settlement agreement for MACT avoidance.

EPD investigated the feasibility of the Longview permit limit of 1×10^{-5} lb/MMBtu to see if this should be considered for the HF MACT limit at Plant Washington. The following table shows HF stack test data from numerous coal-fired power plants throughout the country. Only two of the listed facilities would be in compliance if they had in place the same limit as Longview. The remaining facilities either would be out of compliance or not enough information was available to determine compliance due to emission levels were below the detection level. This information alone shows that maintaining compliance with such a low limit as in the Longview permit would be unlikely and thus is not representative of MACT.

HF Stack Test Data from PRB-Fired Plants

Plant	Stack Test Date	Reported Emissions Lb/MMBtu
Wygen I	June 13, 2005	1.35×10^{-6}
Neil Simpson II	June 13, 2005	5.58×10^{-7}
Hardin	May 31, 2006	4.67×10^{-5}
Tucson Electric - Springerville Unit 3	Aug. 24-25, 2006	6.30×10^{-5}
MidAmerican - Walter Scott, Jr.	May 8-12, 2007	$<1.08 \times 10^{-4}$ (below detection limit)
MidAmerican - Walter Scott, Jr.	Aug. 14-18, 2007	2.87×10^{-5}
Wygen II	Jan 31, 2008	$<3.76 \times 10^{-5}$ (2 of 3 runs below detection limit)
Newmont Nevada TS Power Plant	April 6-14, 2008	1.38×10^{-4}
Weston 4	July 10, 2008	4.00×10^{-5}
OPPD	April 9, 2009	$<2 \times 10^{-4}$ (below detection limit)
Newmont Nevada TS Power Plant	April 24, 2009	$<2.14 \times 10^{-4}$ (below detection limit)
Holcomb 1	August 5-6, 2009	$<2.8 \times 10^{-5}$ (below detection limit)

Also, GreenLaw indicated that Plant Washington also identified another site (Maidsville) that had a lower HF emission limit than proposed. This site (Maidsville) is the same Longview facility referenced above.

The Thoroughbred permit includes a requirement to establish a correlation between SO_2, coal quality, and HF emissions to demonstrate ongoing compliance through SO_2 CEMS. It is worth noting that the developer of the Thoroughbred facility has withdrawn the permit application for construction, thus preventing EPD from ever learning whether this Thoroughbred limit is achievable in practice.

iii. The MACT Limit Is Less Stringent than the HF Limits Achieved in Practice by the Best Controlled Similar Source.

The proposed HF limit of 0.000217 lb/MMBtu for Plant Washington fails to be at least as stringent as the emissions control achieved by the best controlled similar source. First, as discussed above, there are three permits for similar sources with lower HF limits: Longview with a HF limit of 0.00001 lb/MMBtu, 3-hour average, Maidsville in West Virginia with an HF limit of 0.0001 lb/MMBtu, and Thoroughbred in Kentucky at 0.000159 lb/MMBtu, 30-day average.

Second, permit limits often overestimate actual emissions. For example, Weston 4 has an HF permit limit of 0.000217 lb/MMBtu. Ex. 63. The initial stack test at Weston 4 reported emissions of 0.000040 lb/MMBtu or five times lower than the limit. Ex. 72. The table below identifies similar facilities that have tested at much lower HF limits than permitted. Thus, EPD should not rely on permitted limits to determine the MACT floor.

Comparison of HF Permitted Limits and Test Results

Facility	Permit Lb/MMBtu	Test Lb/MMBtu	Ratio Permit/Test	Ex. Number
Hardin	0.00051	0.000050	10	66
Weston 4	0.000217	0.000040	5	72
Council Bluff 4 5/07	0.0009	0.000108	8	70
Council Bluff 4 8/07		0.000029	31	71A, 71B, 71C
Springerville 3	0.00044	0.000063	7	67A. 67B, 67C
Gilbert 3	0.00047	0.000056	8	65
Santee Cooper Cross 3	0.00030	0.0000415	7	73

Not only does the above table show that coal-fired power plants emit HF at lower rates then their permit limits, but also this stack test data shows that lower limits than 2.17 x 10^{-4} lb/MMBtu are being achieved in practice. Stack tests conducted at units without any HF limits indicate similarly low emissions. Wygen Unit I (2003) fires low sulfur subbituminous coal and has an SCR, dry FGD, baghouse. It tested at 0.00000135 (1.35 x 10^{-6}) lb/MMBtu in 2005. Ex. 58. Neil Simpson II (1995) fires the same low sulfur subbituminous coal as Wygen I and is equipped with a dry FGD and baghouse, but has no SCR. It tested at 0.000000559 (5.59 x 10^{-7}) lb/MMBtu in 2005. Ex. 59.

In addition, the Gilbert Unit 3 circulating fluidized bed boiler achieved a hydrogen fluoride emission level of less than 0.000056 lb/MMBtu while burning bituminous coal. Ex. 65, p. 3, Table 4. The JEA Northside circulating fluidized bed boiler tested at less than 0.0000309 lb/MMBtu while burning 100% Pittsburgh 8 coal; and at 0.00004582 lb/MMBtu while burning 100% Illinois 6 coal. Ex. 32, pp. 31-38.

The U.S. Department of Energy measured HF emissions from 16 different coal burning boilers, including with and without various control options, such as gas reburn, low NOx burners and selective noncatalytic reduction. This study demonstrated that several of the facilities emitted lower amounts of HF than proposed here as MACT for Plant Washington, including: Springerville (<0.000092 lb/MMBtu), Yates (0.000122 lb/MMBtu), Nelson Dewey (0.000067 lb/MMBtu), Burger using SNCR (0.000039 lb/MMBtu), and Shawnee using lime injection with fabric filters (<0.000023 lb/MMBtu). Ex. 28, Table 2-6.2, pp. 44-45.

Based on the above test data, the lowest HF emission rate being achieved in practice at coal-fired electric utility boilers is at least an order of magnitude lower than the 0.000217 lb/MMBtu HF limit proposed as MACT for Plant Washington. All of this actual emissions data must be considered in determining the MACT floor for the HF to be emitted by Plant Washington.

EPD Response: EPD could not verify the information pertaining to Exhibit 28 that listed stack test data for the Shawnee, Burger or Arapahoe sites. The data presented for HF emissions is not located on the page and table specified by GreenLaw. EPD has found fluorine data contained in Table A-7 in Appendix A of the document. The data contained in the table is in units of $\mu g/Nm^3$ and GreenLaw has not submitted calculations on how they determined the HF emission rate for Bailly, Boswell, Yates and Springerville. EPD has no information that can be used for the basis of comparison based on the information submitted.

iv. EPD Must Conduct a Revised MACT Floor Determination.

EPD concluded that MACT for HF is an emission limit of 0.000217 lb/MMBtu based on a 3-hour average. The stack test data that we were able to collect during the public comment period is sufficient to establish that EDP has not selected MACT for HF. The 14 measurements summarized above average 0.000052 lb/MMBtu, which is a factor of more than four lower than EPD's proposed MACT determination. The standard deviation, a measure of variability of this data, is 0.000036 lb/MMBtu. The average plus three standard deviations, which encompasses 99.97% of the measurements, is 0.00016 lb/MMBtu, which is still lower than EPD's proposed MACT level. These data indicate that EPD should collect additional stack test data from other pollution control agencies and make a new determination of HF MACT floor using actual emissions data.

v. EPA Failed to Fully Evaluate Beyond-the-Floor HF Control Technologies for Plant Washington.

EPD did not adequately consider beyond-the-floor controls for HF control at Plant Washington. EPD has proposed that HF would be controlled by the wet scrubber, the control designated for SO_2 control. The beyond-the-floor analysis only considered the addition of a wet electrostatic precipitator to the BACT pollution control train. Plant Washington Permit Application at 10-55. Higher HF control efficiencies with the wet scrubber should have been evaluated.

Wet scrubbers can achieve higher levels of HF control. For example, Alstom submitted data to Duke Energy indicated that 99.7 – 99.9% HF removal efficiencies have been achieved at two units with a wet scrubber designed to achieve high SO_2 removal efficiencies. The Plant Washington Permit Application indicates that the proposed limits for HF reflect 98.5% control. December 2008 Plant Washington Permit Application, at 10-56. The above-referenced documentation supports lower HF limits could be achieved with a better-designed wet scrubber. Thus, EPD must evaluate higher levels of HF control that are achievable with a wet scrubber in determining MACT for Plant Washington.

In summary, EPD must properly conduct a thorough evaluation of the MACT floor and of beyond the floor technologies in proposing an HF limit that is truly reflective of MACT for HF at Plant Washington.

EPD Response: Again, the MACT emission limit should not be set at the lowest single test result ever achieved by a best controlled similar source, and when working with small sets of source test data to assess an emission limit, an appropriate margin of compliance needs to be added. As for the proposed HF emission limit, stack testing results were reviewed, and the calculation methodology used to derive the emission limit was reviewed again.

The Michigan Department of Environmental Quality (MDEQ) has recently issued an air quality permit for the Consumers Energy Facility. This permit contains a lower HF permit limit for the boilers than Plant Washington. The Consumer's boilers operate in a very similar manner and capacity to Plant Washington. Therefore, the two facilities can easily be compared for the purposes of MACT. MDEQ issued the final permit on December 29, 2009 for the Consumers Energy Facility with a HF limit of 1.40×10^{-4} lb/MMBtu for all coal types (sub-bituminous, bituminous or a blend). The Consumers Energy Facility plans to primarily burn PRB and a 50/50 blend of PRB and bituminous coal. Therefore, EPD has determined that a lower HF limit of 1.40×10^{-4} is appropriate for MACT.

Based on Division's review of recent coal fired power plant permits issued (see Appendix C), the Division has decided to lower HF emissions limit while firing either sub-bituminous coal or while firing 50/50 blend coal from 2.17 x 10^{-4} lb/MMBtu to 1.40 x 10^{-4} lb/MMBtu. The Division will modify Condition 2.13.k as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

k. Contain Fluorides (as HF) in excess of 1.40 x 10^{-4} lb/MMBtu on a 3-hour average. [40 CFR 63 Subpart B and 40 CFR 52.21(j)]

c. Mercury MACT

EPD proposed a MACT limit for mercury of 13 x 10^{-6} lb/MW-hr (rolling 12 month average). See Condition 2.13.m. of draft Plant Washington permit. Compliance is determined using a mercury continuous emissions monitoring system (CEMS) on a 12-month rolling average basis. EPD Notice of MACT Approval, Appendix A at 42-3. These limits would be met using activated carbon injection. Draft permit at Condition 2.9. This proposed limit fails to reflect MACT for the mercury to be emitted by Plant Washington.

The MACT floor is to be based on the lowest limit that is achieved in practice. Based on a review of EPD's Case-by-Case MACT Determination for Plant Washington (in Appendix A of EPD's Preliminary Determination), it is not entirely clear what criteria EPD applied in determining best controlled similar source for Plant Washington. EPD's MACT determination included mercury emission test result data for EGUs burning both bituminous and subbituminous coal. *See* EPD Preliminary Determination, Appendix A, at 9-10. No indication was given that any of these test results were being discounted due to differences in coal type. The EPD MACT determination also evaluated several circulating fluidized bed (CFB) boilers with lower limits, but then discounted those emission limits due to differences in fuels. *Id.* at 10. However, EPD's MACT approval did not provide any justification for not considering all solid fossil fuel burning EGUs in determining MACT floor. And yet, the company proposed a mercury emission limit of 15 x 10^{-6} lb/MW-hr (1.68 x 10^{-6} lb/MMBtu) that would only apply when burning subbituminous coal. *Id.* at 13. It appears that the company has proposed no mercury emission limit when burning bituminous coal or when burning a blend of bituminous and subbituminous coal.

In its review of beyond-the-floor MACT for mercury, no additional controls or lower mercury emission rates were considered appropriate for mercury by Power4Georgians. *Id.* at 12. Power4Georgians appears to claim that its planned controls of a selective catalytic reduction (SCR) system, baghouse, and wet scrubber constitute the best demonstrated technology for mercury based on EPA's position of its unlawful CAMR regulations. *Id.* Why this is at all relevant to a case-by-case MACT determination is entirely unclear. The CAMR rule was overturned by the U.S. Court of Appeals (*State of New Jersey et al. v. Envtl. Prot. Agency*, 517 F.3d 574 (D.C. Cir. 2008)), and the NSPS standard for best demonstrated technology is not nearly as stringent as the case-by-case MACT standard. 40 C.F.R. §§63.43(d)(1) and (2).

EPD Response: The D.C. Circuit Court of Appeals vacated the Clean Air Mercury Rule on a procedural issue. The data and research completed during the years of rule development are an excellent source for background information and is completely relevant to this permitting action.

EPD, in its review of the Plant Washington MACT application, added three additional mercury stack test results, two of which were much lower than the 15 x 10^{-6} lb/MW-hr mercury MACT

limit proposed by Plant Washington and are even much lower than EPD's proposed 13 x 10^{-6} lb/MW-hr limit. Specifically, according to EPD's Notice of MACT Approval, the Weston 4 unit achieved a mercury emission rate of 1.4 lb/TBtu or 8.79 x 10^{-6} lb/MW-hr and the Newmont Nevada unit achieved less than 7.6 x 10^{-6} lb/MW-hr. *Id.* at 13. And, although it is not appropriate to subcategorize the determination of best controlled similar source based on coal type and neither the company or EPD provided any rationale for any such subcategorization, it is interesting to note that these two units with lower mercury emission rates were burning subbituminous coal and were also equipped with similar controls as Plant Washington will be equipped with.

Although EPD included these additional stack tests in its review of MACT for Plant Washington, it did not rely on those to set a lower limit but instead relied on a proposed MACT limit for the Mid-Michigan Energy LLC facility which proposed, in January 2009, a mercury MACT limit of 13 x 10^{-6} lb/MW-hr. *Id.* at 14. GA EPD determined that this limit reflected a beyond-the-MACT floor level of control for mercury at Plant Washington and so proposed this as its mercury MACT emission limit. *Id*. Under the terms of the draft permit, this limit would apply irrespective of the coal type burned. Draft Plant Washington Permit, Condition 2.13.m.

Both the company's and GA EPD's evaluation of MACT for mercury fail to follow the process required by 40 C.F.R. §63.43(d) in determining MACT for the mercury to be emitted by Plant Washington. As our analysis shows below, there is no justification for subcategorizing the determining of best controlled similar source based on coal type and there are numerous instances of lower mercury emission rates being achieved in practice at similar EGUs.

i. The MACT Approval Fails to Identify Important Design Criteria for Plant Washington.

Neither the company nor EPD have disclosed the design basis of the Plant Washington boiler, including specific information necessary to determine the uncontrolled levels of mercury expected from Plant Washington. While the company provided coal mercury data for subbituminous and bituminous coals from the USGS CoalQual database, that database is overly broad and does not reflect the specific coals currently proposed to be burned at Plant Washington. Authors of a study that compared USGS data to commercial coal data for the Pittsburgh seam cautioned against use of the USGS data, stating: use of the USGS data base without careful analysis and treatment of the data will produce misleading estimates for trace element emissions from coal-burning utilities. For example, the coal sampling was irregular, it reflects coal before it is physically cleaned (*e.g.*, ash removal), most of the mines sampled are now closed, etc. Other permits show that lower mercury coal than assumed by Power4Georgians (i.e., 10.2 lb/TBtu) is available from the Powder River Basin.

Such data is required to be part of the MACT application pursuant to 40 C.F.R. § 60.43(e)(2)(viii). There is no way EPD can propose a mercury emissions limit that truly reflects the maximum achievable control technology for Plant Washington without source-specific data. Indeed, EPD's determination can hardly be called a case-by-case analysis without such data. Furthermore, EPD must also obtain specific design thermal efficiency data for Plant Washington's boiler, if EPD is going to set limits in terms of lb/MW-hr that truly reflect MACT for Plant Washington. Therefore, EPD must require Plant Washington to submit detailed data specific to Plant Washington as required to be included in all applications for case-by-case MACT determinations pursuant to 40 C.F.R. § 60.43(e)(2), and it must make a revised determination with all available data made public for review and comment.

ii. The Proposed Mercury Emission Limit Is Not at Least as Stringent as the Emissions Achieved in Practice by the Best Controlled Similar Source.

The first step in determining MACT for Plant Washington's mercury emissions is to determine the level of mercury emissions achieved in practice at the best controlled similar source. For Plant Washington, which is planned to be a supercritical pulverized coal boiler that could burn Powder River Basin subbituminous coal or up to a 50/50 blend with Illinois #6 bituminous coal, the determination of MACT floor must be based upon the mercury emission rates achieved in practice at all solid fossil fuel fired electric utility steam generating units, irrespective of fuel type or rank of coal.

As discussed above, similar source is defined in 40 C.F.R. §63.41 as

> a stationary source or process that has comparable emissions and is structurally similar in design and capacity to a constructed or reconstructed major source such that the source could be controlled using the same control technology.

Electric utility steam generating units burning solid fossil fuel are similar in design and comparable in emissions, regardless of whether such sources burn bituminous coal, subbituminous coal, lignite, coal refuse, or even petroleum coke, and the mercury emissions from such sources could be controlled using the same control technology. While it is true there can be differences in the mercury content of the different fuel types, those differences do not mean that the same mercury emission rates cannot be achieved.

Coal rank affects only the amount of pollutant removal that can be achieved by a given technology design. However, the removal efficiency can be modified by changing the design basis of each control technology. For example, the amount of mercury that can be removed with a sorbent injection system can be increased through sorbent selection and adjusting the amount of injected sorbent concentration. Coal rank will not affect the emission rates achievable, only the design of the control technologies and how they are operated to control emissions. Just as units burning low sulfur coal may be designed with different SO_2 controls as compared to those burning high sulfur coal, units burning different types of solid fossil fuels can have mercury controls that are designed specifically to address the characteristics of mercury formation and control from the fuel in question, such as the use of halogenated sorbents for mercury control from low chlorine coals.

Further, sources burning lower mercury controls or higher chlorine coals cannot be ignored in determining MACT floor. The 2007 brick kiln case, for example, requires that inputs, ***e.g.***, fuels, be considered in setting the MACT floor. *See Sierra Club v. Envtl. Prot. Agency*, 479 F.3d 875, 882-83 (D.C. Cir. 2007). EPD cannot ignore better performing sources with different inputs, ***e.g.***, sources burning bituminous coals to set a MACT limit for subbituminous coals. If a source emits a lower mercury emission rate due in part to lower mercury content of the coal, that source's emissions still must be considered in evaluating the best controlled similar source. Separate limits based on fuel type are inconsistent with this framework. The EPA is following the brick kiln case in its currently proposed standard for the Portland cement manufacturing industry. Indeed, EPA rejected subcategorization based on inputs in its proposed standard for Portland cement manufacturers. 74 Fed. Reg. 21,136, 21,145-21,149 (May 6, 2009) (relevant excerpts attached as Ex. 79). This proposed rule for Portland cement manufacturing is EPA's latest statement on the appropriate method of performing a MACT evaluation.

(a) With Currently Available Control Options and Technology, Coal-Fired Electric Utility Steam Generating Units Can Meet the Same Level of Mercury Emissions Regardless of Coal Rank/Fuel Type.

The same degree of mercury reduction can now be achieved from coals, regardless of rank, using advances in mercury control technology that have occurred since the research studies relied on in the 2005 proposed rulemaking. Exs. 82-85. These advances include additives to increase the chlorine content of the coal, catalysts that oxidize over 90% of the mercury in coals, and a smorgasbord of sorbents to choose from. As of March 2009, 135 mercury control technology systems had been booked by pollution control vendors at a variety of different facilities. Ex. 87. These advances and experiences have allowed for comparable mercury reductions across all boiler and coal types.

For example, subbituminous coals such as those proposed for Plant Washington typically contain low amounts of chlorine. Thus, the majority of the mercury exiting the boiler is present as elemental mercury, which can be difficult to remove in downstream pollution control devices. In the past, the mercury from these coals was believed to be much more difficult to control than mercury from high chlorine coals, which lead to higher proposed MACT and final NSPS limits for sources burning subbituminous coal. However, extensive research has led to the development of new technologies. Thus, this is no longer the case. In fact, research suggests that it is more difficult to remove mercury from high chlorine bituminous coals, due to sulfuric acid mist. Ex. 88A, 88B. Additional controls, *e.g.*, trona injection, not considered by EPD, may be required to meet BACT if Plant Washington fires such coals.

EPD Response: EPD and Plant Washington evaluated the use of sorbent injection for the control of sulfuric acid mist emissions, which included the use of trona. A complete discussion is available in the application and in the preliminary determination BACT analysis for sulfuric acid mist.

Mercury can now be controlled to the same degree of reduction when firing any coal type due to commercially available products. First, the chlorine content of low chlorine subbituminous coal can be boosted by blending in 15 to 50% bituminous coal or by adding proprietary chemicals. Exs. 89, 90, and 85. Given that Plant Washington may be blending up to 50% Illinois #6 bituminous coal with subbituminous coal, this may result in high levels of mercury reduction. Second, specially formulated catalysts can be used to enhance mercury oxidation. Exs. 91 and 83. Mercury oxidation is important because it enhances the ability of downstream control equipment to remove mercury. Finally, a large number of sorbents are commercially available and can be matched to specific flue gases to remove over 90% of the mercury. Halogenated sorbents such as bromiated carbon have been demonstrated to remove over 90% of the mercury from several facilities burning subbituminous coal. Exs. 82 and 86.

Thus, there is no basis for subcategorizing determination of similar source based on coal type due to differences in performance of control technologies. Any applicant for MACT Approval has a suite of tools that can be used to match an achieved-in-practice MACT floor and beyond the floor levels achieved at any plant, and this includes units burning waste coal and/or pet coke. Consequently, EPD must determine MACT for mercury irrespective of the type of coal burned.

(b) Mercury Emission Rates Lower than EPD's Proposed Mercury MACT Limit for Plant Washington Have Been Achieved in Practice at Similar Sources.

EPD's proposed mercury MACT limit for Plant Washington of 13 x 10^{-6} lb/MW-hr equates to approximately 1.46 lb/TBtu. Lower mercury emission limits have been achieved in practice at numerous units.

Several units in EPA's 1999 Information Collection Request (ICR) testing had mercury emission rates lower than 1.46 lb/TBtu as shown in the table below, and none of these units had mercury-specific controls.

Unit	1999 ICR Mercury Emission Rate, lb/TBtu
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
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

Another example of a unit meeting a lower mercury emission rate is Reliant Energy's Seward Station. The units at this facility achieved mercury emission rates ranging from 0.01-0.02 lb/TBtu which, according to the test report, reflects 100% mercury removal. Ex. 127. Seward Station, a 521 megawatt power plant, consists of two identical CFB boilers burning bituminous waste coal, each equipped with a selective non-catalytic reduction (SNCR) system, baghouse, in-furnace limestone injection, and flash dryer absorber. These units were burning waste bituminous coal with a mercury content ranging from 0.276 - 0.465 parts per million (ppm), presumably this is by weight of mercury in the coal, which is relatively high compared to the mercury coal contents identified in the 1999 ICR test results in Ex. 29.

Another example is the MidAmerican Walter Scott, Jr. unit. The MidAmerican Walter Scott Jr. unit attained a mercury emissions rate lower than 0.72 x 10^{-6} lb/MMBtu during the May 2007 test. See Ex. 70. The Plant Washington permit application identifies a different test result for the Walter Scott Jr. Unit 4 and also neglects to mention that the results fell below the PQL so the PQL (which, in the case of this other stack test, was 1.2 lb/TBtu). *See* Exs. 70 and 71A, B, and C.

Further, the Santee Cooper Santee Cooper Cross Unit 3 was shown in testing to emit mercury at a rate of 0.72 lb/TBtu and 0.58 lb/TBtu. Exs. 73 and 74.

Units that burn pet coke or a blend of pet coke and coal have also been shown to achieve lower mercury emission rates than EPD's proposed MACT limit for Plant Washington which equates to 1.46 lb/TBtu. JEA Northside includes two CFB boilers equipped with spray dryer absorbers and baghouses that burn pet coke and/or coal. These units achieved a mercury emission rate of 0.51 lb/TBtu while burning 70% pet coke and 30% Pittsburgh No. 8 coal, 0.28 lb/TBtu while burning 100% pet coke, and 0.074 lb/TBtu while burning 80% pet coke and 20% Pittsburgh No. 8 coal. Exs. 32, 33, and 34.

Yet, another example is the Hardin Generating Station. This facility burns Powder River Basin subbituminous coal, and is equipped with an SCR, dry scrubber, fabric filter, and ACI system. This facility is equipped with Hg CEMs and, while we have not yet obtained the specific mercury CEMs data, a presentation on the mercury reductions achieved at Hardin provides a graphical representation of 10 months worth of mercury emissions. *See* Ex. 93. Specifically, the 17th slide of the attached presentation shows that, over the 10 month period from September 2007 to July 2008, mercury emissions from Hardin rarely ever exceed 0.5 µg/m3 and are often much lower than 0.5 µg/m3. Assuming this mercury emissions data reflects standard temperature and pressure, a mercury concentration in the stack of 0.5 µg/m3 reflects an emission rate of 0.305 x 10^{-6} lb/MBtu (or 0.305 lb/TBtu). This is much lower than the mercury emissions rate EPD has proposed for Plant Washington, thus providing convincing long-term (10 months) data measured by a Hg CEMS that lower mercury emission rates have been achieved in practice.

It also must be stated that the mercury test results for these units do not necessarily reflect the lowest mercury emission rates that can be achieved at subbituminous coal-fired power plants. They simply reflect the mercury emissions rates achieved at these units based on their design and the emission limit they are trying to achieve. The level of mercury control achieved with ACI can be improved with increased amounts of carbon injected, as well as with different sorbents such as bromiated carbons as discussed above. Furthermore, other options are available to improve mercury control such as blending with higher chlorine bituminous coal.

For example, at the time of the mercury stack testing at MidAmerican's Walter Scott Jr. unit, the unit was subject to a mercury emission limit of 1.7 x 10^{-6} lb/MMBtu. Ex. 94. Because it costs more to inject more carbon or to use halogenated carbons, it is not reasonable to expect the emissions testing at this unit to reflect the lowest mercury emission rate achievable at this unit because the operation of the ACI system is tied to ensuring compliance with the applicable emission limit and not necessarily to achieving the lowest Hg reductions.

In addition, use of a fabric filter followed by a wet scrubber (i.e., Plant Washington's proposed configuration) as compared to a dry scrubber followed by a fabric filter (the Walter Scott Jr. Unit 4 configuration) would improve mercury control. Studies have demonstrated that elemental mercury, the major form of mercury from subbituminous coals, is more soluble in the wet scrubber scrubbing solution. The wet scrubber also removes 50% or more of the particulate matter, including absorbed mercury, while the dry scrubber is far less efficient at removing particulate matter. In addition, because the dry scrubber is typically situated before the baghouse and because it removes chlorine as discussed elsewhere in these comments, less chlorine is available in the downstream activated carbon injection system and baghouse where it would otherwise facilitate mercury removal. In contrast, the baghouse and ACI system in a control train with a wet scrubber are located upstream of the scrubber and thus more chlorine would be available to oxidize the mercury so that it is more readily captured in the baghouse.

All of these test results provide irrefutable evidence that lower mercury emission rates than EPD's proposed 13 x 10^{-6} lb/MW-hr mercury MACT limit (or approximately 1.46 lb/TBtu) have been achieved in practice, including as measured by CEMs and on long term basis. Consequently, GA EPD's proposed mercury MACT standard for Plant Washington utterly fails to reflect the MACT floor.

(c) EPD and Plant Washington Cannot Ignore These Lower Mercury Emission Rates Achieved Due to Claims of Short Duration Testing.

A stack test report shows what has been achieved and what is achievable. That alone should end any dispute as to whether such data is relevant to the MACT analysis. While stack tests are just a snapshot of operations under carefully observed and controlled conditions, these tests have historically been all that is required to demonstrate compliance with permit limits, including MACT limits. If periodic tests with no intervening compliance demonstrations are adequate to demonstrate compliance with MACT limits, they should also be adequate to establish the emission levels that must be complied with in the first place.

Long term test data is not required to set the MACT floor. There is very little long-term test data for any of the subject HAPs or their surrogates. If long-term emissions data were a prerequisite, it would be impossible to make a MACT determination. The EPA has routinely used other approaches to determine the best controlled similar source. These other approaches include relying on short-term test data and applying a technology based approach when there is a lack of data. These and others have been upheld by the D.C. Circuit, so long as they are reasonable. These decisions indicate that measured, long-term emissions data is not required to establish the floor or beyond the floor MACT emissions rate.

In setting an emission rate reflective of the MACT floor, EPD can account for variability in the effectiveness of control measures and techniques by setting the MACT floor based on the emissions control achieved by the best controlled similar source under the worst reasonably foreseeable circumstances. In a November 2003 memo to the Utility MACT Project File, EPA explained how you could account for such variability. Specifically, EPA stated there are two fundamentally different approaches to incorporating variability into the proposed [MACT] rule: (1) including variability in the MACT floor calculation; *or* (2) including variability in the compliance method. EPA further stated:

Addressing variability in the compliance method would involve allowing an averaging time for compliance that would accommodate variations in pollutant emissions over time. For example, averaging over a month or year of data will provide opportunity for variations in the amount of a constituent in the fuel to be accommodated without exceeding the emission limitation.

Use of a long-term average smoothes out the ups and downs or variability in measured data. This is shown in Figure 7.1 from Exhibit 107, which graphically displays the same data set on an instantaneous basis (as measured by a CEMS), on a one-hour basis, and on a four-hour basis. This chart shows that the longer 4-hour averaging time smoothes out the peaks and valleys in the instantaneous values, resulting in a straight line as a function of time. The shorter term data is very ragged with lots of peaks and valleys. Further, a 3-hour stack test conducted once a year has an equal chance of coming in either higher or lower than the standard.

Indeed, long term testing of mercury emissions at coal-fired electric utility steam generating units with mercury controls have shown very little variability in mercury emissions, and a long term

averaging time could readily address the few excursions in mercury emissions. For example, see the 17th slide of the attached presentation on mercury emissions at the recently constructed Hardin Station which is equipped with a dry scrubber, baghouse and ACI system and burns subbituminous coal. Once carbon injection started, its Hg CEMs showed only a few elevated mercury concentrations over a 10 month period. Long term mercury testing has also been conducted for the Toxecon installation for mercury control at Units 7-9 of the Presque Isle power plant in Michigan. While we currently do not have the raw CEMS-measured Hg emissions data for these units, we have summaries from various presentations and reports on the long term operation of the Toxecon mercury controls shows the units consistently achieve over 90% mercury control based on monthly averages.

For all of the above reasons, there is absolutely no valid justification for EPD to ignore short term stack test data in setting the MACT floor for mercury for Plant Washington. Stack tests show what has been achieved and, as such, must be considered in determining the MACT floor for mercury at Plant Washington.

iii. Relevant Mercury Limits Were Not Adequately Considered by EPD.

There is additional information which indicates that MACT for mercury emissions from Plant Washington is an emission limit lower than 13 x 10^{-6} lb/MW-hr.

Permits

At least 2 permits have been issued with lower mercury MACT limits. Other permits represent other agencies‘ determination of what has been achieved and is achievable, which is relevant to the subject inquiry. In addition, a beyond-the-floor analysis must also be done at Plant Washington, which sets MACT at the level that is "achievable." An achievable standard clearly contemplates permits as one of the sources that must be considered.

Utah issued a permit in October 2004 for the NEVCO Energy-Sevier project, a 270-MW circulating fluidized bed boiler that will burn a bituminous coal. This permit contains a mercury MACT limit of 0.4 lb/TBtu. Ex. 111. Assuming 38.4% thermal efficiency of the Sevier project boiler, this would equate to 3.6 x 10^{-6} lb/MW-hr. This is lower than the mercury limits proposed for Plant Washington by EPD.

EPD Response: The NEVCO Energy–Sevier project does contain a mercury limit of 0.4 lb/TBtu. Further investigation reveals the following language in Permit Condition 19 for long term compliance with the permit limit.

> *The mercury content of any coal burned in any fuel burning process shall be monitored and recorded for each load of fuel delivered. Certification of fuels shall be either by Sevier Power Company’s own testing or test reports from the fuel marketer. For determining mercury content in coal, American Society for Testing and Materials (ASTM) Method D3684-01 or other method approved by the Executive Secretary, is to be used.*
>
> *If the initial emission testing for mercury is passed, the source can operate using coal with mercury content no greater than 110% of the tested mercury content without further emission testing. Coal with higher mercury content shall not be used until successful testing at this value has been completed. A new mercury content value of 110% of this tested value shall then be allowed without further emission testing.*

Continuous compliance for this facility will not be demonstrated through a CEMS device like Plant Washington, but by monitoring of the mercury concentrations of coals used at the facility. It is difficult to compare emissions and method of compliance since the expected mercury content of the coal is not known. Further, the NEVCO Energy–Sevier project is a CFB, which is not a similar source.

> Virginia issued a permit in July 2008 to Virginia Electric and Power Company for two circulating fluidized bed boilers (Dominion Wise County) with a combined output of 668 MW. These boilers would burn bituminous coal and waste coal. The permit contains a mercury MACT limit of 0.88 x 10^{-6} lb/MW-hr (claimed to be equivalent to 0.09 lb/TBtu). Ex. 112. This is substantially lower than the limits proposed for Plant Washington. The fact that these sources will be CFB units does not negate the need for EPD to consider these much lower mercury limits in setting MACT limits for Plant Washington, especially given that even EPA did not subcategorize CFB boilers when it proposed MACT standards in January 2004. Power4Georgians tried to discount this mercury limit because Dominion will be allowed to burn coal refuse. *See* December 2008 Plant Washington Permit Application at 10-26. However, Power4Georgians failed to mention that the Dominion Wise County facility is also authorized to burn bituminous coal (*See* Ex. 112, Condition 8) and will have to meet the same mercury MACT limit regardless of the type of coal it burns.

EPD Response: The Virginia Electric and Power Company project is a CFB, which is not a similar source. While bituminous coal is permitted, it is expected to primarily burn waste coal.

> State Regulatory Programs
>
> Additionally, as a part of establishing its MACT floor, EPD should have contacted Brayton Point power station in Massachusetts and Massachusetts Department of Environmental Protection. The legally enforceable limit for all coal-fired units in Massachusetts is 0.0075 lb/GWh in year 2008, and 0.0025 lb/GWh (or, 0.28 lb/TBtu) in 2012. Similar mercury limits are included in New Jersey State regulations.
>
> *iv. The Beyond-the-Floor MACT Analysis Was Inadequate.*
>
> The second principle of MACT determinations must be addressed after determining the level of emissions control achieved in practice by the best controlled similar source (i.e., the MACT floor). Specifically, 40 C.F.R. § 63.43(d)(2) states:
>
> > The MACT emission limitation and control technology shall achieve the *maximum emissions reduction* that can be identified from the available information, with consideration of the costs of achieving such emissions reduction and any non-air quality environmental impacts and energy impacts.
>
> 40 C.F.R. § 63.43(d)(2) (emphasis added).
>
> The second principle of MACT determinations, often referred to as the beyond the floor analysis, essentially calls for an evaluation of all available control technologies, similar to the process required in determining BACT. Indeed, a comparison of the definition of MACT to the definition of BACT used in the PSD program shows that the two definitions are almost identical, except that the floor for determining BACT is the applicable NSPS whereas the floor for determining MACT is the emissions control that is achieved in practice by the best controlled similar source. Consequently, to determine MACT for Plant Washington, an approach similar to the top-down

approach of the PSD program should be used for determining beyond the floor MACT for the mercury to be emitted by Plant Washington.

Such an approach would ensure that the potential control technologies that would achieve the maximum emissions reduction are fairly evaluated. One of the most important steps in the top-down BACT process that should apply to a case-by-case MACT determination is the identification of all available control options that have a practical potential for application to the emissions unit and the pollutant.

In determining the control technology representative of MACT, the permitting authority must consider alternative processes and techniques that reduce or eliminate the emissions of HAPs in addition to technologies that collect or treat HAPs. *See* definition of control technology at 40 C.F.R. §63.41. Such alternative processes or techniques would include the evaluation of an integrated gasification combined cycle (IGCC) plant as an alternative process for producing electricity. Studies have shown that it is very economical to control mercury emissions by 90% or more with available carbon bed technology as discussed further below.

In its MACT Application, Plant Washington indicates that no beyond-the-floor limits are warranted. December 2008 Plant Washington Permit Application at 10-39. Although the Plant Washington application goes through many of the DOE/NETL mercury studies and showed that some of those studies achieved higher levels of mercury reduction than that deemed necessary to achieve the company's proposed mercury MACT limit of 15 x 10^{-6} lb/MW-hr, the permit application did not explain why beyond the floor technologies were not warranted for Plant Washington.

According to the company's calculations, it would have to achieve 84% mercury control to attain its proposed mercury MACT limit of 15 x 10^{-6} lb/MW-hr or 1.68 lb/TBtu. December 2008 Plant Washington Permit Application at 10-39 (Table 10-9). To meet EPD's proposed MACT limit of 13 x 10^{-6} lb/MW-hr (or 1.46 lb/TBtu) then, Plant Washington would need to achieve 86% mercury removal. Yet, mercury removal efficiencies above 90% have been shown to be achievable at coal-fired EGUs with activated carbon or other sorbent injection.

EPD did not do much more for its beyond the floor analysis, except that it found a MACT permit application for a source that would burn subbituminous coal and that proposed a Hg MACT limit of 13 x 10^{-6} lb/MW-hr. Notice of MACT Approval (Appendix A of EPD's Technical Review) at 14. Based on that proposal, EPD reduced the mercury limit for Plant Washington from the 15 x 10-6 lb/MW-hr limit proposed by company down to 13 x 10^{-6} lb/MW-hr. *Id.* While that permit application is relevant information for EPD to consider, EPD's beyond the floor analysis should not have stopped there. EPD should have done a much more thorough review in this step of the review to determine an emission limit for Plant Washington reflective of the maximum degree of reduction in mercury emissions that is achievable at the facility.

For example, to conduct a proper MACT analysis, EPD must obtain site-specific information from Plant Washington. At a minimum, the following information must be supplied to support a beyond-the-floor MACT analysis:

> design basis mercury content of each fuel that is proposed to be used;
>
> uncontrolled mercury emission rate for each fuel that will be used;
>
> design basis of the activated carbon system, including inlet mercury concentration, control efficiency and carbon injection rate;

design basis of the wet scrubber and baghouse.

Plant Washington failed to provide any of this data. Further, to set limits in terms of lb/MW-hr, Power4Georgians must also submit site-specific thermal efficiency design data for Plant Washington.

EPD is also required to evaluate all available information in determining MACT for Plant Washington. 40 C.F.R. § 63.43(d)(2). Available information includes information provided by others, and thus we have attached documentation for EPD's consideration in determining MACT for mercury at Plant Washington (including documents and studies cited above).

The mercury control efficiency represented by EPD's proposed mercury MACT standards is unknown because Plant Washington has failed to submit uncontrolled mercury emission rates for the fuels that will be used at Plant Washington as previously stated. In any case, in our opinion, 99% mercury control has been achieved and is achievable for the subject units using bromiated activated carbon, the ReACT technology, or other technologies that are currently available. *See*, *e.g.,* Exs. 51A,B and 52; *see also* Ex. 118.

For example, packed beds of sorbent material, typically carbon, have been used in Japan and Germany to remove mercury, dioxins, and other HAPs from a wide range of combustion sources, including coal-fired power plants. One such technology is the J-Power Regenerative Activated Coke Technology or ReACT process. This is a multi-pollutant control technology intended for installation downstream of a particulate control device. It removes SO_2, NOX, mercury, dioxins, other HAPs, and particulate matter. It uses a moving bed of activated coke pellets that is continuously removed and thermally regenerated, producing a concentrated SO_2 stream for sulfur recovery, either as sulfuric acid or gypsum. The process was demonstrated in 2007 on a 2.5 MW slip stream at the 250-MW Valmy Generating Station in Nevada on both sub-bituminous and bituminous coals. The Valmy demonstration reported SO2 removal of 98->99%, NOX removal of 26-48%, and mercury removals of 97->99%. Ex. 51A, B.

ReACT has been installed on 14 commercial units to date, including 4 coal-fired utility boilers in Japan and Europe. The technology has been in operation at the 350 MW Takehara Unit 2 since 1995 and the 600 MW Isogo Unit 1 since 2002. A 600 MW unit is currently under construction at Isogo Unit 2. Isogo Unit 1 has achieved greater than 98% SO_2 removal, 10-50% NOx removal, greater than 95% particulate removal, and greater than 90% mercury removal. Ex. 75, Table 7. "Commercial installations located in Japan and Germany operate at 90-99% SO_2 removal, with SO_2 inlet concentrations as high as 1300 ppm SO2." Ex. 75, at 14.

EPD Response: EPD and Plant Washington evaluated a number of possible control technologies as a part of the BACT and MACT control. Specifically the ReACT system has not been used on a full-scale coal-fired power plant much less one that is comparable in size and design to Plant Washington.

In addition, higher mercury control is achievable using a mercury oxidation catalyst, coal blending, high-chlorine fire retardants, or mixing a chlorine-rich additive into the boiler, such as PVC, a high heat content (19,000 Btu/lb), high chlorine, low cost additive. Further, the SWEPCO Turk MACT analysis indicated it would achieve greater than 90% mercury reduction more reliably than other similar units currently in operation due to the method it will use to deliver the activated carbon into the gas stream.

Consistent mercury control requires reliable delivery of the correct amount of activated carbon. Thus, the injection system is a key part of the system design. Most ACI systems use eductors to

deliver the activated carbon into the gas stream. These systems operate well in the short-term, but there are long-term reliability issues. An eductor is a large nozzle that creates a vacuum that pulls the activated carbon into an air stream that transports it into the flue gas. Eductors operate within very narrow pressure ranges and can be difficult to control. The injection nozzles can plug. The SWEPCO Turk ACI system will use a pressurized tank transfer system that does not rely on eductors, allowing operation over a wider range of system pressures. EPD and Plant Washington did not consider an alternate, more reliable carbon injection system.

Greater than 90% mercury removal has been achieved on a long term basis at subbituminous coal-fired power plants with activated carbon injection. Based on Plant Washington's and EPD's determination of MACT floor (which we contend is not low enough and doesn't reflect the best emissions control achieved in practice at similar facilities), EPD's MACT floor for mercury at Plant Washington does not even reflect 90% control and fails to reflect what can be achieved with activated carbon or other sorbent testing even considering the use of subbituminous coal. For example, the Holcomb Unit 1 power plant, which burns PRB subbituminous coal, achieved 93% mercury control in long term testing. In addition, over a year of continuous mercury CEMS data is available for the WE Energies Presque Isle facility in Michigan, which burns subbituminous 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. Exs. 100, 101, 102, 103, and 104. 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, Ex. 93, and at Comanche Station in Colorado, Ex. 105, both of which burn PRB coal. EPD should obtain the complete record and use it to inform its MACT decision in this case.

Thus, EPD failed to evaluate all available information in determining MACT for the mercury to be emitted by Plant Washington. In addition, the proposed mercury emission limits are less stringent than the emissions control achieved in practice by the best controlled similar source. Consequently, the EPD MACT analysis and proposed MACT limits for mercury are technically and legally deficient.

EPD Response: As noted above, a similar source under state and federal law is one that has comparable emissions and is structurally similar in design and capacity such that its emissions could be controlled using the same control technology. Control technology includes the use of different processes and the substitution of materials. The power plants listed in the previous table of the comments do not appear to be similar sources based on boiler type and do not use similar mercury control technology. EPD already determined that CFB boilers are not designated as similar sources and any emissions information is not comparable to Plant Washington and will not be used in the determination of the MACT emission limits. The Virginia Power and Electric facility in Dominion Wise County is a CFB boiler facility and will only burn bituminous coal, bituminous coal refuse (gob), and wood/bark. The NEVCO project in Utah is also a CFB boiler project.

Plant Washington is not a similar source. However, the control technology of sorbent injection is transferable from 100% bituminous coal to 100% PRB coal and a 50/50 blend of PRB and bituminous coal). The proposed facility will inject sorbent to control mercury.

Emission controls and limits beyond what is achieved in practice by the best controlled similar source were reviewed for HAPs. For example, catalytic or thermal oxidation for organic HAPs, wet ESP for acid gases, and information from DOE/NETL's Mercury Control Field Testing Program were reviewed and found to be either not technically feasible, demonstrated in practice, and/or available for application to a

utility size boiler for the beyond-the-floor analysis. A beyond-the-floor analysis was performed for metallic HAPs, acid/inorganic HAPs, organic HAPs, and mercury.

The beyond-the-floor analysis is not complex for this project. The boiler has the best control to meet the MACT floor. There are not any control options that EPD is aware of that are technically feasible, demonstrated in practice and/or available for application on a utility size boiler to set a MACT emission limit based on a beyond-the-floor control technology.

As part of the Division's continuing efforts to seek out new and environmentally proactive air quality permits, EPD has reviewed and updated the spreadsheet for recent permits for coal power plants (see Appendix C). Specifically, the Michigan Department of Environmental Quality (MDEQ) has issued an air quality permit for the Consumers Energy Facility. This permit contains a mercury permit limit of 7.9 x 10^{-6} lb/MW-hr. The Consumer's boilers operate in a very similar manner and capacity to Plant Washington. Therefore, the two facilities can easily be compared for the purposes of BACT and/or MACT. MDEQ issued the final permit on December 29, 2009 for the Consumers Energy Facility with a mercury limit of 7.9 x 10^{-6} lb/MW-hr for all coal types (sub-bituminous, bituminous or a blend). The Consumers Energy Facility plans to primarily burn PRB and a 50/50 blend of PRB and bituminous coal.

Upon further review and based on this new information obtained by the Division, as well as comments received during the comment period, EPD has lowered the sub-bituminous (i.e. PRB) coal limit from 13 x 10^{-6} lb/MW-hr to 7.64 x 10^{-6} lb/MW-hr and added a bituminous coal limit of 6.0 x 10^{-6} lb/MW-hr. The PRB rate is based on 90% removal of mercury from the average mercury content of PRB coal. The bituminous rate is equal to the rate in Georgia EPD's proposed Longleaf permit. The facility can use weighted average for the 12-month rolling permit limit to allow for blending of the proposed Illinois No. 6 bituminous coal. The average of the two proposed limits puts Plant Washington as the lowest mercury permit limits in the country.

Therefore, EPD will modify Conditions 2.13.m and 7.25.b.x as follows:

2.13 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from Coal Fired Boiler S1, any gases which

m. Contain Mercury (Hg) in excess of 7.64 x 10^{-6} lb/MW-hr (gross) on a 12-month rolling average while firing sub-bituminous coal or a computed weighted average on a 12-month rolling average based on the proportion of energy output in gross MW output contributed by each coal rank (sub-bituminous and bituminous) and its applicable Hg emissions limit while firing up to a 50/50 blend of sub-bituminous and bituminous coal. Hg emission limit of 6.0 x 10^{-6} lb/MW-hr (gross) shall be used for bituminous coal to calculate computed weighted average.
[40 CFR 63 Subpart B and 391-3-1-.02(2)(ttt)]

7.25 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition No. 7.24 (and all others in this Condition), the following excess emissions, exceedances, and excursions shall be reported:
[40 CFR 52.21 and 391-3-1-.02(6)(b)1]

b. Exceedances: (means for the purpose of this Condition and Condition No. 7.24, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

x. Any 12-month rolling average mercury emission rate that exceeds 7.64 x 10^{-6} lb/MW-hr (while firing sub-bituminous coal) or the computed weighted average as per Condition 2.13.m (while firing blend of sub-bituminous and bituminous coal) for the Coal Fired Boiler S1,

d. Other HAPS

EPD did not set limits on any other individual HAPs besides hydrogen chloride, hydrogen fluoride, and mercury. However, it is feasible to set separate limits for individual HAPs. We are aware of several permits that have established limits on many more HAPs than in the Plant Washington permit, including Longview, Ex. 53, and Thoroughbred. Ex. 62. Further, as stated above, EPD is required to set MACT limits for all of the HAPs to be emitted by Plant Washington. *See* 42 U.S.C. § 7412(a)(6).

EPD Response: EPD stands by the surrogate approach for setting permit limits and ensuring continuous compliance with the MACT limits. The permit establishes emission limits for each HAP the proposed facility will emit. The PM emission limit is the surrogate for metal HAPs. The CO emission limit is the surrogate for organic HAPs, and HCl and HF are the surrogates for acid/inorganic HAPs. The application covers all regulated pollutants that will be emitted by the facility.

e. The Proposed Plant Washington MACT Provisions Do Not Include Adequate Testing or Monitoring Requirements.

The proposed permit revisions fail to include adequate testing or monitoring requirements to ensure enforceability and compliance with the proposed MACT limits. Specifically, 40 C.F.R. § 63.43(g)(2) provides in pertinent part as follows:

> (2) The Notice of MACT Approval will specify any notification, operation and maintenance, performance testing, monitoring, reporting and record keeping requirements. The Notice of MACT Approval shall include:
>
> (i) In addition to the MACT emission limitation or MACT work practice standard established under this subpart, additional emission limits, production limits, operational limits or other terms and conditions necessary to ensure Federal enforceability of the MACT emission limitation;
>
> (ii) Compliance certifications, testing, monitoring, reporting and record keeping requirements that are consistent with the requirements of §70.6(c) of this chapter;
>
> (iii) In accordance with section 114(a)(3) of the Act, monitoring shall be capable of demonstrating continuous compliance during the applicable reporting period. Such monitoring data shall be of sufficient quality to be used as a basis for enforcing all applicable requirements established under this subpart, including emission limitations . . .

The draft permit, as revised, fails to comply with these requirements.

First, the permit fails to include any testing or monitoring, recordkeeping or reporting requirements for mercury during the first year of operation of Plant Washington. While mercury CEMs are required to demonstrate compliance with the proposed rolling 12-month averages (which we support and agree are justified to ensure continuous compliance with emission limits),

the permit must include interim monitoring and reporting provisions for the first 12 month of operation (before the first 12 month rolling average is determined) to ensure that Plant Washington is achieving MACT for mercury during that period.

EPD Response: In order to comply with a rolling 12-month average, Plant Washington will be required to collect data every day of operation via a continuous emissions monitoring system (CEMS). All the data that the facility will collect regarding its mercury emissions will be available for inspection by EPD at any time.

Second, the Permit requires a single stack test for HF and HCl (for each coal type) over the entire life of the Facility. Condition 6.3(d), (f). The Permit also does not define excess emissions, exceedances, or excursions reports for HCl and HF. Condition 7.25. The Notice of MACT Approval at 26 explains that Power4Georgians proposes to use SO_2 CEMS and pH to demonstrate that acid gas pollution control devices are operating effectively. However, the Permit does not detail how this data is to be used to ensure compliance with the acid gas MACT limits. And the permit does not require that SO_2 CEMS and pH data be used to determine compliance with the HCl and HF limits. Thus, the proposed MACT limits for HF and HCl are unenforceable as a practical matter. The advocated indirect monitoring fails to ensure compliance.

EPD Response: EPD will revise the permit (Condition 6.3) to require annual stack tests on the coal-fired boiler for those BACT and MACT limits where CEMS are not the compliance determination method. The SO_2 CEMS will ensure proper operation of the scrubber which will provide a reasonable assurance of compliance with the HCl and HF limits. Condition 2.3 of the permit requires the facility to submit a Title V application and Compliance Assurance Monitoring (CAM) plan within 12 months after commencing operation. In the meantime, the facility will be required to monitor the pH (along with the SO_2 CEMS). The CAM Plan will be required to include a relationship between the monitoring parameter (which could be the SO_2 CEMS, pH, or something else) and the regulated emissions (HCl or HF). At that time, the stack testing frequency would be also reevaluated.

Therefore, EPD will modify Condition 6.3 as follows:

6.3 Within 60 days after achieving the maximum production rate on each coal type (sub-bituminous coal and a 50/50 blend of sub-bituminous and bituminous coal) in Coal Fired Boiler S1, but not later than 180 days after the initial startup of the boiler, the Permittee shall conduct the following performance tests and furnish to the Division a written report of the results of such performance tests:
[391-3-1-.02(3)]

h. In addition to the initial performance tests, the Permittee shall conduct performance tests as described in Condition 6.3.a. through 6.3.g. on an annual basis.

There is typically no correlation between sulfur in coal (and hence SO_2 in stack gases) and chlorine or fluorine in the coal (and hence HCl and HF in the stack gases). *See* Exs. 19, 20A-C. For example, the chlorine in the coal could triple while the sulfur content remains constant. This could lead to an exceedance of the HCl limit, but no change in SO_2 emissions. Thus, the SO_2 CEMS does not assure compliance with the HCl and HF emission limits.

Thus, the indirect monitoring is not linked to the underlying permit limit. Neither EPD nor Power4Georgians has measured or supported in any manner the relationship between the parameters being indirectly monitored, SO_2 and pH, and the plant‘s HCl and HF emissions. The permit does not, as a result, connect the indirect parameters with the plant‘s HCl and HF limits,

> even if the plant violates the indirect parameters under the terms of the permit, the HCl and HF limits are still satisfied. Moreover, the suggested indirect monitoring fails to measure all of the variables upon which the plant's HCl and HF emissions depend. HCl and HF emissions may vary by orders of magnitude based upon, among other things, fuel selection; yet, the permit does not monitor the chlorine and fluorine content of the plant's fuels or place any restrictions on these fuels. As a result, even if all of the indirectly monitored parameters are satisfied, i.e., the SO_2 limits, the plant may still emit pollutants well above the HCl and HF permit limits. Put differently, unless all variables that significantly affect the plant's HCl and HF emissions are monitored, indirect monitoring cannot ensure continuous compliance: the permit fails to provide such comprehensive indirect monitoring.

EPD Response: Condition No. 7.25.c.ii specifically lists that an exceedance of an SO_2 limit is an excursion for HF and HCl. HCl and HF are acid gases that will be effectively controlled by the wet scrubber system at Plant Washington. Therefore, effective control of SO_2 will ensure effective control of HCl and HF. The reference to the 97.5% SO_2 removal requirement was inadvertently left out of Condition 7.25.c.ii and it is now included. Monitoring the control efficiency of the wet scrubber provides a direct measurement of scrubber performance.

> The permit and supporting record fail to establish any relationship between the indicators and the parameters they represent. The EPA has objected to numerous proposed Title V permits based on a permitting authority's failure to adequately establish a correlation between the indicator and the emission limit. For example, EPA objected to the proposed Title V permit for a plant in Florida based in part upon the lack of correlation between VOC emissions and CO/O_2 emissions where CO/O_2 was being measured as a surrogate for VOCs. In the objection letter, the EPA stated:
>
> > [T]he Title V permit does not contain any detailed explanation linking CO/O_2 monitoring to VOC, for the purposes of compliance. To resolve this concern, the permit must require the source to conduct routine VOC monitoring, or a technical demonstration, such as a comparison of historical emission data to emission limits, must be included in the statement of basis explaining why the State has chosen to allow CO monitoring as a surrogate for VOC. A discussion of how carbon monoxide monitoring indicates good combustion, which affect VOC emissions, could be provided along with historical data to support the current monitoring strategy.
>
> *U.S. EPA Region 4 Objection, Proposed Part 70 Operating Permit, Southdown, Inc – Brooksville Plant, Hernando County, Florida, Permit No. 0530010-002-AV.*
>
> Similarly, on December 22, 2000, the EPA granted a petition for objection to a Title V permit based in part upon the fact that the permit and accompanying Statement of Basis failed to provide a sufficient basis for assuring compliance with several permit conditions. *See In re Fort James Camas Mill*, Order Denying in Part and Granting in Part Petition for Objection to Permit, December 22, 2000. According to the Order, "the rationale for the selected monitoring method must be clear and documented in the permit record." *Id.* at 8.
>
> The permit and supporting record must establish a specific link with proffered indicators to assure continuous compliance and enforceability. For example, in the Tampa Electric Company's F.J. Gannon Station case, the EPA objected to the Title V permit, stating:
>
> > While the permit does include parametric monitoring of emission unit and control equipment operation in the O&M plans for these units … the parametric monitoring scheme that been specified is not adequate. The parameters to be monitored and the

> frequency of monitoring have been specified in the permit, but the parameters have not been set as enforceable limits. In order to make the parametric monitoring conditions enforceable, a correlation needs to be developed between the control equipment parameter(s) to be monitored and the pollutant emission levels. The source needs to provide an adequate demonstration (historical data, performance test, etc.) to support the approach used. In addition, an acceptable performance range for each parameter that is to be monitored should be established. The range, or the procedure used to establish the parametric ranges that are representative of proper operation of the control equipment, and the frequency for re-evaluating the range should be specified in the permit. Also, the permit should include a condition requiring a performance test to be conducted if an emission unit operates outside of the acceptable range for a specified percentage of normal operating time. The Department should set the appropriate percentage of the operating time would serve as trigger for this testing requirement.

U.S. EPA Region 4 Objection, Proposed Part 70 Operating Permit, Tampa Electric Company, F.J. Gannon Station, Permit No. 0570040-002-AV.

> The permit offers no link between the proffered indicators and the underlying MACT limits. Thus, if EPD is going to allow these secondary indicators at all, the agency should rewrite the permit to clearly transfer enforceability to the underlying limits – HCl, HF, as well as metals (PM surrogate) and organic HAPs (CO surrogate). By way of example, if SO_2 is used to determine continuous compliance with HCl and HF, at the very least, the permit should clearly state that an SO_2 violation equals an HCl and HF limit violation.

EPD Response: EPD has established the links between the continuously monitored pollutant (SO_2) and the surrogate pollutant HAP (HCl and HF). The requirements in Permit Condition 7.25 detail explicitly that exceedances of the surrogate pollutant is also an excursion of the regulated pollutant. PSD is not the same program as Title V and Title V will specifically include a review of monitoring through the CAM requirements of 40 CFR 64.

> The permit does not specify that a violation of an indicator constitutes a per se violation of the underlying permit limit. The permit also does not contain an indicator range or the procedure to acquire one. The permit also lacks any requirement to develop a correlation between the indicators and the applicable requirement, support for the chosen approach, a trigger for additional stack testing, a requirement for stack testing if operation occurs outside of the range, or a requirement to cure the exceedance. Thus, the permit does not ensure continuous compliance for HCl, HF, non-mercury metallic HAPs, and organic HAPs.
>
> Continuous emission monitoring systems (CEMS) are available for both HCl and HF and are widely used in other industries. *See*, *e.g.,* Exs. 113 and 114. While they have not yet been used on coal-fired power plants in the United States to our knowledge, as case-by-case MACT limits have only recently been imposed on coal-fired power plants, HCl and HF CEMS are entirely capable of being used on such power plants.
>
> EPA has recently recognized that CEMS are the proper means of measuring compliance with HCl limits; on April 22, 2009, EPA recommended that North Carolina require a HCl CEMS to assure that HCl emissions at Cliffside Unit 6 remain below the MACT applicability threshold. EPA wrote: "[w]hile there are monitoring alternatives to an HCl CEMS, a HCl CEMS is expected to provide the most reliable assurance of compliance." Ex. 115. In addition, Florida recently issued a revised draft permit for the Seminole plant that requires the use of HCl and HF CEMS to

demonstrate that emissions remain below 9.75 ton/yr for HCl plus HF combined, which works out to the lowest HCl and HF emissions in any coal plant permit. Exs. 116 and 117.

Continuous emission monitoring is EPA's preferred method of determining continuous compliance and has been required for NOx and SO2 under NSPS for decades. *See*, *e.g.*, NSR Manual, p. I.3 ("Continuous, direct emission measurement is preferable.") CEMS should be used here to determine continuous compliance with the HCl and HF MACT limits.

EPD Response: EPD is aware that North Carolina and Florida have recently required the use of HCl CEMS as a part of the synthetic minor permit amendments for the avoidance of MACT for the Cliffside facility and the Seminole facility. The biggest concern over the use of HCl CEMS is that they are not commercially available and demonstrated in practice. They are used especially on incinerators or other combustion sources where the fuel has a high concentration of chlorine. The problem is with the level of detection. The outlet HCl emissions from a coal-fired power plant are very low in comparison to other sources with high chlorine emissions. Thus, the detection range for coal-fired power plants on the CEMS are lower than the methods provided by EPA to ensure accurate data collection.

A June 2009 response written by the North Carolina Department of Environment and Natural Resources to the EPA regarding use of HCl CEMS discussed those issues:

One of the concerns associated with using continuous HCl monitoring is the low HCl concentration expected in the exhaust of Cliffside Unit 6. The expected HCl concentrations are lower than the EPA's performance specifications for allowable drift, making it highly unlikely that such a monitor would provide accurate or meaningful data.

Plant Washington provided the following data as part of the email submission dated March 16, 2010, on the expected HCl and HF emissions from the facility and the limitations on the CEMS device.

With the low concentrations of the acid gases HCl and HF expected in the exhaust gas stream at Plant Washington, the ability of CEMS devices to accurately monitor HF and HCl has not been proven. The expected concentration of HCl in the flue gas stream is approximately 0.24 ppm, and the expected concentration of HF in the flue gas stream is 0.3 ppm. Review of minimum detection limits for HCl CEMs devices indicated detection limit values of 0.1 to 0.18 ppm, and minimum detection limits for HF of 0.1 to 0.22 ppm. Documentation for one CEMS device cautioned that the actual detection limit would vary depending on the source specific conditions of the stack in question. On account of the low expected concentration of HCl and HF in the flue gas stream and the expected drift of the CEMS instrument based on vendor data (4-5%), meaningful data collection on a utility boiler stack would be difficult as the drift of the instrument could be more than twice the expected concentration of HF or HCl in the flue gas.

Based on the above information, HCl or HF CEMS are commercially available and technically feasible for only facilities with much higher chlorine and fluorine emissions. At this time, the CEMS are not able to accurately measure HCl and HF emissions on a continuous basis from a coal-fired power plant. Therefore, Plant Washington will not be required to install CEMS for HCl and HF emissions. EPD does understand that it will take several years for this facility to commence operation. CEMS technology can and will continue to improve so the potential is there for HCl or HF CEMS to become available in the future. EPD has included in Condition No. 5.2.h adding a requirement that prior to the commencement of operation of the facility, the Division can require the addition of HCl or HF CEMS if they become available, and are reliable and accurate for continuously monitoring these pollutants at coal-fired power plants.

Therefore, EPD will modify Condition 5.2.h as follows:

5.2 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated pollutants on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.

h. If at any time prior to the commencement of operations of the facility, the Division determines that a Continuous Emissions Monitoring System (CEMS) exists that can reliably and accurately measure hydrochloric acid and/or hydrogen fluoride emissions from the Coal Fired Boiler S1 in the operating concentrations required by this permit, then the Permittee shall install such device(s) no later than 12 months following receipt of written notice from the Division or prior to the startup of the Coal Fired Boiler, S1, whichever is later. Any written notice from the Division shall include the basis (e.g., example installations) supporting the Division's determination. The CEMS(s) shall measure and record the hydrochloric acid and/or hydrogen fluoride emissions discharged to the atmosphere from the Coal Fired Boiler, S1. The one-hour average hydrochloric acid emissions and/or hydrogen fluoride rates shall also be recorded in pound per million Btu heat input.
[391-3-1-.02(6)(b)1]

Comment 4 – GreenLaw Comment on Professional Engineer

The Application Must Be Submitted and Reviewed by a Professional Engineer Licensed in Georgia.

No licensed professional engineer, registered in Georgia or otherwise, prepared or reviewed the application and draft permit for Plant Washington. In Georgia, it shall be unlawful for any person other than a professional engineer to practice or to offer to practice professional engineering in this state. O.C.G.A. § 43-15-7. The terms professional engineer and professional engineering are defined by statute. O.C.G.A. § 43-15-2. The term "Professional engineering" means:

> [T]he practice of the art and sciences, known as engineering, by which mechanical properties of matter are made useful to man in structures and machines and shall include any professional service, such as consultation, investigation, evaluation, planning, designing, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, buildings, machines, equipment, processes, works, or projects, wherein the public welfare or the safeguarding of life, health, or property is concerned or involved, when such professional service requires the application of engineering principles and data and training in the application of mathematical and physical sciences. A person shall be construed to practice or offer to practice professional engineering, within the meaning of this chapter who by verbal claim, sign, advertisement, letterhead, card, or in any other way represents or holds himself out as a professional engineer or engineer or as able or qualified to perform engineering services or who does perform any of the services set out in this paragraph. Nothing contained in this chapter shall include the work ordinarily performed by persons who operate or maintain machinery or equipment.

O.C.G.A. § 43-15-2(11)(emphasis added). Professional engineer means:

> [A]n individual who is qualified, by reason of knowledge of mathematics, the physical sciences, and the principles by which mechanical properties of matter are made useful to man in structures and machines, acquired by professional education and practical experience, to engage in the practice of professional engineering and who possesses a current certificate of registration as a professional engineer issued by the board.

O.C.G.A. § 43-15-2(10) (emphasis added). The term the board as used in the above definition means the State Board of Registration for Professional Engineers and Land Surveyors. O.C.G.A. § 43-15-2(1).

> Thus, in order to lawfully practice professional engineering in Georgia, one must be a professional engineer as defined by Georgia law. In order to be considered a professional engineer in Georgia, one must receive certification from the Georgia Board of Registration for Professional Engineers and Land Surveyors. Absent this certification, it is unlawful to practice professional engineering. As stated in the Georgia Code, it is unlawful for any person other than a professional engineer to practice or to offer to practice professional engineering in Georgia. O.C.G.A. § 43-15-7.

Both the Applicant and EPD make BACT determinations as part of the permitting process. The Georgia Board of Registration for Professional Engineers and Land Surveyors has ruled that BACT determinations constitute the practice of engineering. *Minutes, Meeting of the Georgia Board of Registration for Professional Engineers and Land Surveyors, December 6, 1994; Minutes, Meeting of the Georgia Board of Registration for Professional Engineers and Land Surveyors, December 10, 1991.* A MACT determination is made similar to a BACT determination. As such, EPD must ensure that both the

BACT and MACT determinations made by the Applicant and the permitting agency are performed by properly licensed professional engineers.

EPD Response: The Georgia Air Quality Act and the Georgia Rules for Air Quality Control provide the regulations, guidance and structure on the issuance of Air Quality Permits. Nowhere in those governing provisions is there a requirements that EPD professionals be registered or licensed by any particular board. The justification provided by Greenlaw includes meeting minutes from Georgia's Professional Engineering Board which suggest that permitting actions such as BACT determination or MACT determinations by association constitute the practice of professional engineering.

Conclusion

For the reasons set forth above, we ask EPD to deny the requested Plant Washington Permit. For your convenience, we have provided all of the source material referenced in these comments. Omissions in exhibit numbers, such as numerical gaps between exhibit numbers, are intentional. All documents referenced as exhibits should be included on the accompanying CD, regardless of such omissions. If you believe that any documents have not been provided, or if you require any additional information, please do not hesitate to contact us at (404) 659-3122. Thank you for your consideration of this important matter.

EPD Response: Comments so noted.

CITIZEN COMMENTS

EPD received over 500 combined emails and hard copy letters from citizens in opposition of Plant Washington. EPD also received over 100 combined emails and hard copy letters from citizens in support of Plant Washington. Many of the public comments have been condensed and combined together. Please refer to Attachment B of this document (or the permit file for Plant Washington) to view all public comments received.

Please note only comments related to air quality will be addressed in EPD's responses. Many of the comments that were submitted by citizens are as follows:

Comment 1

Comments from many citizens

Dr. Couch, I am concerned about the potential impacts of Plant Washington on the health of me, my family, and my community. This proposed coal fired power plant will affect communities around the state of Georgia. I urge EPD to hold hearings in at least the following communities: Atlanta, Dublin, and Savannah.

Plant Washington would consume far too much water for drought stricken Georgia. No coal is clean. Does anyone want mercury in there fish and water?

EPD Response: EPD has complied with all requirements associated with this permitting action. In addition to meeting all of its regulatory obligations, the EPD has taken extra efforts to ensure that the community around the proposed facility has had easy access to information about the proposal as well as the opportunity to voice concerns about the project. The EPD held two question-and-answer sessions to provide information and answer questions from the public, on March 5, 2009 and October 6, 2009 in Sandersville Georgia. At these meetings, the EPD provided staff contact information so that the public could have additional questions answered, if needed. In fact, the EPD has responded to many public inquiries throughout this process. The EPD also set up a special section on our web page just for this proposal that contains an extensive amount of information on this proposal. The web site is located at: www.georgiaair.org/airpermit/html/permits/psd/dockets/plantwashington/index.htm.

The final permit for Plant Washington imposes very stringent emissions limits for all pollutants. In addition, the EPD recently adopted rules requiring significant reductions in sulfur dioxide, nitrogen oxides, particulate matter, and mercury emissions from all existing coal-fired power plants in the entire state. Overall, state-wide, emissions of these pollutants will be decreasing significantly.

The Georgia Rules for Air Quality Control and the Federal Rules for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs) are designed to protect the environment and human health. An air quality analysis is required of the ambient impacts associated with the construction and operation of the proposed modification. The main purpose of the air quality analysis is to demonstrate that emissions emitted from the proposed new major stationary source, in conjunction with other applicable emissions from existing sources (including secondary emissions from growth associated with the new project), will not cause or contribute to a violation of any applicable National Ambient Air Quality Standard (NAAQS) or PSD increment in a Class II or Class I area. NAAQS exist for NO_2, CO, PM_{10}, SO_2, Ozone (O_3), and lead (Pb). PSD increments exist for SO_2, NO_2, and PM_{10}.

It has been determined through approved modeling techniques that the estimated emissions for Plant Washington will not cause or contribute to a violation of any ambient air standard or allowable PSD increment. It has further been determined that the proposal will not cause impairment of visibility or detrimental effects on soils or vegetation. Any air quality impacts produced by project-related growth should be inconsequential.

There are no applicable NAAQS or specific Georgia ambient air standards for the non-criteria pollutants being emitted, such as HAPs. Impacts from each of the pollutants listed in this letter were analyzed using the EPD Guidance for Ambient Impact Assessment of Toxic Air Pollutant Emissions (referred to as the Georgia Air Toxics Guideline; Version June 21, 1998). The Georgia Air Toxics Guideline is a guide for estimating the environmental impact of sources of toxic air pollutants. A toxic air pollutant is defined as any substance, which may have an adverse effect on public health, excluding any specific substance that is covered by a State or Federal ambient air quality standard.

The Georgia Air Quality Act and the Georgia Rules in 391-3-1-.03(1)(c) state that the permit for the construction or modification of any facility shall be issued upon a determination by the Director that the facility can reasonably be expected to comply with all the provisions of the Act and the rules and regulations promulgated thereunder. Therefore, Georgia EPD must issue an air quality permit for the Plant Washington facility if they meet all applicable requirements in the rules and regulations that are applicable.

Comment 2

Comments from many citizens

I am a Georgia citizen and I am opposed to the construction of Plant Washington. Another coal plant in Georgia will lead to dirty air, dirty water, and will adversely affect the health of everyone within 1,000 km of the plant. I do, however, support clean energy such as wind and solar that will protect the health of Georgia citizens and bring jobs to Washington County.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 3

Postcard comments submitted by many citizens

NO NEW COAL IN GEORGIA. NO KIDDING! Georgia needs to address the reality of Global Warming as it meets its growing energy demand. The proposed Plant Washington would emit an Unacceptable amount of CO_2, and use an In-appropriate amount of water, diminishing the quality of life for all Georgians. Solutions like investments in energy efficiency are healthier, more cost-effective, and produce more jobs, but have not been fully explored by the EMC's who are proposing this plant. Coal is not the answer for Georgia's future!

EPD Response: Please refer to Division's responses to Citizen Comment 1 and GreenLaw Comment 1, Section L.

Comment 4

Comments submitted by Fall line Alliance for a Clean Environment on behalf of many citizens
(Please view the permit file for the entire comments)

Renewable energy from solar, wind, biomass and geothermal energy sources do not produce mercury, soot and other harmful pollutants and do not guzzle our precious water. Clean energy is available, affordable and plentiful. We need to invest in clean, renewable energy today and stop sinking money into financially risky, technologically outdated fossil fuels, like coal-fired power plants proposed for Early County and Washington County. We believe that all Georgians will prosper when we make the smart energy choices of energy efficiency and clean, renewable energy".

I urge you to end the role that you currently have in the construction of a new coal-fired power plant in Washington County. Given the high cost of building and operating a new coal plant and their harmful effects on our air and water, this plant is not the best option to meet energy needs for Georgia or Washington County residents. Through a combination of energy efficiency initiatives and homegrown renewable energy sources such as biomass, wind, and solar power, Georgia can meet future energy demands without building costly and polluting coal plants.

I am writing to register my opposition to the proposed coal burning power plant in Washington County. Numerous studies and reports have shown that the energy. I urge you to consider the short and long-term negative effects the proposed coal fired plant will have on Washington County and our neighbors in surrounding communities. Thank you for considering my concerns.

We believe that Georgia should invest in energy sources that will not harm our air or rivers. Renewable energy from solar, wind, biomass and geothermal energy sources do not produce mercury, soot and other harmful pollutants and do not guzzle our precious water. Clean energy is available, affordable and plentiful. We need to invest in clean, renewable energy today and stop sinking money into financially risky, technologically outdated fossil fuels, like coal-fired power plants proposed for Early County and Washington County. We believe that all Georgians will prosper when we make the smart energy choices of energy efficiency and clean, renewable energy.

EPD Response: A company submits an air permit application proposing the type of facility that is to be built and designates where the facility will be located. EPD's job is to enforce the rules and regulations that are applicable to the proposed facility. In this case it means that EPD requires the facility to employ the best possible technology for reducing emissions and ensures that the air quality is in compliance with the legal requirements. By law if a permit applicant, such as Plant Washington, complies with all applicable rules and regulations, Georgia EPD must issue the permit. EPD does not have any jurisdiction or authority to designate the type of facility (solar, wind, biomass, geothermal) or location (Washington County or elsewhere) allowed to receive permits. EPD appreciates the public involvement of its citizens and hopes to continue that relationship and improve it at every opportunity to further the customer service efforts. Also, please refer to Division's response to Citizen Comment 1.

Comment 5

Form Letter comments from many citizens

I am writing to register my opposition to the proposed coal burning power plant in Washington County. Numerous studies and reports have shown that the energy…… I urge you to consider the short and long-term negative effects the proposed coal fired plant will have on Washington County and our neighbors in surrounding communities. Thank you for considering my concerns.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 6

Postcard comments from many citizens

I urge you to end the role that you currently have in the construction of a new coal-fired power plant in Washington County. Given the high cost of building and operating a new coal plant and their harmful effects on our air and water, this plant is not the best option to meet energy needs for Georgia or Washington County residents. Through a combination of energy efficiency initiatives and homegrown renewable energy sources such as biomass, wind, and solar power, Georgia can meet future energy demands without building costly and polluting coal plants.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 7

Comments from many citizens
(Please view the permit file for the entire comments)

Many citizens expressed their support for Plant Washington. Plant Washington will help bring more jobs to this area. Many encouraged EPD to issue the final permit as quickly as possible.

EPD Response: Comment so noted.

Comment 8

Comments from Amy Brown – citizen of Warthen, Georgia

I live in Warthen, Georgia and I have a few questions about the proposed Plant Washington. 1) I keep hearing the EPA's service announcements about "kids feeling like fish out of water"; this is in reference to kids with asthma like my son (age 8), how does the EPA justify supporting a coal burning plant? 2) Several families living in Warthen and the surrounding town have had to lower their pumps in their wells due to dropping water levels. How can we tolerate anything that will take more water out of our water table? 3) With all the CLEAN energy alternatives, why not put our hard earned money into an energy source that will leave the planet in better shape not worse? There maybe a such thing as CLEANER ways to burn coal, but there is NO such thing as CLEAN COAL!!

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 9

Comments from Andy Jones– citizen

I am writing this letter in SUPPORT of Plant Washington. As a project manager/estimator with 15 years experience in the construction industry I know that Plant Washington will have a tremendous boost to the economic growth of Washington County before, during and after the initial construction phase. I welcome Power 4 Georgians and Plant Washington to Sandersville and Washington County because not only for the jobs and economic growth that it brings, but for the future electrical needs of Georgia. I have attended every EPD meeting and several more concerning Plant Washington and feel safe in saying that everything

that has been required of Power 4 Georgian has been exceeded in their plant air quality, water management and waste management models. I also feel that with the information presented by all parties that Plant Washington will be the cleanest, safest and best built coal fired power plant built in the country. I would also like to say THANK YOU! for all that you have done to help bring Plant Washington to Washington County and making it the BEST, SAFEST Coal fired Power Plant that it will be!

EPD Response: Comment so noted.

Comment 10

Comments from Neal Chandler – citizen of Atlanta, Georgia

IN THIS NEW ERA OF POTENTIAL (AND ACTUAL) GREEN POWER THERE IS NO EXCUSE FOR DIRTY COAL. I, AND MY FAMILY, ARE AGAINST ANY NEW COAL-FIRED POWER PLANTS IN GEORGIA THAT SPEW MERCURY AND OTHER POLLUTANTS OUT INTO OUR COMMON ENVIRONMENT.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 11

Comments from Ann Hibbard – citizen

Please do not allow coal fired power Plant Washington to go forward.
1. There is no such thing as clean coal. Our entire planet is in peril and you will be criminally responsible for further destruction of the environment.
2. There are plenty of clean alternatives like solar and wind.
3. If we stopped selling our power out of state there would be enough for GA already.
4. I do not appreciate you using my lungs to filter out pollution for other states.
5. I am a boater like rivers with water in them, not industrial waste.
6. Most people would like to be able to eat the fish caught in GA rivers. Wake up already! Peace.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 12

Comments from Anne Mayberry – citizen

I currently live in Colorado but was born and raised in Sandersville, Georgia and still own property in Washington County. I urge you to not permit the coal fired power plant proposed to be built and operated in Washington County. If we could strip this project of it's politics and consider it's merits alone, I believe that there would be no argument. The need does not currently exist, the cost is prohibitive, and the long term health concerns are of an indeterminable nature. All of this to satisfy the fiscal needs of a few at the expense of many? When will we finally choose to do what is right for our people instead of continuing to enrich those with vested interest? The science is there, the logic of old technology versus newer, cleaner energy resources is irrefutable yet politics continues to win the day. I can only pose one last question for your consideration. Can you sleep at night with the decisions you make that will affect your children, grandchildren and many future generations as well as the earth that sustains us all?

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 13

Comments from Ayman Fadel – citizen of Augusta, Georgia

I'm writing in opposition of the building or expansion of any coal plants in Georgia, specifically Plant Washington. It's critical that we reduce carbon emissions. Coal plants create other pollutants as well. Finally, coal plants further stretch our limited water resources. We should start more vigorous energy conservation programs and raise the price on carbon fuels to spur development of clean energy.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 14

Comments from Steven Battle – citizen of Bonaire, Georgia

I oppose the permitting of Plant Washington. I suspect that the utility wants a permit before much needed guidance on C sequestration can be imposed. The state of GA should prevent but, tragically, does along with it again.

EPD Response: Comment so noted.

Comment 15

Comments from Rebecca Bell – citizen

Please stop the dirty coal plants in Georgia. They are an archaic technology for the 21st century.

EPD Response: Comment so noted.

Comment 16

Comments from Ben Salter – citizen

While the environmentalist have been very vocal in opposition to Plant Washington I feel that they are speaking to an agenda that has nothing to do with Washington Co. Washington County needs this plant! We have 2 coal plants to the west of us that have operated for years without obviously harming the environment. Operating with the proper emission & environmental controls should definitely be in the forefront of considering our county for construction of this power plant but neither can we just sit by and miss opportunities for jobs and revenue that will just go somewhere else if we don't take advantage of those situations. Please strongly consider allowing Plant Washington to built in Washington County, Georgia for the future of the residents of Washington County, as well as, the future power needs of all Georgians.

EPD Response: Comment so noted.

Comment 17

Comments from Benjamin R. Tarbutton – citizen of Sandersville, Georgia

I am a resident of Washington County and I wholeheartedly support Plant Washington. It will help meet our State's growing needs for dependable, non-intermitant power and will be the largest single economic

development effort in our County's history in terms of invested capital. We are also excited about the permanent and construction phase jobs Plant Washington will bring as well as the incredible increase in our local tax base. Plant Washington will give our County the ability to undertake many initiatives to improve the quality of life of Washington Countians, and for that we are grateful. Additionally, based on the science that has been provided and reviewed by EPD, it is evident that Plant Washington will be a safe and clean facility that will not overly impact our air or water resources. It is a win-win for our community and the State on so many levels. I sincerely hope that EPD will grant final permits for Plant Washington as soon as practicable. I would also like to thank EPD. I also want to thank Power4Georgians.

EPD Response: Comment so noted.

Comment 18

Comments from Bill Garner – citizen

I am a citizen of Washington County and have lived here all my life except when I lived in Athens where I received my BS from the School of Agriculture at UGA. I live in the northern part of Washington County in the house that my great grandfather built in 1870. I am currently employed at Thiele Kaolin Company and have been so for 24 years. I will keep my comments brief and to the point.

1. Air quality has always been an issue in this county. We were on restricted burning for a few months this past summer. Why permit a plant that would add more CO_2 to the air we breathe.
2. I understand that coal ash containment ponds have the potential to be a problem. I know of one that overflowed containing certain contaminants.
3. Mercury has been found in fish and some ground water near or downwind of coal plants.
4. Our supply of ground water could be affected by the massive amount needed to run this plant.
5. Bringing in the raw coal by rail and offloading for storage could add pollutants to the ground and air. I have listened to both sides and I believe that the permitting of Plant Washington would not be in the best interest of the ones of us who reside and work in this county, therefore I oppose this coal plant being built in Washington county or any county in the state of Georgia.

EPD Response: Please refer to Division's response to Citizen Comment 1. EPD is concerned about pollution from coal burning power plants. Assessments have been conducted to ensure that most kinds of pollution released from the proposed power plant will be below amounts that will significantly impact the environment. However, assessing the impact of mercury released into the atmosphere from burning coal presents unique difficulties. Studies have shown that air transport and deposition, followed by movement into aquatic systems through runoff and other mechanisms can significantly affect the potential for bioaccumulation of mercury in fish. Exposure to mercury from consumption of contaminated fish is considered to be the major pathway of exposure for people.

Comment 19

Comments from Brenda Durden – citizen

Thanks for a very informative meeting in Washington CO on Oct 6 2009. My husband and I are a small business in the CO - we are looking forward to your coming.
#1- We need you
#2- the ones fighting you, half have plenty the other half don't live here and could really care less- My husband was in the kaolin field for over 25 yrs. Was in first down size for Imerys 15 years ago. We after 3 months of him driving a chalk truck and much prayer-opened our business. Durden Landscaping and

Const.Inc.

We supply holding tanks, portable restroom -install and repair septic tanks, we know how business fill - the mom and pops don't get any help from Washington, DC. again we welcome you here and appreciate the ones helping you come to Washington CO. Just let me say Thanks for wanting to be apart of our community and I will continue to pray nothing blocks your coming. Thanks.

EPD Response: Comment so noted.

Comment 20

Comments from Brenda Tanner – citizen

I would like to ask you to please check into the effect Plant Washington will have on the people that live closest to the location chosen. I understand that it will have lasting effects on the water supply, the fish in our ponds, people who have breathing problems such as asthma, COPD and others. We know that we need jobs in Washington County but we also need to consider the effect these jobs will have on the residents. Please pray about your decision as I am going to do and let God lead you in the decisions that you make. Don't let money be the deciding factor when it could have so many diverse effects.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 21

Comments from Caleb Lord – citizen

I have a few questions concerning the effect Plant Washington will have on Washington County and surrounding counties. They are as follows:

Have there been any considerations about using some of the waste-water ponds from the kaolin companies as a source of water?
And what proposals are given to store the material after the first 30 years?
Will it be safe to consume fish and other wildlife out of the William Swamp Creek stream and area or will there be limits on the consumed amount per month as it is for the Oconee River?

Thank you for your time and I look forward to hearing a response to my above mentioned questions at the meeting held on October 20 at the Ridge Road Primary School.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 22

Comments from Carly Queen – citizen of Atlanta, Georgia

Please stop power companies from poisoning our air and using all our water to operate another coal plant in Georgia! Deny Plant Washington the permit to harm Georgia citizens for profits. To allow this would be committing a crime against humanity and the ecosystems upon which we are so undeniably dependent.

Say NO to Plant Washington!!!

EPD Response: Comment so noted.

Comment 23

Comments from Casey Browne – citizen

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health. In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

Not only has GA been suffering form a drought in recent history, but we've also come up with healthier more efficient plans for energy! Why in the word would we not use them? Make GA step up and become a leader in new clean energy.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 24

Comments from Charles Twombly – citizen

No coal plant in Washington County, friends. We don't need to solve one problem by creating another.

EPD Response: Comment so noted.

Comment 25

Comments from Charles Cone – citizen of Atlanta, Georgia

I oppose the construction of the socalled "Plant Washington", the coal-fired power plant that Power4Georgians wants to build in Washington County, GA. The so-called Plant Washington threatens Georgia's air, water, land and economy. Georgia needs to get in line with our forward-thinking neighboring states of Florida and North Carolina and heavily promote clean, renewable energy such as solar wind power.

Please do not permit construction of the coal-fired power plant in Washington County, GA. There is no such technology yet available as "cleancoal". It is a only marketing slogan penned by the coal industry. The so-called Plant Washington threatens Georgia's air, water, land and economy. Georgia needs to get in line with our forward-thinking neighboring states of Florida and North Carolina and heavily promote clean, renewable energy such as solar wind power. Many thanks.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 26

Comments from Charles Lee – citizen of Sandersville, Georgia

Please consider this as my wholehearted endorsement of the construction of Plant Washington as proposed by Power4Georgians. I have lived in Washington County since 1965, except for my 4-year stint at college, and I am in full agreement with the proposal to build this plant because of the much needed benefits that will accrue to Washington County and surrounding areas of our state. While we for years were able to enjoy the benefits of a thriving kaolin industry in our county, that industry faces some rather significant current and long-term challenges that certainly need to be offset if our community is to remain viable. Plant Washington, while offering 128 budgeted full-time jobs when it begins operation, will additionally offer numerous opportunities during the construction phase of its existence, and there will be many opportunities for permanent jobs for our citizens in ancillary and support businesses and industries once the plant is up and functioning. This, along with the expanded tax base brought on by construction of the plant, will only serve to regain and hopefully surpass some of the economic losses we have experienced in recent years and put our area back onto a positive track where economic benefit and development are concerned.

In another regard, I applaud the EPD for its diligent effort in the permitting phase associated with Plant Washington. You have seemingly given every productive effort toward seeing to it that Plant Washington is the safest and cleanest coal-fired generating plant built, and having been privileged to witness some of the modeling and re-modeling efforts Power4Georgians have generated and analyzed in attempting to effectively comply with concerns generated over the plant, I am confident that your issuance of a final permit for construction of this plant will accurately assure our citizens that this plant is worthy of being built.

We respectfully ask that, as you move forward toward consideration of issuance of the final permit for Plant Washington, you consider the support you are receiving from citizens like myself who see Plant Washington as a very positive thing for this community. Thank you for your consideration.

EPD Response: Comment so noted.

Comment 27

Comments from Charles Muise – citizen of Barnesville, Georgia

I think that the proposed Plant Washington coal plant is a terrible idea, which should be halted. We all know that there is no such thing as "clean coal" and we all know that the extraction of coal, while it does not directly affect Georgia, is very destructive. In addition to the well-known damage it would bring to air quality, it would also negatively impact one of Georgia's most important rivers. We also all watched in horror at the events at Kingston Steam Plant last year. As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 28

Comments from Chris Barbieri – citizen of Roswell, Georgia

I deeply concerned about draft permits recently issued for a new coal plant in GA, Plant Washington. Coal plants are notoriously "dirty" and harmful to the environment. Air and water quality for our state will suffer drastically, ultiimately affecting public health.

Construction of this plant will release harmful toxins into the environment and will use unacceptable amounts of water. As recent years have shown, our water resources are finite and we must manage every

drop carefully.

The only way I could even remotely support a new coal plant would be if one or two older (and even more harmful) coal plants in GA were closed.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits. If built, it will endanger public health and harm the lives of GA families.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 29

Comments from Chris Biggers – citizen

As a citizen of nearby Jefferson County I would like to convey my support for the permitting and building of Plant Washington in Washington County. Georgia is a growing state that will require more energy and the construction of Plant Washington will help meet those growing needs.

I attended the public meeting this past Tuesday the 6th and am confident Plant Washington will be safe for the environment and good for Georgia. Please enter my support for this very important project.

EPD Response: Comment so noted.

Comment 30

Comments from Chuck Adams – citizen

My, name is Charles Adams Jr. I am a citizen of Washington county. I reside approx 4 miles (as the crow flies) from the proposed site of Plant Washington. I support the building of this facility, which will benefit our local EMC as well as our community in general. JOBS!

EPD Response: Comment so noted.

Comment 31

Comments from Claude Crider – citizen of Waleska, Georgia

Please do not allow the construction of the proposed coal fired plant near Sandersville. The additional mercury pollution is not acceptable in relation to the amount of energy that will be produced. We need to begin funding alternative means of energy conservation, production and distribution. It is time to re-allocate the resources that would go into the proposed plants that create more pollution into the creation of resources that are cleaner, more efficient and renewable.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 32

Comments from Curtis McLeod – citizen

We need jobs. We need booming economies.
We need empowered people

We need healthy communities.
We DO NOT NEED OR WANT PLANT WASHINGTON

EPD Response: Comment so noted.

Comment 33

Comments from Dana Martinsek – citizen

My name is Dana and i'm a Kennesaw State University student. PLEASE DO NOT BUILD PLANT WASHINGTON! We have enough environment problems as it is!

EPD Response: Comment so noted.

Comment 34

Comments from Daniel Parker – citizen

I've been doing a lot of reading and talking about this new coal plant that is to be built in Washington County, and I think it's a terrible idea.

EPD Response: Comment so noted.

Comment 35

Comments from Danny Brown – citizen of Sandersville, Georgia

I am for plant Washington, I believe in the EPD and EPA and if they say its safe, I'm with you. Its good for the community put me down in favor of the plant.

EPD Response: Comment so noted.

Comment 36

Comments from David Cummings – citizen of Warthen, Georgia

I live in Warthen, Georgia and am a native of Washington County. This comment is written to state my opposition to the permitting of Plant Washington. I am concerned about the mercury emissions from Plant Washington. The site for Plant Washington is within the water shed for the Ogeechee River. The United States Geological Survey (USGS) has found that mercury levels in fish living in black water rivers of the Southeastern United States are high. In fact the levels are two to three times the recommended level. The Georgia EPD has issued recommended limits of the consumption of fish caught in these rivers. The Ogeechee River is a black water river with high mercury levels.

The USGS identified emissions ----------

At a public meeting on October 6, 2009 ----------

The bottom line is that ----------.

EPD Response: Please refer to Division's response to Citizen Comments 1 and 5.

Comment 37

Comments from Walton County Resident - citizen

I would surely like to know why nobody notifies landowners of this intended mess and just try and sneak it in and i mean sneak it in.....,,,,,I don't need or want nothing of the such poisoning the air/land.....COAL IS A MESS,,,IVE SEEN THE DAMAGES CUASED FROM PLANTS UP NORTH.....RUINED WATER AIR AND LOWER PROPERT VALUES ETC.....YOU GOT TO BE KIDDING,,,,WHO IS MAIKING THEIR POCKETS FAT ON THIS.....NOT THE PEOPLE I live in walton county and feel the plant/ county had/has a legal responsibility to notify land owners of their intentions.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 38

Comments from Don Carson – citizen

This is crazy. This is a step backwards. Please. Do not build Plant Washington near Sandersville. No more mercury in the water. No more pollutants in the air. No more carbon in the air. Another coal plant is the last place we should spend our money for energy production. Every other choice should be exhausted. We have wind and solar options, and there is always the thing we never consider -- conservation. Are we ever going to get real about global warming or are we going to deny that it exists? Now is our last chance.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 39

Comments from Don McAdam – citizen of Atlanta, Georgia

In a study by the US Geological Survey, every stream in US that they tested since 1998 is contaminated by an intense neurotoxin, mercury. Consequently, 48 out of 50 states have advisories warning of the dangers of consuming fish from these waters. The US Environmental Protection Agency warns us that the single biggest man-made source of mercury pollution comes from coal-fired power plants. Despite this, and in contradiction to our state's EPD's mission to protect and restore Georgia's environment, the state of Georgia is set to approve permits for more coal-fired power plants.

The USGS also found that some of the highest levels of mercury in fish were in Georgia's waterways. As it turns out certain types of wetlands and forest streams, of which are abundant in Georgia are more efficient in converting precipitated mercury into the form which ends up contaminating fish.

This past week the Georgia Environmental Protection Division offered a disingenuous defense of the proposed coal plants at public hearing in Sandersville. The EPD claimed that these new plants would pollute less than existing ones. They made this argument even though no environmentalist ever claimed otherwise. The problem is that despite design improvements, these plants will still emit large amounts of toxic waste.

It is unethical for the EPD to support the construction of new power generating facilities that burn coal. Yet, that's exactly what they are doing. It's up to us to demand that no more coal plants be allowed in our

state. Please call and write your state legislators, Governor Perdue and the state EPD.

EPD Response: Comment so noted.

Comment 40

Comments from Edna Rhodes – citizen

Allowing this coal powered plant to be built is a terrible, terrible mistake. I'm surprised "these people" responsible can sleep at night. Pollution is killing us already. And they wonder where all this cancer is coming from Duh!

EPD Response: Comment so noted.

Comment 41

Comments from Edward Boyen – citizen of Gibson, Georgia

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health. Besides the actual emissions of the plant, the coal will have to be brought in from several hundred miles away. This is not a solution that is sustainable.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses. The water tables are already dropping in this area, and will become more unstable if they are able to pull the huge amounts of water as indicated.

As a concerned neighbor of Washington County, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 42

Comments from Elinor Spalten – citizen of Smyrna, Georgia

So happy to hear that this proposal was defeated. Strongly protest further pollution of our water, land and air.

EPD Response: Comment so noted.

Comment 43

Comments from Elizabeth Pryor – citizen of Tennille, Georgia

I support Plant Washington and the Power Four Georgians Group. Please do not let a small group of very vocal "outsiders" keep these very necessary jobs from Washington County. Plant Washington is necessary for the survival of the citizens of Washington County. If these opponents feel so strongly, let

them move here and make a change from within!

EPD Response: Comment so noted.

Comment 44

Comments from Elizabeth Keysar – citizen of Peachtree City, Georgia

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

Now is the time to investigate clean energy alternatives that are right for Georgia - that will supply energy and new jobs - without continued destruction of the mountains in West Virginia to extract coal. There are larger issues, such as global climate change, that we can be part of the solution rather than continuing to be the cause.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 45

Comments from Emma Accorsi – citizen

My name is Emma Accorsi and I'm a student at Emory University. I'm extremely against the construction of Plant Washington. This coal plant will consume up to 16 million gallons of water every day when we already struggle with droughts. Additionally, the plant will produce 6.2 million tons of carbon dioxide each year - an amount equivalent to that produced each year by *1 million cars*. This plant will pump mercury and lead into our environment. Instead, I strongly encourage you to support clean energy such as wind or solar, which generate four to six times more jobs than fossil fuel production. Please make the right choice for Georgians.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 46

Comments from Eric Nicoletti – citizen

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

Georgia's renewable energy resources are somewhat limited, in comparison to states like California and New Mexico. However, I feel it is in our, and our children's best interest to invest in these energy sources now.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 47

Comments from Gisela Birkholz – citizen of Mountain Park, Georgia

Please note that I am utterly and totally against the new coal-fired power plant near Sandersville in Washington County that is in its final stages of review by the Georgia Environmental Protection Division! And as a Georgia resident and voter I feel ignored and side-lined by our actions! I urge you to reconsider your position!

EPD Response: Comment so noted.

Comment 48

Comments from Greg Phillips – citizen

I am writing this note to let you know I am in total support of the Coal Power Plant here in Washington County.

Unlike many of the other supporters of the plant, I am not a lifelong resident of the county. I came to Washington County as a County Agent in 1973, at a time when farming was declining. I went to work with a Kaolin company in 1992 and in a few years the Kaolin Industry was and is declining. The county has and will continue to change in the years to come.

In order for Washington County to grow and prosper, we have to attract new businesses. Businesses looking to relocate are looking at the schools, the hospital, the work force, roads and the energy they need that can be supplied at a good price.

Washington County has just opened a new elementary school. A few years ago we completed a new middle school and this year we just passed the 1% sales tax to increase the size of the high school. We also have a private school that is doing a great job. The hospital is doing something that many small hospitals are not; they were actually in the black last quarter as a result of a very good administrator. Since Sandersville Technical College opened several years ago in the county, our work force has the opportunity to be the best trained in the state. Sandersville is located almost in the middle of the new Fall Line Expressway. With the building of Plant Washington we would have all the pieces in place to grow and prosper here and in surrounding counties.

I find it hard to believe that the plant would harm the environment here in the county as many of the critics have claimed. I just do not believe that the various state and federal agencies would allow that to happen, especially with all of the onsite inspections coal plants have.

I firmly believe that the plant would be a major benefit not only to Washington County but to the surrounding counties and state.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 49

Comments from Harriet Langford – citizen of Darien, Georgia

I understand the need for power, and many locals I am sure are eager for jobs, but as a person interested in the big picture, I protest allowing another coal plant being permitted. At what point do we realize the impact of current decisions on the future generations? I have felt lately that Georgia has not had leadership committed to looking at the long range environmental picture.

One of my concerns is the impact not only on Sandersville and surrounding areas, but mercury emissions are just a tiny bit of the picture that will affect the Altamaha River which is so essential to the coastal ecosystem where I live.

This is a massive investment and Georgia has not even TRIED legislating conservation! Ga Tech published a study that shows that efficiency can reduce the growth of electric consumption. We need knowledgeable leaders willing to put Georgia at the forefront of efficiency, conservation, and investment in alternative fuel production instead of promoting the same old health dangers!

EPD Response: Comment so noted.

Comment 50

Comments from Heidi Davison – citizen of Athens, Georgia

The two largest polluters of our air in Georgia are automobiles and coal-fired power plants. These are words I have heard from EPD Director, Dr. Carol Couch on many occasions.

To reduce our air pollution in the state and to not create new centers of pollution, Georgia needs to get serious about developing an energy plan that drives us towards clean, not dirty, sources.

Air pollution is expensive! We pay for it far beyond our monthly energy bills. Industry pays when it must make modifications to processing systems; individuals and communities pay more when faced with compromised health, especially children, seniors and those with immune deficiencies; businesses pay when employees health effects their work; faced with non-attainment, local governments and their residents pay when modifications are required to gas pumps, industries, vehicles, businesses seek to locate elsewhere, and water consumption rises exponentially.

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Comment so noted.

Comment 51

Comments from Hovey Smith – citizen

I am a lifelong resident of Washington County and live four miles from the proposed Plant Washington. I am writing this letter in support of the plant. As a Professional Geologist (no. 0622) legally registered in the state, I have done a considerable investigation into the groundwater and surface waters that will be impacted by the plant. I find that the water resources are adequate to support the plant, but am concerned about the potential out-flow from the plant site from 500-year flood events which will discharge into Williamson Swamp Creek.

If the ash and gypsum produced by the plant is indeed utilized off site, as it is reputed to be going to be, this would be a much lesser problem than if stockpiled on site. With this single reservation and the desire that anyone whose lands are impacted by the placement of the plant or the associated railroads be made whole and well compensated, I will continue to support the plant.

EPD Response: Comment so noted.

Comment 52

Comments from Jeffery Smith – citizen

My name is Jeffery Smith and I am writing to you as a life long resident of Washington County, a local business owner in Sandersville and the Mayor Pro-tem for the City of Sandersville. I want to be on record in SUPPORT of Plant Washington. I want to thank the EPD for the professional handling of this. I feel that everyone's opinion is valuable and deserves to be herd. I also thank those in opposition to the project for fully making the public aware of environmental concerns. We should all be thankful, regardless of our opinion, that our state and country can peacefully have this dialog. I feel that some concerns raised by the opposition have merit but I must say that I am greatly disturbed by their intentional attempt to persuade the public with what I consider nothing more than "SCARE TACTICS". I will not enter into a full dialog of reasons for my support as I have stated some of those in a previous hearing as well as mailed them to Dr. Couch. For the good of this state and region this project must be allowed to proceed with the expectation that future technology with be used address the environmental concerns which I feel have been blown out of proportion. Thank you for allowing me to express my opinion via email. I was unable to attend the last public meeting on October 20th.

EPD Response: Comment so noted.

Comment 53

Comments from Jennifer Ahrens – citizen of Sandersville, Georgia

Our community is in support of this new power venture in Washington County. Now more than ever, Georgians need access to more affordable power, and the jobs created by this new plant will be most welcomed.

EPD Response: Comment so noted.

Comment 54

Comments from Jeremy Andrews – citizen of Sandersville, Georgia

As a lifelong resident of Washington County, I want to express my support for construction of Plant Washington. I am an avid outdoorsman but am convinced that the new technology will effectively reduce emissions compared to other plants. I support alternative energy but we need affordable power. I work for a large international company and I understand that alternative energy should be a part of long term strategy. However, the current economic climate necessitates cost/benefit consideration when making major capital decisions.

Washington County has been hit especially hard in the current economic downturn. The kaolin industry has traditionally been a stable employer for many residents. The decline in the paper industry has significantly impacted demand for kaolin. The county needs the tax base of the power plant to offset the losses in the kaolin industry and other local industries. The residents of Washington County have been beneficiaries of good local government and have high expectations concerning education, roads, etc. We will need new tax revenue to offer these services in the future. Construction phase would boost the local economy in short term but the >100 permanent jobs will help sustain quality jobs for our county.

I have met the leadership of Power for Georgians and am convinced that they will do what is required to have a safe and environmentally sound plant. The data from groundwater and waste treatment projections point to no detrimental impact on environment. I am convinced the benefits outweigh the risks for the construction of Plant Washington.

EPD Response: Comment so noted.

Comment 55

Comments from Jill Livingstone – citizen of Savannah, Georgia

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

PS. Please know that both South Carolina and North Carolina have found that ash ponds are leaking into rivers and ponds. We all know about Tennessee -- if we do this Georgia will be on the list as well.

Do we care about Georgians? What about the people who hope to retire to our state? Do we honestly believe we will be attracting people with a filthy AND harmful environment?

There are other, cleaner projects (not to mention conservation) that will increase our energy production AND protect the health of today's Georgians and those we hope to attract in the future.

Please consider our health over dollars -- just this one time!

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 56

Comments from Joann Milam – citizen of Sandersville, Georgia

I attended the public meeting in Sandersville, Georgia on Tuesday, October 20, 2009. I registered to speak. However, at 8:35pm I had to leave the meeting (I was under the impression it would be over at 8:00pm). My name had never been called at that point. Unfortunately, there were probably on four individuals that were supporting Plant Washington that were allowed to speak.

I fully support Plant Washington. I was born and raised on a farm in Washington County. My father still farms that land. At a young age I learned to love and respect the land, water, wildlife and all the wonderful natural resources of our country. I am also passionate about living a healthy lifestyle. In my career, my time is spent working with others on issues related to their health and how they can control their own well being and manage chronic disease.

I have heard and read much regarding both the pros and cons related to the operation of Plant Washington. I am confident that Plant Washington's state-of-the-art emissions control technologies will provide maximum protection for the environment and for the health of our county and state.

I whole-heartedly support your approval of the permits.

EPD Response: Comment so noted.

Comment 57

Comments from Joan Walker – citizen of Decatur, Georgia

Plant Washington coal plant is not good for Georgians, and therefore, I am concerned about the draft permits that are proposed to be issued for this plant. There is no doubt in my mind that if the permits are issued, this plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

I am also very concerned about the withdrawal of water from the Oconee River and the wells that will be dug along the pipeline. Our water resources are limited and withdrawals like this will adversely impact other water users such as Georgia's families and local businesses need for their uses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 58

Comments from John Grosshans – citizen of Sandersville, Georgia

I would like all to know that I support Plant Washington.

EPD Response: Comment so noted.

Comment 59

Comments from John Wilson – citizen of Macon, Georgia

I am opposed to the construction of this plant. My family owns a farm in the adjacent county and I don't want our farm subjected to the air and water pollution, which coal plants generate. Coal is not the way this country needs to go. The mining, transportation and burning of coal all create problems. We have enough mercury pollution in our surface waters. Please count me as OPPOSED.

EPD Response: Comment so noted.

Comment 60

Comments from Jon Houghton – citizen

Please do not allow another coal plant in Georgia to poison the world. We the People shall bear the price should y'all condone climate criminality. Can't we invest in a future of peaceful prosperity instead of death, disease and international discord?

EPD Response: Comment so noted.

Comment 61

Comments from Julian Smith – citizen of Savannah, Georgia

To allow such a plant would be in direct conflict with our Federal and State incentives to produce clean energy. Please make every effort to be a part of the solution. A clean power plant is less expensive. I can provide the details of a clean energy power plant. I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 62

Comments from Kaila Pittner – citizen

I want it on public record that I oppose Plant Washington.

EPD Response: Comment so noted.

Comment 63

Comments from Kaleigh Nix – citizen

I don't want this thing built.

EPD Response: Comment so noted.

Comment 64

Comments from Keaton Belli – citizen

My name is Keaton Belli and I am an environmental science student at Georgia Tech and a 16-year Georgia resident. I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health. Georgia is a state that has many beautiful landscapes and contains residents that make a living by farming the fertile soil. This new coal plant will add even more pollution to the soil and air which will damage crops, fish, and wildlife all over our magnificent state.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 65

Comments from Keith Johnson – citizen

I wanted to write you a note expressing my support for Plant Washington. I am a resident of Washington County and support Power4Georgians in building Plant Washington. We need new jobs in our community, funding to support local government programs and emergency services. This $2 billion dollar investment will provide a strong boost to our economy. While the need for jobs and industry in our community is great, it is my understanding that this plant will also provide the energy needed to sustain Georgia growth for many years to come. I am also confident that your agency, along with the environmental controls at this facility, will assure that Plant Washington will be safe for human health and the environment. I ask that you register my comments in your official records in support of this project.

EPD Response: Comment so noted.

Comment 66

Comments from Kelsea Norris – citizen of Athens, Georgia

My name is Kelsea Norris, and I live in Athens, GA and attend the University of Georgia. I am a Georgia citizen and I am opposed to the construction of Plant Washington. Another coal plant in Georgia will lead to dirty air, dirty water, and will adversely affect the health of everyone within 1,000 km of the plant. I do, however, support clean energy such as wind and solar that will protect the health of Georgia citizens and bring jobs to Washington County.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 67

Comments from Kevin Galbraith – citizen of Atlanta, Georgia

I wish to state my opposition to the proposed construction of the coal power plant in Washington County. I think that investing in coal power when alternative fuel technologies are gaining popularity and efficiency is simply the wrong path. More importantly, it seems relatively apparent that relying on this type of fuel will have negative consequences on our future sustainability and health. If you are able to provide me with information regarding the waste and disposal process of coal ash in Georgia, such as how and where it is stored, I would greatly appreciate the chance to learn more. Thank you for your time.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 68

Comments from Beth Carr – citizen

Hi, I'm a voting citizen of Georgia, and I want to urge the EPA to DENY the permit for the construction of a new coal power plant in Sandersville. This plant will put an additional 106 pounds of toxic mercury into Georgia's air every year – mercury that will find its way into our rivers and our fish. It will also emit other dangerous pollutants linked to serious human health problems—including asthma, bronchitis, and chronic respiratory diseases—plus global-warming carbon dioxide.

As the severe danger to human life from global warming becomes increasingly apparent, we need to be building alternative energy plants, not more carbon-spewing coal plants -- which by the EPA's own admission account for 40% of US carbon emissions!
(http://www.epa.gov/climatechange/emissions/co2_human.html)

EPD Response: Please refer to Division's response to Citizen Comments 4 and.5.

Comment 69

Comments from Kim Joris – citizen

I am writing to register my opposition to the construction of a coal-fired plant in Washington County, Georgia. My primary concern is the environmental and quality of life impact that a coal plant will have on nearby residents.

Though I do not live in Washington County, I grew up in neighboring Baldwin County, Georgia and am very famliliar with the land and the people of the area. Even though I do not live nearby anymore, I still believe I will personally be impacted by the plant as both of my parents and many high school friends are still in the area.

Please do not allow a coal plant to be built in Washington County, Georgia. Building such a plant will be environmentally devastating to the region.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 70

Comments from Larry Scully – citizen

I am very much against the establishment of the Coal Power Plant in Washington County. I own 107 acres in Davisboro, GA (13 miles east of Sandersville) and my land lies along Williamson Swamp Creek as well. The soot, toxins, and mercury that will be emitted from this plant means that it will drift over my property and affect both the quality of the developed and undeveloped land as well as the wetlands along the creek. This area of the state is prized for its pristine woodlands and fields and was one of the reasons I purchased my property. I firmly believe this would be a disaster for the natural beauty, health and quality of life in Washington County. We must protect our air and water from such pollution.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 71

Comments from Laura Nelms – citizen

As you know, plant Shearer, the top CO_2 emissions-producing plant in the country, is already located in Juliette, GA. The addition of yet another coal-powered plant to the middle Georgia area will be detrimental to the surrounding river systems and ecosystems. This, in turn, affects long-run human health. The areas that must be mined in order to produce the coal to fuel these plants are already in grave environmental danger and mountaintop removal in order to mine. The Coal River Mountain in Virginia, if incorrectly mined, could spill billions of gallons of coal slurry, killing thousands who live in the area and permanently damaging the environment in close proximity and along connecting river ways. This is only one example of many. The addition of another coal-burning power plant affects not only the area in which it is built but also the place from whence the coal comes. Yes, it would provide jobs, but that is not worth the environmental and human health impacts. Thank you for your consideration of this and all other comments on the issue.

EPD Response: Comment so noted.

Comment 72

Comments from Lee Horton – citizen

On behalf of my family and I we support the construction of plant Washington.

EPD Response: Comment so noted.

Comment 73

Comments from Lisa Knighton – citizen

Please. Let's move forward and develop new ways of producing energy. As an asthma sufferer, I do not need more pollution in the air.

EPD Response: Comment so noted.

Comment 74

Comments from Cobb County resident – citizen

I am a Cobb County resident and member of Cobb Electric Member Corporation. I want to indicate my opposition to CEMC's plans to participate in a new coal plant. It is not needed, it is polluting and uses up too much of our precious water in Georgia. I also object to the ability of CEMC to charge me before a single KWH is generated from the plant.

EPD Response: Comment so noted.

Comment 75

Comments from Lynda English – citizen

Please say no to the proposed coal plant. Our safety is much more important than the few jobs it would provide local people.

EPD Response: Comment so noted.

Comment 76

Comments from Lynn Henley – citizen

I am writing to express my opinion concerning the coal plant proposed for middle Georgia ...protect the elderly, young and well everyone from this proposed coal plant. It seems as though opposition falls on deaf ears. States the nation over are banning coal plants, but Georgia considers them and even builds them! These actions make the government and citizens look very uneducated. Please look out for our citizens and make Georgia the state to be envied not pitied.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 77

Comments from Margaret Breen – citizen of Atlanta, Georgia

Please reject permits for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health. We already have plenty of coal emissions with existing plants--let's not add even more.

The economic argument for this plant simply does not hold water (more on water later). The pollutants from this plant result in toxicity that is affecting the health of every Georgia citizen, yet the high costs of caring for the resultant asthma and cancer is not considered in the costs of the plant. If you do take these factors into account, not only should be not permit this plant, we should withdraw the permits for all other coal-fired generation in Georgia.

While the emissions are bad enough, the plant will also withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. As the recent drought has shown, water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 78

Comments from Mark Tisdale – citizen

Please don't invest more of Georgia's valuable resources in another coal plant. The time for us to invest in cleaner alternatives is here. This is throwing money and our health down a rat hole. Don't approve another coal plant in Georgia!

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 79

Comments from Marlee Long – citizen

I want it on record that I do not want Plant Washington built.

EPD Response: Comment so noted.

Comment 80

Comments from Martie Tompkins – citizen

I would like for EPD to be aware that I am in favor of Plant Washington in Sandersville, Georgia. I am an owner of three tracts of property within 5 miles of the plant site. It is my family, "Mathis" that Mathis Road is named for. I have attended the public meetings in our area and the benefits of Plant Washington exceed any negative items brought out during these meetings. Our community needs this source of energy for industrial growth.

EPD Response: Comment so noted.

Comment 81

Comments from Elaine Brown – citizen

I am not a resident of Washington County but lived there for 22 years. I have family and many friends who do live there. I strongly support Plant Washington as an effort not only to support the economic stimulation for Washington County but for the provision this plant will provide for other areas in the state. I have read the articles provided both pro and con. I have read letters from very qualified personnel who reside in Washington county. I definitely trust the judgment of those who actually contributed positive feedback on the findings that prove the plant a good investment for this county. This county needs growth and production to maintain quality life for those who have chosen to live in this rural area.

Although there are those who have chosen to be negative to this cause do so because that is the position they choose to remain in no matter what the topic of discussion. I know some of these people personally this is their nature. Please consider this letter in support of Plant Washington for the good of Washington

County and the state.

EPD Response: Comment so noted.

Comment 82

Comments from Neal Martin – citizen of Peachtree City, Georgia

I would like to express my opposition to the building of the coal-fired Plant Washington facility in Sandersville, GA. We must find more environmentally sound alternatives to coal plants and the air and CO_2 pollution that they cause. In addition, the environmental impacts from the coal mining itself are very significant.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 83

Comments from Nicholas Hobbs – citizen

My name is Nicholas Hobbs and I am a second year student at Georgia Tech. A friend of mine informed me of the potential construction of the coal plant and I just wanted to state my opposition to it as a Georgian. I understand its short term benefits are good but I also understand the easy road is seldom the best one. With the efforts being made to begin and sustain a "green" revolution, I must take this stance. Once again, I know 'clean' energy isn't the easiest/cheapest to promote and it isn't coming out of my pocket, but please at least consider my point of view to understand where I am coming from.

EPD Response: Comment so noted.

Comment 84

Comments from Pam Mathis – citizen of Sandersville, Georgia

As a Sandersville local and a land owner on Mayview Road, please know that I fully support the proposed Plant Washington. Not only will the new plant create jobs for our county but it will also draw new industry, which is vital to our local economic development. And I am not concerned about the emissions as I understand state of the art technology will be used.

Many out of town visitors voiced opinions against the Plant this week. They don't live here. Please consider that your supporters live in Washington County...where it really matters.

EPD Response: Comment so noted.

Comment 85

Comments from Pamela Bloodsaw – citizen of Sandersville, Georgia

I (Pamela Bloodsaw Dunn) is emailing you to let you know that I strongly support Plant Washington. Plant Washington will bring more jobs to this area as well has betters things in the future.Looking forward to this plant coming.

EPD Response: Comment so noted.

Comment 86

Comments from Patricia Kelly – citizen of Carlton, Georgia

Plant Washington coal plant near Sandersville will use and pollute water from the Oconee River and create a new source of mercury pollution in rivers already experiencing problems with mercury. Plant Washington is the expensive, water consuming, and polluting choice for meeting Georgia's future energy needs. Please say no to this additional pollution source. We need to reduce the pollution in this state not add to it. Please encourage solar, wind, wave energy generation before it is too late for survival of the human species on this planet.

EPD Response: Comment so noted.

Comment 87

Comments from Pierre Howard – citizen of Atlanta, Georgia

As a taxpayer and life-long citizen of Georgia, I oppose the granting by EPD of a permit for a coal-fired plant in Washington County.

EPD Response: Comment so noted.

Comment 88

Comments from Rebecca Propst – citizen of Atlanta, Georgia

I am writing to register my opinion against the proposed coal plant in Washington County. Georgia has an opportunity to be a leader in seeking and developing clean energy, and should direct efforts to that end. Pollution producing energy should be left in the left in the past, and Georgia should look toward the present and future benefits in its energy planning.

EPD Response: Comment so noted.

Comment 89

Comments from Ree Garrett – citizen of Sandersville, Georgia

I want to voice my support for Plant Washington to be built near Sandersville. As a lifelong resident of Washington County, I have worked with and volunteered with several different segments of our population over my almost sixty years. From my volunteer work with the local library, the hospital and the schools, to my part ownership of the local newspaper, to my jobs with the kaolin industry and now the Chamber of Commerce, I can attest first hand to the need for this industry to locate in our county.

We are plagued with a poverty rate of over 22% and a high school graduation rate of just above 70%. An increased tax base that this plant would bring to our county and the job that would be available could be the hand-up this community needs to pull itself out of these dismal statistics.

All manufacturing comes with risk. But I believe that the facts show, the benefits of this plant far outweigh the small effect it will have on our air quality and water purity and availability. I implore you to issue a final permit for Plant Washington.

EPD Response: Comment so noted.

Comment 90

Comments from Richard Miller – citizen of Powder Springs, Georgia

I normally would not write this type of letter. I am generally in favor of energy development of all kinds, including coal-fired plants. However, in recent years as I have studied the issue of energy, I am convinced that coal-burning plants no longer make sense. I don't believe they are healthy for the environment when we have sensible alternatives such as nuclear, hydroelectric, or even wind power. I especially don't understand the need for a coal-fired plant in Georgia if the energy is going to be transported to other states. I also understand the energy need in Georgia is actually declining. I understand that coal is cheap and plentiful, but it's not the best solution for Georgia right now.

Please say NO to Plant Washington and Longleaf.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 91

Comments from Ricky Alley – citizen of Midville, Georgia

I never thought I would have to tell my children we could not eat fish everday because of the ramifications of coal powered power plants. Please look at your own family and friends and consider how important your decision on this matter is. We do not hunt, fish, and consume products from our part of the world because of a dollar, it is because it is our God given right. Please leave this choice for future generations to consider, not because chemical levels and cheaper energy has taken away their choice.

EPD Response: Comment so noted.

Comment 92

Comments from Rob Mathis – citizen of Sandersville, Georgia

I am writing to say I am in full support of Plant Washington. The base load power this plant will generate will help ensure that power remains affordable in the state of Georgia for mining and manufacturing. I am confident that the EPD is capable of determining and enforcing emissions levels which are safe for the environment and safe for my family. I am also confident that the in depth water study that was done shows the water withdrawal rates are acceptable and will have no negative effects on the environment. I am excited about the potential jobs that this plant could bring to our area. I urge you to issue all permits for Plant Washington.

EPD Response: Comment so noted.

Comment 93

Comments from Robin Benson – citizen

My name is Robin C. Benson, I am a photo major at the SCAD Atlanta campus. I would like it to be on public record that I absolutely oppose this plant!

EPD Response: Comment so noted.

Comment 94

Comments from Robin McDonald – citizen of Warthen, Georgia

I am in support of the new plant to be built in Washington County. I am an employee of a local kaolin company and it is no secret that the community's long-standing reliance on the kaolin industry has been challenged over the past few years. There is a well-qualified and deserving work force in this community that deserves the opportunity to work in another industry such as that that Plant Washington would provide.

There is a lot of opposition to this plant - much of which is from out of the county. There are some "environmentalists" and "tree-huggers" that would protest anything that they could get some attention opposing.

You have in your power the ability to award the fine people of this county an opportunity. Please consider approving this permit.

EPD Response: Comment so noted.

Comment 95

Comments from Robin Rahn – citizen

His email is to express that I am opposing the new coal plant in Georgia. I am hoping for options such as solar and wind power plants to replace all old coal factories. Renewable sources such as these are ways to reduce global warming and pollution. These are only two reasons that new coal should be forbidden!

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 96

Comments from Samer Othman – citizen

I am writing to you in regards to the new coal plant planned for Georgia. This news comes to my great dismay and concern as we already have one of the largest coal plants of the world in Plant Scherer. It seems that building yet another large plant would contribute to ruining the good air quality that we enjoy in our state. Considering the positioning of Georgia and also the topography; along with government funding for more earth-friendly technology; it would seem more advantageous and perhaps ever cheaper to use wind power. Our coastal land expanse and mountain acreage would prove to be ideal places to harvest the power of the wind. I admit that I am by no means the most environmentally conscience citizen and believe that tree hugging is in some ways counter-intuitive. However, in this instance I strongly oppose the development of a highly polluting establishment. My public health background tells me that such a plant would further contribute to emphysema, lung cancer, and respiratory pathology rates. Further more, I have yet to hear any problems of brown outs or black outs from around the state. And though I'm not saying it's not possible in the future, perhaps catching it early would mean additional options and being able to thoroughly consider every possibility. Thank you for your consideration and acceptance of public opinion messages.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 97

Comments from Sandy Layton – citizen of Savannah, Georgia

Please deny permit for plant Washington.

EPD Response: Comment so noted.

Comment 98

Comments from Sarah Sassler – citizen

I would like it to go on the record that I do not want the coal-fired power plant to be built in Washington County.

EPD Response: Comment so noted.

Comment 99

Comments from Scott Ahrens – citizen of Sandersville, Georgia

I was fortunate to attend the public comment hearing on Plant Washington on Tuesday, October 20 in Sandersville. I have lived in Sandersville for six years. I am not a life-long resident like many of the people for or against our power plant. I have lived in the Midwest and Mid-Atlantic areas of the US, and I travel all over the world for my profession.

After hearing both sides, I want to publicly state that I support Plant Washington. I think it is human nature to be concerned about the future, and to expect that the worst is going to happen. While Plant Washington will not be perfect, and it has its risks, the benefits of such a plant far outweigh the negative aspects of the plant. I trust the EPD will do everything in its power to make sure Plant Washington is as safe as it can possibly be.

However, as technology improves every year, so does the probability that the potential pollution will also decrease. The thing I fear the most with regards to pollution and air quality is the effect that China and India have on the world environment. While I understand the US has done its fear share, if the world cannot control the pollution coming from these two countries, nothing anybody else does is going to matter.

EPD Response: Comment so noted.

Comment 100

Comments from Scotty and Pendery McCoy – citizens of Sandersville, Georgia

We are residents of Washington County. We fully trust the GA EPD to provide the guidance for Plant Washington and support the construction of this Facility.

EPD Response: Comment so noted.

Comment 101

Comments from Sheila Parker – citizen of Sandersville, Georgia

As a member of the Altamaha Riverkeepers organization and a resident of Georgia I am calling for your strictest guidelines to protect the Oconee River from mercury pollution generated by Plant Washington in Sandersville. They say you get what you expect, and I am mailing you to say I have confidence that you will do your job to protect our living waters, not just for us, but for your own children and grandchildren.

EPD Response: Comment so noted.

Comment 102

Comments from Sheila Parker – citizen of Sandersville, Georgia

As a lifelong citizen of Washington County I would like to express my support in favor of Plant Washington. While I can appreciate the delicate balance needed between conservation and industry I believe Plant Washington would benefit our county greatly. Thank you for considering the opinions of the people of Washington County.

EPD Response: Comment so noted.

Comment 103

Comments from Stephen Feinberg – citizen of Athens, Georgia

My name is Stephen Feinberg, and I am a student at the University of Georgia in Athens, GA. I am a eorgia citizen and I am opposed to the construction of Plant Washington. Another coal plant in Georgia will lead to dirty air, dirty water, and will adversely affect the health of everyone within 1,000 km of the plant. I do, however, support clean energy such as wind and solar that will protect the health of Georgia citizens and bring jobs to Washington County. This is an opportunity for Georgia to be a leader in the shift to clean, renewable energy. It is my hope that you at the EPD will take advantage of this opportunity and make the choice to lead Georgia into the new era of clean, green energy.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 104

Comments from Steve Klocke – citizen of Athens, Georgia

Please consider: By promoting energy efficiency, many utility companies have saved themselves the burden of building new plants**.**

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 105

Comments from Suzanne Warthen – citizen

I am writing to register my opposition to the proposed coal burning power plant in Washington County. Numerous studies and reports have shown that the energy……I urge you to consider the short

and long-term negative effects the proposed coal fired plant will have on Washington County and our neighbors in surrounding communities. Thank you for considering my concerns.

EPD Response: Please refer to Division's response to Citizen Comments 1 and 5.

Comment 106

Comments from Jerry and Sylvia Flowers – citizens of Macon, Georgia

We were unable to attend the meeting; however, we wish to be on record as opposing issuance of a permit for constructing Plant Washington or any other coal-fired power plant in the State of Georgia. We base our opposition on cost considerations, public health issues and a variety of environmental concerns, including those associated with the widespread negative impacts of coalmining and waste disposal. We want Georgia to join the growing number of states that have either banned new coal-fired power plants or placed a moratorium on them until all prudent and feasible alternatives can be thoroughly evaluated.

EPD Response: Comment so noted.

Comment 107

Comments from Deborah May – citizen of Tennille, Georgia

I wish to give my full support in the decision to build Plant Washington in Washington County, Georgia. I had the opportunity to tour the Santee Cooper's Cross Generating Station on January 14, 2009 and was very impressed with the facility and the careful 24 hours monitoring system and the watchfull controls this plant observed. I sincerely hope your committee with vote YES for Plant Washington! I also wish to thank your department for the informative meetings and hearings you have presented to the citizens of our community. We are far more informed because of your presentations.

EPD Response: Comment so noted.

Comment 108

Comments from Iketina Jordan – citizen of Sandersville, Georgia

I support Plant Washington 100%, there is a great need for this Power Plant.

EPD Response: Comment so noted.

Comment 109

Comments from Tochie Blad – citizen of Atlanta, Georgia

We have too many red zone days in Atlanta and the state with our current output of industry and cars. As a mom, of an asthmatic child, we do not need to add to the dirty air problem with another coal plant. PLEASE DO NOT ALLOW the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

Recent rains, allow us to forget our water issues but with the Water wars still in play and the Corp. not allowing Lake Lanier to be a drinking water reservoir. Water conservation is important in this state. We can't afford the water a new coal plant will required.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 110

Comments from Traci Todd – citizen

I'm writing to encourage you to DENY the draft permits for construction of the Washington County, GA coal plant. My primary concern is water contamination and enormous water consumption, which could jeopardize availability for our communities, small businesses, and farms, as well as damage creeks, streams, and rivers, making it hazardous to eat the fish from our waterways. Our water tables are already suffering greatly, and according to an article written 9-7-09 found on The Georgia Dept. of Natural Resources website, over the next 4 decades, Georgia farmers alone will need 20% more water for irrigation than is currently used. That's not including individual land owners and small businesses whose water needs are also projected to increase. Please use prudence, and good common sense, and say "NO" to the Washington, GA coal plant.

EPD Response: Comment so noted.

Comment 111

Comments from Trey Gunning – citizen

I have been following the development in this proposed power plant for some time now. The more research i do the more scared I am. Coal is not the direction this country needs to be headed in. We all understand the environmental problems with coal, from mountain destruction to air and water quality. I am having trouble understanding who is going to benefit from this plant. When clean sustainable options are out there. These options work for our region and can produce many jobs for our communities. Being a georgia resident i am very concerned with the pollution and dangers of building this plant. I beg that the proposal is declined and we can look to the future in a cleaner more sustainable way. As a young person living in Georgia I feel these decisions about energy that are going to greatly affect the future of georgia for such a long time should be made on the basis of responsibilty not who can gain on the short term. Let Georgia be a leader in sustainable energy not the leader in Carbon emissions!

EPD Response: Comment so noted.

Comment 112

Comments from Capers O. Brazzell – citizen of Sandersville, Georgia

Washington County is my adopted home. I have operated a business here since 1977, and certainly do not want to see its natural beauty and liveability besmirched or compromised. Therefore, I urge you to use the utmost care in granting the final permit. I have attended all the sessions sponsored by EPD and

most of those led by Power4Georgians and FACE. Based on the information presented, I must come down firmly on the side of constructing Plant Washington. The facts I have seen have convinced me that construction of the plant would be of great benefit to our part of the state.

EPD Response: Comment so noted.

Comment 113

Comments from Walter McMillan – citizen

I served as Superior Court Judge for forty (40) years in the Middle Judicial Circuit. During this time I had several cases involving the environment in Washington and other counties. Probably the first case was Calvine Industries in Swainsboro. Because of interested citizens and the good work of the Georgia Water Control Board (now part of EPD) the plant was approved for operation subject to completion of many needed safeguards. It remained open for a while, but soon under its own weight the plant closed. Technology then was not as advanced as it is today, but you stayed on top of the problem. Your capable agency is well equipped to oversee this proposed Plant Washington now, and certainly you will be in the future in line with advancing technology. This country needs energy from all sources to keep up with the global economy. I know you will do everything in keeping within your responsibility to help us - and the public - to get this needed facility. Thank you for all your help both now and in the past.

EPD Response: Comment so noted.

Comment 114

Comments from Wanda Brooks – citizen of Sparta, Georgia

This is to express my positive feelings about Plant Washington. I am from an adjoining county, and feel not only will this keep our lights on, but will provide jobs for our area. Please allow this plant to come in our area.

EPD Response: Comment so noted.

Comment 115

Comments from Wayne Andrews – citizen

I am contacting you to express my support for building Plant Washington near Sandersville. As with many industries, there will be some emissions; however, technology has been developed and is available to minimize risk. This area desperately needs the jobs and tax base the plant will provide. As you are probably aware, Washington County has relied on the kaolin industry for decades. That industry is now flat and may even be said to be in decline. I do feel badly for families who live near the site that have properties that may be affected badly solely because of their location. I hope the power company will compensate property owners very adequately for any loss. In considering possible health effects from power plant emissions, I look only about 30 miles west to Plant Branch in Milledgeville. Plant Branch has been operating for decades. I know of no wide ranging health effects that are due to emissions from that facility. I think the people of Milledgeville are happy to have the facility. Many people in Washington County will welcome Plant Washington.

EPD Response: Comment so noted.

Comment 116

Comments from Roy Hubbard – citizen of Richmond Hill, Georgia

With current levels of mercury poisoning already over the EPA limits, it is unacceptable to consider permitting any source of additional contamination such as the Washington County coal fired power plant. We must stop making Georgia a dumping ground for other people's garbage, I.E. Plastic from North Carolina and we must stop polluting the air and water of the State to satisfy the insatiable appetite of the uncontrolled growth in the Atlanta area.

The concept being promoted that such a plant is going to bring prosperity to that depressed area of the state is simply not true. The labor force is not equipped to work in a highly technical, automated facility. Plants of that size normally employee a handful of skilled workers and management. Tell the truth to the people of Washington County. They are going to get the pollution, not the jobs.

EPD Response: Comment so noted.

Comment 117

Comments from Alan Bailey – citizen of Savannah, Georgia

Thank you for taking comments on the proposed Plant Washington. I hope that all of the comments received about the environmental consequences of permitting this plant are seriously considered. It seems as though in the past, EPD has allowed public comments, but then has not actually considered these comments in making their permitting decisions.

As you well know,coal-fired power plants are one of the largest sources of mercury to the atmosphere. This mercury finds it way into the State's waters, resulting in serious pollution and contaminating fish. This contamination is significant. For example, over 2/3 of the St. Marys River is posted with fish consumption advisories from contamination by mercury. Not only that, the CO_2 emitted from the burning of coal is a significant greenhouse gas, contributing to global warming, something Georgia should be exquisitely cognizant of, given it is a coastal state. Finally, permitting a coal-fired plant will enable mountaintop removal to obtain coal. Even though this heinous practice does not occur in our state, its use obliterates the natural environment where it is perpetrated, which includes the filling of mountain streams with mining rubble.

Please do the right thing, and not the politically expedient thing. Deny these permits, so Georgia can focus, perhaps even be a leader in, the production of clean, renewable, sustainable energy. Not more of the same- energy from dirty coal plants. Please do it for our families, do it for your family, do it for the State of Georgia.

EPD Response: Please refer to Division's response to Citizen Comments 1 and 5.

Comment 118

Comments from Alan Bailey – citizen of Atlanta, Georgia

I oppose the permitting of Plant Washington.

(1) The demand for the energy produced by this plant is based on dubious assumptions about population growth and energy use.

(2) You know for a fact and should act on the knowledge that there is insufficient water for this purpose in the Oconee River and in the aquifer system underlying the plant. By permitting this plant, you will "lock in" a low priority use of water and put at risk for the future local drinking water supplies.

(3) The nearby Ogeechee River is polluted with methylmercury. Plant Washington's BEST estimate is that it will put well over 100 pounds of mercury into the air each year. You have a statutory duty to regulate pollutants and to protect human health. The EMCs submitting this proposal have one dubious argument in favor of this plant: if the plant is not built, energy costs for consumers will rise. Your job is not to supply cheap energy to Atlanta. Your duty is to submit this proposal to rigorous scrutiny for the impact it will have on our natural resources and human health.

By that measure, the plant should not be permitted.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 119

Comments from Brian Wright – citizen

I am writing today in support of Plant Washington. As a business owner and resident in Washington County, I have tried to carefully review the information presented both for and against the facility being built in our County. After hearing both arguments, I am convinced that the Plant's advantages including local jobs and a source of affordable energy more than outweigh the few small disadvantages that have been cited.

I am hopeful your agency will approve the necessary permits that will allow this project to become a reality. I respectfully ask that you register my comments in your official records.

EPD Response: Comment so noted.

Comment 120

Comments from Janice Jones – citizen

My husband and I were unable to attend the meeting held in Sandersville last Tuesday night in regard to the public hearing about Plant Washington. Therefore, I would like to take this opportunity to address the issue with you. Although we live in Hancock County, we are not that far from the site of the proposed Plant Washington. My concerns, however, aren't simply related to our particular location. The more I have researched information on coal plants, the more convinced I am that they are not the safe power source alternatives that they are touted to be. In fact, they appear to pose significant risks to the land, water, and air surrounding the sites. I very much agree with the opinion expressed by Senator Dubose Porter and many neighbors with whom I have spoken: we need safer, cleaner, more renewable alternatives for generating power and jobs. While I do understand this area's desperate need for a job base to replace the declining chalk/clay industry here, I hate to see us mortgage our future on today's utilization of such an outdated, unsustainable, and - frankly - dangerous resource as coal.

Please make your decision against the construction of the Plant Washington. Thank you for the opportunity to express my concerns to you.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 121

Comments from Carlie Gentry – citizen

I am a college aged, Georgia resident and I have heard of the proposal for a new coal plant in Sandersville. My current residence is not in harms way of the chemical run off and toxic by products that would inevitably be caused by this plant and many others like it. Yet still, as a young citizen of this state, I find it highly jeopardizing to risk such ill effects upon my peers and their future families. I understand that in times as these job creation is a very strong source of motivation. But as you proceed in your own efforts, remember that there is always a price to be paid for hasty decision making.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 122

Comments from Charles Tarbutton – citizen of Sandersville, Georgia

I want to express my sincere appreciation for the thorough and professional manner in which EPD has conducted its review of PowerforGeorgia's several permit applications related to the Plant Washington project. I have every confidence in the department to follow the spirit and the letter of all applicable laws and regulations, and thereby, protect the people of Washington County and the State of Georgia from any and all pollutants emitted by regulated/permitted sources, including Plant Washington, if constructed. I wholeheartedly support the construction of Plant Washington, and I fully expect EPD to do its job of regulating and inspecting the operator to ensure that it is in full compliance with its permits. Thank you again for the extremely important job that you do, and the professional manner in which you do it.

EPD Response: Comment so noted.

Comment 123

Comments from Christina Hennecken – citizen

I am concerned about the pollution a new coal plant in Sandersville, GA, will create for Georgians. According to redandblack.com (an independent student newspaper), the new coal plant would have adverse effects on air and water quality, the surrounding environment, and people's personal health. I see the possibility of new jobs as a good thing, but in the long term, I am not convinced that a coal plant will benefit Georgians. Temporary construction jobs do not outweigh the damage this plant would have on the environment and the health of surrounding communities. Since the EPD, as the name suggests, is supposed to protect, I think the permit to build this plant should be denied.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 124

Comments from Charles Lewis – citizen of Louisville, Georgia

I am adamently opposed to the coal plant proposed for Washington County, GA due o negative environmental impact. Please do not allow greed to destroy the environment we leave to our grandchildren.

EPD Response: Comment so noted.

Comment 125

Comments from Donna Martin – citizen of Peachtree City, Georgia

Please reconsider putting a coal plant in Sandersville, GA. We need to be better stewards of the resources that God has given us. I am concerned about the fact that it will use 16 million gallons of water per day. Also, it will be putting more carbon dioxide into the air and depositing mercury into nearby water sources. Thank you for letting me voice my opinion.

EPD Response: Comment so noted.

Comment 126

Comments from Glenn Newsome – citizen of Monticello, Georgia

Please DO NOT APPROVE the application for Plant Washington. My family has lived in Wash Co for 6 generations. Mostly farmers. The use of millions of gallons of water will deplete the aquaifer. Water levels in ponds on property I own are down this year even will all the rain. We must think about the future for our children. Wash Co already has one of the highest rates of cancer in GA. The air is bad now - a coal plant will make it much worse. Increased mercury in the water will hurt young children. We must take care of God's creation. Please DO NOT approve Plant Wash. Thank you for your consideration.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 127

Comments from Jessica Holcomb – citizen

I do not wish to see a new coal plant being built in Georgia, to increase air pollution. Coal is not "green".

EPD Response: Comment so noted.

Comment 128

Comments from Jane Stebbins – citizen

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health.

In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.Water is already a major problem (evidenced by Everybody vs. The Army Corp. of Engineers) - notwithstanding the recent rainfall, in the long term, we cannot afford to be losing more of it to anything. Particularly not to an energy plant using old, dirty technology. Coal power plants should be phasing out and looking for cleaner, healthier alternatives, not building more!

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 129

Comments from Jessica Robinson – citizen of Kennesaw, Georgia

My name is Jessica Robinson. I am a student of Anthropology and Ecology at Kennesaw State University. I would first, like it on public record that I oppose the proposed coal-fired power Plant Washington to be built. According to a report done by Synapse Energy Economics, Inc., Cobb EMC did not include any costs for carbon dioxide mitigation measures or for purchasing CO_2 emission allowances. Also, the cost analysis submitted by Cobb EMC is several years old, and out of date. Please explain up to date costs for carbon dioxide mitigation measures/ emission allowances. Again, I oppose the building of this plant. There are healthier, cleaner, more cost-efficient alternatives such as wind, solar, and responsible biomass, all of which Georgia could utilize towards serving as a leader in clean energy. I have a vision and a commitment to a clean, sustainable future and coal has no part in that whatsoever. Thank you for your time and consideration, and I look forward to your response.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 130

Comments from John Hintermaier – citizen of Macon, Georgia

I am writing to express my opposition to the EPD granting permission for the construction of Plant Washington in Sandersville. The fact that several of the original partners have pulled out of the deal and the looming regulation of CO_2 emissions are behind my opposition. I live in Macon and we already suffer from the air and water quality issues that are associated with Plant Scherer. We do not need another coal fired plant in our region of the state. The developers of this plant should follow the lead of Southern Company and explore alternative fuel sources for this plant. Biomass or natural gas would be far better fuel sources and would not bring with them the issues that a coal plant does.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 131

Comments from Judith Vanderver – citizen of Atlanta, Georgia

I am concerned about the recent draft permits for Plant Washington in Sandersville, GA. This plant will emit toxic mercury into our air and pollute our already polluted Oconee River. With conservation, and building renewable energy infrastructure we can meet Georgia's energy needs. Please deny the Plant Washington coal plan draft permits. This plant will endanger our children's health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 132

Comments from Kim Roberson – citizen

This letter is to let you know that I fully support Plant Washington. Working in the electric utility industry, I know that Georgia will need the megawatts that Plant Washington will produce and place on

the state's power grid. During the building stage, Plant Washington will provide many jobs that will boost the economy in Washington County and once built, Plant Washington will provide much needed jobs here.

I believe that Plant Washington will be a clean and safe facility and with the state of the art technologies that are available today it will provide maximum protection for the environment. I respectfully ask that my comments be recorded in your official records.

EPD Response: Comment so noted.

Comment 133

Comments from Lamar Binion – citizen

My name is Lamar Binion. I have lived in Washington County for thirty-five years, and I am currently the Chairman of the Washington County Board of Education. I am a retired educator having taught biology during my teaching years, so I feel that I have somewhat of an environmental conscience.

With that being said, I have given much thought and study to Plant Washington being built in Washington County. It is my firm belief that Plant Washington's state-of-art-emissions control technologies will provide maximum protection for the environment and for the health of my friends and loved ones. From a Board of Education point of view, the two billion dollar investment is just what Washington County needs. For years now, I have watched counties like Burke, Appling, Putnam and Monroe provide more to the boys and girls and move ahead of us because of the resources provided by facilities like Plants Vogtle, Hatch, Harllee Branch, and Plant Sherer. While I do not speak for all, I do feel that the great majority of people in Washington County support this project, so without hesitation or reservation, I whole heartedly support the construction of Plant Washington in Washington County. In conclusion, I am hopeful your agency will approve the necessary permits that will allow this project to move forward.

EPD Response: Comment so noted.

Comment 134

Comments from Laura Coates – citizen

If for no other reason than the water issues. I know it's raining a lot now, but in a couple years (or a few months even), it'll be back to drought. Doyour job and protect the environment!

EPD Response: Comment so noted.

Comment 135

Comments from Nathan Smith – citizen of Alpharetta, Georgia

I oppose the Plant Washington coal plant. As a Georgia resident I would like to see other options pursued to reduce our energy used, rather than grow our energy produced. Please change the law so energy companies can make money by reducing the amount of electricity produced.

EPD Response: Comment so noted.

Comment 136

Comments from Neill Herring – citizen of Jesup, Georgia

During initial promotion of the coal power plant in Washington Co. mention was made of using wastewater from the kaolin mining and processing industry for cooling water for the plant. What happened to that proposal?

This plant's cooling water requirements are excessive for the water resource in the area. The Oconee and Ogeechee Rivers both need all the flow they can capture, and the groundwater systems in the area are at the upper ends of their gradients, meaning that recharge will come slowly, and areas immediately downgradient will experience areal shortages during periods when the power plant's wells are recharging.

EPD Response: EPD's Water Branch will be addressing comments concerning the cooling water requirements for this plant. Only comments relevant to air quality are addressed in this document.

Comment 137

Comments from Martha Black – citizen of Louisville, Georgia

After reading an article in the Wall Street Journal titled States Invest More in Energy Efficiency I see that Georgia ranks among the eleven states with the lowest energy efficiency. Studies indicate it is for cheaper to invest in energy efficiency than to build new coal-fired power plants that will be polluting for 50 years. Less coal-fired power plants in Georgia will mean less toxic mercury in Georgia Rivers. According to the US EPA the Ogeechee River now receives over 2 times the safe amount of mercury from air pollution. If plant Washington is permitted the Ogeechee will receive even more mercury which can cause neurological problems for young people consuming mercury laden fish from its waters.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 138

Comments from Phil, Waldrop – citizen of Statesboro, Georgia

Please ensure that the permits for the new coal-fired plant at Sandersville require the best available technology for pollution control. Thank you.

Comment 139

Comments from Nancy Newsome – citizen of Monticello, Georgia

Please DO NOT approve Plant Washington. I was raised on a dairy farm in Wash Co. This plant would deplete the water in our aquifer. Water levels on our farm are down now. Mercury in the air and water will harm everyone especially young children. The air in Wash Co already has high pollution due to existing coal plants and kaolin plants. Plant Wash will make the pollution even greater.

EPD Response: Comment so noted.

Comment 140

Comments from Paula Jacobs – citizen

I live in Colleton Co., SC but intend to retire in a few years and move back to Jefferson Co., Georgia where our 470 acres family farm is located. South Carolina residents have been fighting this ticking time bomb of arsenic, mercury, lead, etc. and now it has moved its proposal to Ga. But SC is left with the old coal fired power plants and the damage they have done. Please go on line and look under " utility toxins or Canadys coal ash" and read from our Charleston newspaper. www.postandcourier.com.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 141

Comments from Robert Wommack – citizen of Sandersville, Georgia

I am a life long resident of Washington County, a practicing attorney, and elected State Court Judge for Washington County. And I am writing to say that I support Plant Washington. There are many reasons why I support Plant Washington, but the main four are as follows: First, the name Power for Georgia means it will provide much needed power for the State of Georgia; Second, it will provide both temporary and permanent jobs for Washington at a time when our major industries are shrinking in size; Third, it is designed and engineered in such a way as to have little or no effect on the environment and will set the standard for coal plants in the United States(as it has been said many times, Coal is one of America' s most plentiful natural resources and we must find a way to use it if we intend to compete on a world wide scale); and Lastly, Plant Washington will almost double the tax basis for Washington County, providing much needed revenue for our county to improve roads, schools, hospitals, and other needs of the public.

I commend EPD for a fine job they have done in handling this project and urge you to approve it at your earliest convenience.

EPD Response: Comment so noted.

Comment 142

Comments from Sam Booher – citizen of Augusta, Georgia

I am very concerned about another Coal Burning Power plant being built in Georgia. Why is EPD not recommending that the Washington County plan be fueled by Natural Gas?

1. With Southern Company buying Mountain Top Removal Coal from Appalachia and EPA beginning to enforce Federal Law, that will reduce and eventually stop this method of obtaining coal. Thus Southern Company may well look to Power River, Wyoming for its future coal. It would appear that Natural Gas would be a much cleaner and cheaper fuel for a new Power Plant. A Natural Gas Power Plant should be the source of fuel all of Georgia Power Plants should be converting to use.

2. Current Appalachia coal has polluted and is continuing to pollute Georgia river and especially black water coastal rivers to the point the citizens cannot swim in them or eat the fish they catch. I am told Power River Coal has a much higher (I have heard four times greater) mercury content. I cannot believe EPD is going to permit a new Coal Burning Power plant, especially one that will be releasing much higher mercury levels than even our existing Coal Burning plants.

3. As to the Augusta area, the benefit we are about to achieve by Olin Chemical converting to a non-mercury process will be lost with Power River Coal being burned South West of Augusta in a new Coal Burning Power Plant.

The Environmental Protection Agency (EPA) released a report today detailing the impacts of coal ash and smokestack scrubber sludge, toxic byproducts of burning coal, on water quality across the country. The report shows that coal power plants are discharging huge amounts of toxic pollution including arsenic, mercury, and selenium into rivers, streams, and groundwater across the country, contaminating wells, killing wildlife, and risking lives.

EPA's report concludes that an "increasing amount of evidence indicates that the characteristics of coal combustion wastewater have the potential to impact human health and the environment." The report documents decades of damage, ranging from a single spill which wiped out 200,000 fish to reports of well water laced with selenium, which can cause infertility.

The report comes after data collected earlier this year by the EPA found that problems with coal ash, including aging dams, inadequately lined ponds and lax safety enforcements, were much more widespread than previously thought. The data was released only after citizens submitted a Freedom of Information Act request.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 143

Comments from Valda Tanner – citizen of Sandersville, Georgia

I AM NOT IN FAVOR OF PLANT WASHINGTON BEING BUILT. WE NEED TO PROTECT OUR AIR AND CONSERVE OUR WATER!

My home is located only 2 ½ miles from the proposed Plant Washington site, so I have been diligent in finding out whatever I can about water use, pollution discharge, etc., about the plant. I AM NOT in favor of the plant being built and I urge the EPD to decline its permits. Just think about a plant being built that close to your home. I have a family fish pond at my house and there is no doubt mercury or other pollutants from that plant will enter my pond. Your own officials say most mercury falls out within a few kilometers of the plant.

I live within 2 ½ miles of the proposed coal fired power plant in Washington County, GA. I have a farm pond and have spent a lot of time and money turning it into a good fishery for my family and friends. There are several other local citizens in the area near the proposed plant site who have farm/family ponds also. There are lots of area citizens who fish the Ogeechee River which is only a few miles from the plant site. In light of the below article, how can EPD grant a permit for even more mercury pollution? There are times when controlled burns in the area near the plant site have inundated us with smoke, so it is evident pollution from the plant would do the same. Can you guarantee my fish will not have high mercury levels and if not, who will I have recourse against?

EPD Response: Comment so noted.

Comment 144

Comments from Nena Beckham - citizen

The coal plant in Washington planning to be built has too many environmental and social costs. Building another coal plant in Georgia, which already houses one of the most polluting plants in the entire nation, is senseless. Wasting money, time and costly environmental effects with a new plant will not solve

Georgia's energy problem. Instead, the old plants need to be refurbished and made more efficient and environmentally friendly. Some of the current Georgia coal plants have violated the Clean Water Act over 100 times! How do we know that this will not occur with a new coal plant? The proposed plant will not create enough jobs to justify the ecological degradation and negative community impact. This plant is going to pump 6 to 7 million tons of carbon dioxide into the air the equivalent of putting a million more cars on the road in an age when our CO_2 emissions need to drastically decrease. Georgia has an opportunity to invest in the clean energy of the future that will benefit our state, nation and world both now and later it is time to take that opportunity**!**

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 145

Comments from Thomas Black – citizen of Louisville, Georgia

EPD is so dumb to be permitting another coal-fired power plant that will be putting additional mercury in our waterways for years when we already have fish advisaries from EPD for health reasons limiting the amount of fish one should eat from our waterways. With this additional mercury the fish in our black-water rivers can be too toxic to eat in any amount since the mercury accumalation is greater in these rivers. It seems to me that EPD is more concerned with protecting the coal power plants and supplying electricity to Atlanta than protecting the health of Georgia's citizens.

EPD Response: Comment so noted.

Comment 146

Comments from Susan Martin – citizen of Macon, Georgia

I am opposed to the plant proposed for Washington County. Georgians already bear the health burden from too many coal plants, and this one is unnecessary. We do not need the power, the pollution, and there are better jobs to be found for the county. It makes no economic sense to permit this plant?

EPD Response: Comment so noted.

Comment 147

Comments from Ann Armstrong Patterson - citizen

I am strongly opposed to building any coal-fired power plants in GA. They are costly and dirty and there are cheaper, cleaner energies out there.

EPD Response: Comment so noted.

Comment 148

Comments from Adam Valdez – citizen

I am concerned about the draft permits recently issued for the Plant Washington coal plant. If permitted, the plant will emit toxic pollutants that will harm Georgia's air, water and our public health. In addition, the plant will withdraw up to 16 million gallons of water every day through a 30-mile

pipeline to the Oconee River and 15 wells will also be dug along the pipeline to extract groundwater during periods of drought. Our water resources are limited and such massive withdrawals will compete heavily with other water users such as Georgia's families and local businesses.

As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits because it will endanger public health.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 149

Comments from Alison Amyx – citizen

As a young citizen of Georgia, I urge Georgia EPD to deny the Plant Washington coal plant draft permit! Right now, we face a choice. We can either continue to live in the past, or we can take a brave step toward a new future. Renewable energy IS our future, and Georgia will either be prepared to move in this direction or not. If we start saying no to coal and investing in renewable energy now, we can be ahead of the game. We have the chance to become a leader in the South, but it starts with saying no to Plant Washington! I am concerned about the amount of pollution Plant Washington would emit as well as the amount of water the plant would require. Our state is already in the middle of a water crisis, and we will only face decreased water availability in the Southeast as we begin to see the effects of climate change (1). We need to start preparing for these changes now by conserving our water and keeping our water clean and pollutant free! As a young citizen in Georgia, I am concerned about our future and the state that we will leave our children.As a concerned citizen, I urge Georgia EPD to deny the Plant Washington coal plant draft permits. Georgia's future is at stake!

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 150

Comments from W. Bradley – citizen

As a member of Washington EMC, I oppose the Plant Washington Project.

Specifically, I oppose the withdrawal of sixteen million gallons of water from the Oconee River (when available) and the return of only one million. I oppose emissions of any carbon dioxide or other green house gases.

EPD Response: Comment so noted.

Comment 151

Comments from Georgians for Smart Energy (Transcript document dated October 6, 2009)

We are writing to register our opposition to the construction of a coal-fired plant Washington County, Georgia……In conclusion, we urge Georgia EPD to deny the Plant Washington coal draft permits because it will endanger public health of all Georgians and endanger the already tenuous economic stability in Washington County.

EPD Response: Please refer to Division's responses to Citizen Comment 1 and GreenLaw Comment 1, Section L.

Comment 152

Comments from Jennifer Sasser – citizen (document dated October 20, 2009)

I am writing to register my opposition to the construction of a coal-fired plant Washington County, Georgia…….Coal is dangerous, noxious and detrimental to our health and the health of the environment; we should be exploring other avenues for the power that will fuel the future of Georgia.

EPD Response: Please refer to Division's responses to Citizen Comment 1 and GreenLaw Comment 1, Section L.

Comment 153

Comments from Lori and Edward Boyen – citizen

I am writing to register my opposition to the construction of a coal-fired plant Washington County, Georgia…….Coal is dangerous, noxious and detrimental to our health and the health of the environment; we should be exploring other avenues for the power that will fuel the future of Georgia.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 154

Comments from Susan Mayberry – citizen

I am writing to express my concerns over Plant Washington……....I urge you to reconsider the permits issued for this plant.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 155

Comments from Linda Helton – citizen

I am very concerned about the proposed coal fired power plant in Washington County……I very much oppose this coal fired power plant and ask that you not issue this permit!

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 156

Comments from Jeffrey Taylor – citizen

I am writing to express my concerns with respect to the proposed Plant Washington Project…….Again, I urge you to reconsider the permits issued for this plant.

EPD Response: Please refer to Division's responses to Citizen Comment 1 and GreenLaw Comment 1, Section L.

Comment 157

Comments from Stephanie Benfield – State Representative

I write concerning Plant Washington, a proposed coal-fired plant that uses outdated technology and looms on the horizon as a white elephant, the last of its kind……I urge you to apply great scrutiny to a project that makes no sense today, nor will it makes sense 25 years from now when our children will be saddled to another 25 years of uncontrollable pollution.

EPD Response: Please refer to Division's response to Citizen Comment 1.

PUBLIC HEARING COMMENTS

During the public hearing held on October 20, 2009, EPD received many comments from the public. Many of the citizens submitted both oral and written comments during the public hearing and some also submitted subsequent emails and/or hard copy letters to EPD during the public comment period. All of these comments will be addressed in this section. Please refer to Attachment B (or the permit file for Plant Washington) for the entire comments. Please note only comments related to air quality will be addressed in EPD's responses.

These condensed comments are as follows:

Comment 1

Comments from Matt Jackson – State Representative

Thank you EPD for answering questions.

EPD Response: Comment so noted.

Comment 2

Comments from Tommy Walker – Chairman of the County Board of Commissioners

He received an anonymous threatening letter last week that said the person would not do business with him in the future if he did not back off on his support for the coal plant. Washington County needs jobs and economic development. We must trust the EPD to do the right thing to issue the permit. Dublin and Lawrence County will also benefit from the coal plant.

EPD Response: Comment so noted.

Comment 3

Comments from Jimmy Andrews – Mayor of Sandersville, Georgia

Two main concerns are water usage and air quality. The kaolin industry has been active in the area for more than 75 years and has not depleted the water supply. He trusts the EPD to do the right thing. We need to do everything we can to provide jobs for the people in our community.

EPD Response: Comment so noted.

Comment 4

Comments from Pat Lyons – Mayor of Tennille, Georgia

We support the Project. We are hungry for jobs and affordable power development.

EPD Response: Comment so noted.

Comment 5

Comments from Cathy Mayberry – citizen of Sandersville, Georgia

She owns property adjacent to the plant location. She read the environmental impact section of the PSD permit application related to impacts to vegetation and wildlife. During the intensive site survey, no plant species were identified in the immediate area that are sensitive to NOx, but some were identified that were sensitive to SO_2. 100 acres of wheat are planted on her property in 2007 and 2008, less than 1600 feet from the plant site. Wheat is sensitive to both SO_2, and NOx. She also found a mistake in the application stating that no state parks were less than 50 km from the site, which is not true. Even though the screening models state that ground level pollutant concentrations will be safe, how can we trust them? She also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 6

Comments from Alan Pryor – citizen

Plant Washington will be a competitor to his company. In a recent Greenlaw presentation, they stated that it would cost another power company millions of dollars in fees, fines, and legal fees. The costs to these power plants are really paid by their customers in increased costs of their product. The economic benefits of this investment are grossly understated and the environmental harms are overstated. The emissions from this new power plant are a fraction of the older power plants already in existence.

EPD Response: Comment so noted.

Comment 7

Comments from DuBose Porter – State Representative from Laurens County

He is not opposed to a power plant but he is opposed to a coal-fired power plant. It would be much better for this plant to be fired with wood pellets or chips. This type of fuel usage would provide many more jobs for Georgians, as loggers, in restaurants, and chainsaw sales and service. Additionally the environmental impacts would be less. We export wood pellets to overseas but we would import coal from other states to burn in this plant. It would be better to provide local jobs than to employ coal miners in other states.

EPD Response: Comment so noted.

Comment 8

Comments from Midge Sweet – citizen

Is an antiquated coal plant the best that we can do for the citizens of Washington County? There are better alternatives. Loans for another large power project were defaulted on because of lack of demand for power. EPD will not be able to keep track of and fully monitor everything that happens at this plant. He also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 9

Comments from Raven Waters – citizen

There is no such thing as clean coal. Air pollutants from coal plants end up in the water or are stored as piles of fly ash. Mountain top removal is environmentally destructive.

EPD Response: Comment so noted.

Comment 10

Comments from Larry Warthen – citizen

We do not need this plant in Washington County. Coal plants are dinosaurs and we need to move in to the twenty first century. His church is less than half a mile from the proposed plant site. The proposed ash pond is a risk to Williamson Swamp Creek. Environmental impacts from this plant will need to be dealt with by children. We should work toward bringing cleaner industry jobs to Washington County.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 11

Comments from Chandra Brown – member of Ogeechee River Keepers

She is concerned about the hot spot of mercury pollution that will be created if the plant is built. The Ogeechee River is contaminated with mercury and one cannot safely eat the fish caught in it more than once a month. The EPA has established total maximum daily load for mercury in the air of 20 lbs/year. Plant Washington will be permitted at 105 lbs/year and she believes that this is a violation of the clean water act. Storm water and wastewater discharges from the plant are not required to be monitors for mercury contamination. The Developmental Regional Impact (DRI) process has not been followed. She also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 12

Comments from Bruce Earnest – citizen

He applauds EPD for making sure that the mercury controls are the best possible for the citizens of Georgia and he commends EPD for the mercury reduction program that will reduce Mercury emissions by 90 percent over the next 6 years. The pollution control retrofits will provide jobs and make the air cleaner for Georgians. More than 1500 construction jobs and 129 permanent jobs will be created along with more than $1,000,000 in economic growth. Unemployment in Georgia makes it that much more important to attract new jobs to the state.

EPD Response: Comment so noted.

Comment 13

Comments from Hartmutt Ramm – member of Cobb EMC

The hearings are nothing but window dressing for something that is already a done deal. EPD should be named the Enablement of Pollution Division. Coal plants emit radioactive materials that are greater that what comes from a nuclear power plant. Pollution limits are set at levels that the power producers can afford to meet. CO_2 has a clearly demonstrated, well-established effect on water and air quality. During the last public meeting, he talked to a member of EPD and pointed out that CO_2 had huge impacts on anthropogenic global warming, and it did not make sense not to consider CO_2 in the permit. The EPD member replied that they did not have the authority to regulate CO_2, and that he was not extremely familiar with the IPCC CO_2 report. The climate of Georgia will be radically different in 2040. He also submitted written comments to EPD.

EPD Response: Please refer to Division's responses to Citizen Comment 5 and GreenLaw Comment 1, Section L.

Comment 14

Comments from Katherine Cummings – citizen

Their home is about 5 miles from where the plant will be built and has been recognized by the state as a bi-centennial farm. The plant will affect the health of the people that live nearby, and the water and air. Most of her family lives close to the proposed plant. She works at the non-profit statewide rural health association. She is also president of the fall line alliance for a clean environment that partners with people outside of the Washington County Area. The plant will use up to 16 million gallons of water per day and is a threat to the local water resources, and may deplete groundwater reserves, stream flows and lake, wetlands, and animal habitats. Children are harmed by mercury exposure. She also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 15

Comments from Jerry Leonard – citizen

He owns 1180 acres that Williamson Swamp Creek Flows through the middle of and he owns property adjacent to the proposed plant site. His family uses the property mainly for recreation and forestry. Coal fired boilers are very outdated. This plant will totally destroy him if it comes to Washington County. He is opposed to Plant Washington.

EPD Response: Comment so noted.

Comment 16

Comments from Paula Swint – citizen

The proposed plant will be less than 10 miles from her home and is a direct threat to her family, property, food sources, and way of life. She grows fruits and vegetables on her property that will be exposed to the emissions from the plant. She is concerned that her well will dry up because of water usage by the plant. Because she is within 10 miles of the plant she will be exposed to the most concentrated pollutants. Several of her neighbors already have respiratory problems that will get worse because of the plant. She also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 17

Comments from Cindy Roselle – citizen

Use of renewable energy, such as wind, geothermal and solar, have not increased significantly since the 1970s. She has asked her local utility to supply a green power option on her bill and has been told that there is not enough of it available. Projections for electric usage are overstated because of the downturn in the economy. She requests EPD to deny this permit for Plant Washington.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 18

Comments from Brandon Macie – citizen

Is Georgia thinking about the future? We have the ability to produce cleaner, more efficient, affordable energy without effects on the environment and our health. Alternative energy can produce jobs as well. Georgia has enormous wind and solar energy production potential.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 19

Comments from John Swint – citizen

Pollution will harm his family, friends, and forest in many ways. His property produces fruits, vegetables and trees for pulpwood. Particulate matter from the plant will harm people with breathing problems. He is opposed to removing water from the ground and returning it to the Oconee River. The plant is not necessary as conservation and renewable sources are more that sufficient to meet out energy needs. He is concerned about higher energy bills and taxes to pay for building the plant and to pay for its failure that may result when coal becomes much more expensive because of cap-and-trade regulations.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 20

Comments from Hovey Smith – citizen

He lives about 4 miles from the proposed plant location. He is a registered professional geologist, and he has done specific work in hydrology. He has looked at the filings made to EPD regarding the permit and has worked with the local kaolin industry. The kaolin industry and local municipalities have pumped ground water continuously since the 1940s. The local aquifer is robust and responds well (fills back up) when pumping subsides. He is absolutely convinced that the aquifer can support the additional load. Water for the power plant will draw from 15 separate wells intermittently that are spread out so that water depletion will not be localized to one area. Home wells draw from a shallower aquifer that is physically separated from the water to be drawn for the plant and will not be affected. Surface water will not be affected either. Mercury levels at 122 lbs/year are not terribly significant. The recent forest fires in California have emitted more. Naturally emitted mercury levels from fire and volcanic activity have been much higher in the past with no effect from human activity.

EPD Response: Comment so noted.

Comment 21

Comments from Patricia Daniel – citizen

She owns 1400 acres and 4 homes, within 3 miles of the plant. She is concerned about the health of her children and grandchildren. The air and water pollution in the form of acid rain and mercury will affect her and her property directly. No one has mentioned the negative effects of the numerous coal cars coming through the area. If Washington County goes out of attainment, the county will not be able to attract businesses that could provide even more jobs.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 22

Comments from Lyle Lansdell – citizen

She is a retired medical researcher and farmer. She believes that a coal fired power plant is not compatible with agriculture in terms of emissions and water withdrawal. She asked several question and would like them answered in the record.

What is the expected life of the lining under the ash pile?
What will be the volume of the ash pile at the end of 30 years?
Will it fit within the allotted 100 acres on the site?
What will be the weight of the arsenic and mercury in the ash pile?
What is the destination of any water that washes through the ash pile? She heard that landfill linings leak.
What percentage of the construction jobs will go to county residents? i.e. the permanent jobs?
How far down the road are these jobs? Her organization did not send the angry letter to Mr. Walker.

He also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 23

Comments from Jessica Robinson – citizen

It is a tragedy that progress in alternative energy is being rejected in favor of obsolete power technology from coal.

EPD Response: Comment so noted.

Comment 24

Comments from Mark Woodall – Chairman of the Executive Committee of Georgia Sierra Club

He would like to be on record as being opposed to this dirty coal plant. EPD is not set up to protect the environment. They issue permits to pollute. Up until 1990, the city of Atlanta dumped raw sewage into the Chattahoochee River on a regular basis and EPD did not do anything. The Chattahoochee River Keepers filed a federal lawsuit that forced the city to fix the problem. Carol Couch, the director of EPD was fired after doing the right thing to try and prevent water rule changes that would adversely impact

water quality. The DNR board is full of big business executives that are not interested in protecting the environment.
EPD Response: Comment so noted. Please refer to Division's response to Citizen Comment 1.

Comment 25

Comments from Stephen Bowers – citizen

He is a local resident and retired corrections officer that lives on Lake Sinclair. The plant will adversely affect water quality in the area. He has a small pond on his property and he had planned to build a log cabin next to it. He probably will not want to build the cabin if the coal plant is built.

EPD Response: Comment so noted.

Comment 26

Comments from Andrew Bennell – citizen

The plant will not really destroy the environment. Of course, it will affect the environment. We need to trust the EPD to keep the pollution levels within the guidelines.

EPD Response: Comment so noted.

Comment 27

Comments from Randy Mayberry – citizen of Sandersville, Georgia

His primary concern is the emissions of greenhouse gases. He owns a farm adjacent to the proposed site of the plant. The US must first take responsibility for its disproportionate emissions of greenhouse gasses and do something to solve the problem. The EPA, DOT and the US House of Representatives have issued a joint proposal to establish greenhouse gas emission standards for vehicles. EPA proposed a greenhouse gas emissions regulatory program for stationary sources that emit more than 25,000 tons to obtain construction and operating permits to require best available control technology when the facilities are constructed or modified. He is concerned that EPD would issue a permit knowing that it would be invalid based on the proposed regulations and will subject the state to the cost of additional litigation and additional permit revisions. He wants no permits to be issued until plant Washington can comply with the soon to be effective regulations and control the greenhouse gases. He also submitted written comments to EPD.

EPD Response: Please refer to Division's response to GreenLaw Comment 1, Section L.

Comment 28

Comments from Jennette Gayer – citizen

The plant will be a major new source of pollution. There are gaps in the draft permit that do not address new regulations. EPA is working on new rules regulating water discharges from power plants as well as ash storage regulations that are not addressed in the permit at all. Power plant landfills and other disposal practices have polluted ground water in over a dozen states. EPA is also about to issue regulations for CO_2 that are not addressed in the permit. Conservation and weatherization projects could save up to 850 mega-watts of power and also provide many jobs.

EPD Response: Please refer to Division's response to GreenLaw Comment 1, Section L.

Comment 29

Comments from Elaine Weathers – citizen

She owns 300 acres within 3 miles of the proposed plant site. The particulate emissions including PM, and PM_{10} from the plant will cause respiratory problems. Proposed cap-and-trade regulations will make coal the most expensive type of power. Investment in coal power plants is a reckless financial gamble because of coming climate regulations. The plant will deplete the water supply and pollute rivers and streams. Renewable energy would generate more jobs.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 30

Comments from Seth Gunning – citizen

He is a student at Valdosta State. He submitted over a hundred postcards from students and other citizens opposed to the plant. EPD should have more hearings regarding this project across the state. Washington County should not have to choose between clean air and water and jobs. We could be spending the money we will be spending on coal on other renewable energy sources in Georgia like wind solar, and geothermal. Impending CO_2 regulations will make coal much more expensive, making the building of a coal power plant not a good idea. Investing the 2 billion dollars in energy efficiency and renewable energy efforts would save more power and provide four to six times as many jobs. A USGS mercury study found unhealthy levels of mercury in all the fish samples taken across the US. He also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 31

Comments from Rebecca Van Damm – member of Georgians for Smart Energy Coalition

Atlanta will get 98 percent of the power and Washington County will get 100 percent of the pollution along with all the others in a 1000 km radius. Why should we trust Power4Georgians when they have lost most of their investors due to the financial risks of coal? A power plant would be wonderful, but why coal? We already have 8 coal plants in the state. Coal pollutes the land and water and mercury has already caused brain damage in children. While we are being asked to conserve water at home, why allow the plant to consume up to 16 million gallons a day? Coal will be obsolete in 4 years because it is a fossil fuel and it will be gone and will not exist any more.

EPD Response: Comment so noted.

Comment 32

Comments from Michael Black – citizen

Green energy is the future and Coal is not.

EPD Response: Comment so noted.

Comment 33

Comments from Ree Garrett – member of Washington County Chamber of Commerce

The Chamber offered the resolution of unqualified support for the plant because it will provide jobs and economic benefit to the area, provide the local government much needed revenues, keep electric rates low, and meet power needs. The engineering design of the plant has proven to be safe and reliable.

EPD Response: Comment so noted.

Comment 34

Comments from Natasha Fast – citizen

She is a student at Valdosta State. She offered her support to the local residents in opposing the plant. As someone that wants to live, and raise a family in the state, she has concerns about a dirty power plant in the area.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 35

Comments from Lynn Schlup – citizen

She has property adjacent to the Oconee River. She speaks for the other living things in the area that do not have a voice. Taking more water out of the river does not make sense because of the last drought. The waterfowl and amphibians will be adversely affected. The coal plant will turn the river overflows and wetlands into big poisoned ponds. Frogs and toads will be the first to be effected and the chain of life will be no more.

EPD Response: Comment so noted.

Comment 36

Comments from Maura Friedman – member of Georgia Youth for Energy Solutions

Impacts from coal fired power plants are already here because of the existing plants. She opposes the plant because it is wrong to make a community choose between jobs and its health. She supports renewable energy sources like wind, solar, and responsible biomass.

EPD Response: Comment so noted.

Comment 37

Comments from Robert Strange – citizen

He lives down on the Oconee and likes to catch something to eat out of the river every once in a while. If they dump all that pollution into the river he would be scared to eat the fish. If they pump 16 million gallons a day out of the river we will be left with a dry riverbed. The ash pile will be there for 25 to 30

years, and be left for the next generations to deal with. The DNR is putting thousands of tons of river gravel into the Oconee for the Robust Red Horse (fish) to breed on. If the power plant pumps the river, it will cause river levels to fluctuate, harming the fish.

EPD Response: Comment so noted.

Comment 38

Comments from Chris French – citizen of Atlanta, Georgia

She comes face to face all the time with children gasping for air due to asthma and is seeing more and more asthma cases. She gasps at the thought of polluting air even further. She is opposed to construction of this plant.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 39

Comments from Albert Roselle Jr. – citizen

Burning coal is poisonous to our air, land, water, flora, and fauna. The business argument for construction of the plant does not hold up in the current political environment. Plants, animals, and people will suffer health effects from the plant. He is opposed to Plant Washington because of its impact on the global environment. The global climate is already undergoing a rapid rate of degradation and change due to heat trapping gasses cause by human activity. US citizens are generating 3 times the heat trapping gases as the Chinese that have 3 times the population.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 40

Comments from Patty Langford – citizen

She is concerned that people may think they are getting something that they really are not getting. Reconsider, make sure that what is being said about the plant is correct. She lives in Covington and is a member of the Snapping Shoals EMC. The EMC does a lot of good in the community, but something about their newsletters about the new plant seemed like propaganda. Is the plant really needed and is it the best way to generate power? Is it the most efficient? She is concerned about the water quality and quantity. Streams in the area have impaired fish communities and these problems have not been corrected. She is concerned about drawing water from one river basin and discharging it into another, and the water withdrawals from the wells upstream.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 41

Comments from Roger Buerki – citizen

Pursuit of self-interest may be endangering our children's future. He is dismayed at the EMCs that have not withdrawn from the project. He does not trust EPD. We would need reductions in mercury emission

to meet the TMDL, so why are we talking about adding more emissions? He would rather keep our energy dollars here in Georgia.
EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 42

Comments from Mary Carr – member of Southern Alliance for Clean Energy

The plant will emit toxics that will affect air quality. SO_2 and NOx emitted play a lead role in causing respiratory diseases like asthma. NOx emitted is also a key player in the formation of ground level ozone. Georgia had 52 exceedances for ozone last year. The plant will add to this problem. PM_{10} and $PM_{2.5}$ emissions cut short the lives of up to 10,000 Georgians each year. Mercury emission will further pollute the waterways and streams and continue to contaminate the fish populations. CO_2 is about to be classified as a criteria pollutant. It would be irresponsible to issue the permits without consideration to the upcoming regulations of CO_2. Recharge rates of the aquifer will not be able to keep up with the withdrawals for the plant and will compete with the water needs of citizens and businesses. Her alliance would like to express disappointment with EPD's refusal to hold additional statewide hearings. She also submitted written comments to EPD.

EPD Response: Please refer to Division's responses to Citizen Comment 1 and GreenLaw Comment 1, Section L.

Comment 43

Comments from Emily Thomas – citizen

If projects like Washington County go through, she will have to deal with global warming in my lifetime, which makes it an issue for my generation, and generations to come. We can not move to clean renewable energy if we stay rooted in old technology like coal plants for decades to come. She requests EPD to not approve the permit.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 44

Comments from Molly McLaughlin – citizen

Others have done a good job talking about the immediate local effect in Washington County, but it should be an EPA and regional issue. The coal burned here comes from the rest of Appalachia via mountain top removal where the water and air is polluted and people cannot take baths. We should take into account that the plant not only affects the local area but all of the Appalachia. We have only 5 percent of the population, but we use 25 percent of the world's energy resources. So we should ask, like any other country, how they deal with it?

EPD Response: Comment so noted.

Comment 45

Comments from Karen Bunnell – citizen

She is a local resident that owns a 100 acres farm within 5 miles of the proposed plant site. She plans to demonstrate sustainable farming and energy production on her farm. State and federal incentives would allow her to pay back the initial investment in solar hot water equipment in 3 to 5 years after which she would get free hot water for the next 30 years. Mercury emissions from the plant amount to 1 teaspoon a day and will be spread over a huge area, but only 1/70 of a teaspoon of mercury is enough to contaminate a 20 acres lake. People living near a coal ash site have a one in 50 chance of developing cancer. Jobs are important, but clean energy technology creates jobs as well. The government should support solar energy. We should make other choices for clean renewable energy rather than using coal. She also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 46

Comments from Rob Mathis – citizen

He owns property adjacent to the proposed plant site. The advantages of building the plant far outweigh the disadvantages. The plant will provide much needed jobs, increase the tax base in Washington County, and help the local government improve the quality of life for the local citizens. The plant will be state-of-the-art and he has full confidence in the EPD to make sure the emission levels are safe, enforced, and that the water withdrawals do not adversely affect the wells and streams in the county. The US has one quarter of the world's coal reserves and the technology exists to burn it cleanly and safely to provide affordable base power, which is essential for any mining or manufacturing company to be successful. Wind and solar can not meet base power load type energy demands and are only viable with subsidies from the government, and power companies. The economic benefits and jobs for local pipe fitters, welders, and millwrights will have a much greater impact that just the 130 direct jobs at the plant.

EPD Response: Comment so noted.

Comment 47

Comments from Sonny Barksdale – member of Washington County Board of Education

He would like to make a statement in favor of the construction of Plant Washington.

EPD Response: Comment so noted.

Comment 48

Comments from Ron May – citizen

He applauds the young students here for their concern about the environment. When he grew up here 62 years ago, they had white trees, white cars, white grass, all from the kaolin Industry. Because of environmental groups and EPD working with the industry, we do not have these problems any more. EPD conducted one of the most extensive water studies in the history of the state and he is convinced that water resources will not be an issue due to the plant. He is concerned about the threatening letter that the local commissioner received, but is glad that one of the opposition groups did not send it, and that we can have a civil discussion on both sides of the issue. People that are opposed to the plant are mostly upset because it is in their neighborhood.

EPD Response: Comment so noted.

Comment 49

Comments from Keaton Belli – citizen

You do not have to be a scientist to know what is in your water and in your air, and it is your responsibility to know. Renewable energy equals renewable jobs. Renewable energy will sustain time and provide jobs.

EPD Response: Comment so noted.

Comment 50

Comments from Tony Veal – citizen

Thanks to EPD. He would like to make a statement in favor of the plant.

EPD Response: Comment so noted.

Comment 51

Comments from Zachary Feldberg – citizen

There are not many jobs out there. The dollar has been devalued significantly. Iran is going to have nuclear weapons, and China is going to take over the world. What opportunities do I have? Desperate times do not mean we have to take desperate measures. Coal is desperate, dirty, and not good for my future or my future family's future.

EPD Response: Comment so noted.

Comment 52

Comments from Stephen Feinberg – member of Georgia Youth for Energy Solutions

A comment was made that non-local people should not interfere, but the environmental impacts are far reaching. Jobs are important, but clean energy can provide them as well. This is an opportunity for Georgia to be a leader in energy and we should not build this coal plant.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 53

Comments from Tom Barksdale – Chairman of Cobb Alliance for Smart Energy

His organization opposes the building of the plant. Arguments in favor of the plant saying that it incorporates the latest technology are phony. The plant will add to the pollution in the air and water, and cause global warming. EPD should deny the permit. The plant is not needed. Georgia Tech conducted a study and found that Georgia's future energy needs through 2020 could be met with greater efficiency alone.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 54

Comments from Patty Long – citizen

She is very concerned about Plant Washington coming in and wanted to be on record saying that it is a danger to the environment and that she is so afraid that it is going to cause irreparable damage to the community. As a farmer we must be good stewards of our environment, God expects nothing less.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 55

Comments from Jamie McKenzie - citizen

Thanks EPD. Man is having an irrefutable impact on the environment. He was previously a resident of Bartow County near Plant Bowen. He did a research project in 6th grade and surveyed the residents near the plant. They had to have their housed repainted often and experienced high rates of asthma. The health of the next generation is not for sale. We should not sacrifice our health when there are viable alternatives.

EPD Response: Please refer to Division's response to Citizen Comment 1.

Comment 56

Comments from Jason White – member of Collegians for a Constructive Tomorrow

Georgia is one of the fastest growing states in the country. Newer high efficiency clean coal plants will bring cleaner more efficient energy production. Greater energy efficiency and renewables should be part of the equation, but are not enough to meet the needs. Base load electricity requirements are expected to grow 1000 mega-watts over the next 5 years. The new Plant Washington will help Georgians meet the energy needs of the future. Less than 1 percent of the Oconee River flow will be used, and the wells are only expected to need to draw water 4 months out of every 5 years. Well placement will ensure that nearby areas will not be adversely affected. His organization conducted a survey of over 1000 university students and over 73 percent supported building a new clean coal plant in Georgia.

EPD Response: Comment so noted.

Comment 57

Comments from Danny Hammock – citizen

He lives about 6 miles from the proposed power plant. One of the wells is ¼ of a mile from his house. The county has been losing jobs and is in a serious recession. We need this plant. Plant Branch across Lake Sinclair has been there about 40 years with essentially no controls, and one do not have hardly any effects that one can see. With the additional controls on Plant Washington, it will be a benefit and provide good jobs.

EPD Response: Comment so noted.

Comment 58

Comments from Neill Herring – Secretary of Board of Director of Altamaha River Keepers

His group opposes the permitting of the plant. There are 3 major power plants on the Altamaha System, which are Scherer, Branch and Hatch. The fish in the nearby rivers are doing their part for energy production in Georgia, and are full of mercury. We don't need the plant. Power for Georgians says that rates are going to go up it is just a matter of by how much. It is prudent to be concerned when Dwight Brown, one of the major financial backers of the plant, is having legal troubles. *Wall Street Journal* articles indicate weakening demand for electricity in the country; therefore, one do not need this plant. Another *Wall Street Journal* article stated that EMCs all over the country were switching to better energy efficiency. The south invests one fifth of what the rest of the country spends on energy efficiency programs.

EPD Response: Comment so noted.

Comment 59

Comments from Gordon Rogers – member of Satilla River Keepers

Brantly County is getting its second pellet plant. That is the wave of the future, and will bring many jobs to the county. The plant is not just a Washington County issue, but also a Georgia issue and affects the Satilla River whose headwaters are in the plume from the proposed plant. It only takes about 10 lbs/year of mercury emissions to keep us where our large mouth Bass and our Red Breast and our catfish in the lower river are on one meal a month. Mercury comes from several nearby power plants. A wood fired power plant will not solve all the pollution problems, but could reduce mercury emissions and revive our local forestry industry. A wood fired power plant would not line the pockets of coal train owners, and it would not destroy mountaintops in West Virginia. He requests EPD to not issue the construction permit for Plant Washington.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 60

Comments from Grant Cooper – citizen

His concern is the pollution from the plant. The country is in bad shape because of pollution. Clean coal is like being half pregnant and there is no such animal. His friends say we need jobs, jobs, and jobs. He says that slavery was a job, but you never got paid. What we have here is a situation where the money needs to spread around?

EPD Response: Comment so noted.

Comment 61

Comments from Dianna Wedincamp – citizen of Sandersville, Georgia

Everyone within a 100 km radius and everyone downstream will be affected by this plant. She is against coal. During the relay for life event recently held in Sandersville, a group did a mercury air test to let residents know their mercury levels. Her results were 3 times the recommended levels. Current and future mothers should be concerned because mercury effects the neurological development of children.

Her son is a bass fisherman and to tell him that he cannot eat more than 5 oz of fish a month that he catches is unacceptable. She is highly disappointed in the school board member who spoke in favor of the plant.

EPD Response: Please refer to Division's response to Citizen Comment 5.

Comment 62

Comments from Lee Martin – citizen of Macon, Georgia

When you hear the words state-of-the-art as it relates to clean coal, you had better hold onto your wallets and hold your breath. He is opposed to the plant. He lives in Macon in the shadow of Plant Scherer. Five trains a day of 124 cars filled with coal go to the plant each day. Georgia Power pays Norfolk Southern, which has a monopoly on train service to Plant Scherer, twice as much as a comparable plant in Alabama with competing trains and barges bringing them coal. Florida passed a law that does not allow any more coal plants to be built there. Half of the power from Plant Scherer goes to Florida. Macon's non-attainment status prevents more industrial development in the area. Since Plant Scherer was built in 1982 to 1987, Macon now has 15 more allergists and a Class III trauma center in a county that has not increased in population. One should read the book "Dumping in Dixie".

EPD Response: Comment so noted.

Comment 63

Comments from Shannel Davis – citizen

EPD needs to be proactive in setting environmental standards that effect our health, rather than reactive. Plant Washington will bring jobs, but what kinds of jobs? We need jobs that will bring Georgia to the forefront of clean energy and clean jobs. We need jobs in industries that are growing, not depressing. We should not have to choose between a paycheck and our health. Thanks EPD. She also submitted written comments to EPD.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 64

Comments from Tony Morris – citizen

They support renewable energy and promote recycling on campus. Young Harris is the only college in Georgia that has a "Green" fee that goes toward sustainability and renewable energy and good things on campus. 750 students signed a petition that they would be willing to pay a little bit more if their campus could be a little bit greener. We do not need another power plant.

EPD Response: Please refer to Division's response to Citizen Comment 4.

Comment 65

Comments from Andrew Doak – citizen

He is a human being who cares for other human beings. People need air, water, and food to live, and this plant threatens all three. How can we justify this? This is nothing short of manslaughter. If the plant

kills a single human being, it will be blood on the hands of the people promoting it. If the plant would propose to be built in Cobb County, it would be shot down in a second.

EPD Response: Please refer to Division's response to Citizen Comment 1.

EPD CHANGES

Change # 1

40 CFR 60 Subpart Y - Standards of Performance for Coal Preparation Plants has been revised since the issuance of the draft permit and associated preliminary determination. The final rule became effective on October 8, 2009. As a result of this change, EPD will modify preliminary determination and permit conditions as follows.

40 CFR 60 Subpart Y applicability on Page 12 of preliminary determination will be modified as follows:

40 CFR 60 Subpart Y - *Standards of Performance for Coal Preparation Plants*

This regulation is applicable to affected facilities in coal preparation and processing plants that process more than 181 Mg (200 tons) per day [40 CFR 60.250(a)].

The provisions in §60.251, §60.252(b)(1) through (3), and (c), §60.253(b), §60.254(b) and (c), §60.255(b) through (h), §60.256(b) and (c), §60.257, and §60.258 of this subpart are applicable to any of the following affected facilities that commenced construction, reconstruction or modification after May 27, 2009: Thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, transfer and loading systems, and open storage piles [40 CFR 60.250(d)].

Plant Washington will not have a thermal dryer or pneumatic coal-cleaning equipment (air tables), but will have coal processing and conveying equipment (crusher and conveyors), coal storage systems and open storage piles (Emission Units A4, S40, S41, S46 and S47, A6-A9) which are subject to this regulation.

Coal Rail Unloading (Emission Unit A4) will be subject to the opacity limit of 10 percent [40 CFR 60.254(b)(1)]. Coal processing and conveying equipment (crusher and conveyors) and coal storage systems (Emission Units S40, S41, S46 and S47) will be subject to the opacity limit of 10 percent [40 CFR 60.254(b)(1)] and PM emissions limit of 0.023 g/dscm (0.010 gr/dscf) [40 CFR 60.254(b)(2)].

Open storage piles (Emission Units A6-A9) which includes the equipment used in the loading, unloading, and conveying operations of the affected facility must prepare and operate in accordance with a submitted fugitive coal dust emissions control plan that is appropriate for the site condition as specified in paragraph (c)(1) through (6) of 40 CFR 60.254.

EPD will modify Permit Conditions 1.10, 2.23 and 2.28 as follows:

1.10 The Permittee shall comply with the New Source Performance Standards (NSPS) as found in 40 CFR 60 Subpart A - "General Provisions" and 40 CFR 60 Subpart Y – "Standards of Performance for Coal Preparation Plants" for the coal processing and conveying equipment, coal storage systems, coal transfer and loading systems and open storage piles which includes Emission Units A4, S40, S41, S46, S47 and A6 to A9.
[40 CFR 60 Subparts A and Y]

2.23 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from the Coal Handling Particulate Sources (Emission Units A4, A6 to A9, S40, S41, S46 and S47) and Coal

Conveying Systems any visible emissions of which the percent opacity is equal to or greater than 10 percent.
[40 CFR 52.21(j); 40 CFR 60.254(b)(1) and 391-2-1-.02(2)(n)(2) (subsumed)]

2.28 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from PRB Conveyor Stackout S46, Illinois # 6 Conveyor Stackout S47, Coal Crusher House S40, Tripper Decker S41, Fly Ash Mechanical Exhausters S43, Fly Ash Silo S37, SO_3 Sorbent Silo S36, Mercury Sorbent Silo S38, Pretreatment Soda Ash Silo S44 and Pretreatment Hydrated Lime Silo S39, any stack emissions, which contain PM/PM_{10} in excess of 0.005 gr/dscf.
[40 CFR 52.21(j) and 40 CFR 60.254(b)(2) (subsumed)]

EPD will add Permit Condition 2.38 as follows:

2.38 The Permittee shall prepare and operate a fugitive coal dust emissions control plan for Open Storage Piles (Emission Units A6 to A9), which includes the equipment used in the loading, unloading, and conveying operations at the Coal Preparation Plant.
[40 CFR 60.254(c)(2)]

Change # 2

The model year for Fire Water Pump, EP1 will be 2011 and later. The Permittee shall demonstrate compliance with the NSPS Subpart IIII emission limits for the Fire Water Pump, EP1 similar to Emergency Diesel Generator EG1. Permit Condition 7.19 will be modified to add Fire Water Pump, EP1 and Permit Condition 7.20 will be deleted.

7.19 The Permittee shall demonstrate compliance with the NSPS Subpart IIII emission limits for the Emergency Diesel Generator EG1 and for the Emergency Fire Water Pump EP1, by purchasing certified engines. The engines shall be installed and configured according to the manufacturer's specifications. These records shall be maintained in a format suitable for inspection or submittal.
[40 CFR 60.4211(c)]

7.20 {Reserved]

APPENDIX A

AIR QUALITY PERMIT

4911-303-0051-P-01-0

APPENDIX B

WRITTEN COMMENTS

RECEIVED DURING

COMMENT PERIOD

APPENDIX C

RECENT COAL FIRED POWER PLANTS
EPD COMPARISON SPREADSHEET

APPENDIX D

ADDITIONAL SUPPORTING DOCUMENTATION

1. Exhibit G – IGCC Analysis
2. Best Controlled Similar Source Analysis
3. Plant Washington's Response on BACT and MACT Comments
4. Figure showing PM_{10} Significance Model Receptors
5. Mercury Emissions