4APT-APB

Mr. James P. Johnston
Program Manager, Planning and Support Program
Georgia Department of Natural Resources
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Dear Mr. Johnston:

Thank you for the opportunity to review the proposed Best Available Retrofit Technology (BART) technology evaluation for the Georgia Power Company (GPC) – Plant Bowen dated February 2007. Enclosed are our draft comments on the GPC document. Enclosure 1 describes our comments on the control and cost analyses. Enclosure 2 details our comments on the modeling analysis. Enclosure 3 provides clarification to certain statements made in the GPC document.

We appreciate your transmittal of this package for our consideration. If you have questions regarding this draft letter, please contact Stacy Harder of the Region 4 staff at (404) 562-9042.

Sincerely,

Kay T. Prince
Chief
Air Planning Branch

Enclosures

Enclosure 1: Control and Cost Analyses

1. Capital Recovery Factor (CRF) Calculations: For the capital recovery cost factor calculations, it appears that an equipment life of 15 years and a seven percent interest rate of return is assumed for all the control options evaluated (pp.4-20, 4-32). Where these assumptions differ from those in the *EPA Air Pollution Control Cost Manual* (Cost Manual) for the particular control technology, the document should provide justification. The Cost Manual notes on page 3-50 in Section 3.4.2 of Chapter 3, "Electrostatic Precipitators," (September 1999) of Section 6, "Particulate Matter Controls," that, "For ESPs, the system lifetime varies from 5 to 40 years, with 20 years being typical," and much of the equipment at power plants is designed to last 40 years. The document should include further explanation for the assumed equipment life of 15 years. (To access the most current version of the Cost Manual, go to: http://www.epa.gov/ttncatc1/products.html#cccinfo.)

2. Particulate matter emission limits associated with each control technology option considered are not included in the report. SCS should clarify the WESP capital and O&M costs of $115/kW and $0.47/MWh, respectively. The EPA WESP Air Pollution Control Technology Fact Sheet EPA-452/F-03-029 referenced in footnotes 38 and 43, indicates capital and O&M cost ranges of $40 to $200, and $6 to $10 per scfm, respectively (EPA-452/F-03-029, 08/07/03, www.epa.gov/ttn/catc/dir1/fwespwpi.pdf). It may be useful to indicate any unit conversion calculations.

3. Provide documentation for the additional energy charges. There are assumptions presented involving both purchasing power and constructing additional capacity without clearly documenting the basis for the assumptions and why both charges apply. If the control equipment requires power to operate and reduces the ability of the power plant to generate power, costs associated with the power losses are appropriate. However, given their magnitude, EPA would expect greater documentation of the assumptions and why a combination of capacity increases and purchased power are the lowest cost solution.

4. The EPA Air Pollution Control Cost Manual suggests that an ESP system lifetime varies from 5 to 40 years, with 20 years being typical for capital recovery cost calculation purposes (Section 6 - Particulate Matter Controls, 3.4.2 Indirect Annual Costs, pg. 3-50). It is unclear from the BART Report whether or not the "juice can" cost effectiveness calculations are based on upgrading all or a few ESP transformer-rectifier sets. Footnote 32 mentions that "some" of the existing transformer-rectifier sets are already equipped with "juice can" technology. The technical and economic feasibility of the "juice can" ESP control technology option is well established since it is already utilized successfully at Plant Bowen. Visibility impacts do not override all other considerations in a BART analysis.

Based on a review of the BART determination analysis for PM included in the attachment, additional consideration should be given to the "juice can" upgrade option for Plant Bowen ESP electrode systems. Cost effectiveness values for the Bowen ESP electrode system upgrade are consistent with those determined to be reasonable for TECO Big Bend Station PM control device upgrades. Modeling results indicate a six to nine percent reduction in both filterable PM_{10} and $PM_{2.5}$ emissions (e.g., 72.0 TPY PM_{10} emissions total on pg. 4-16). It would also appear that some additional gas flow optimization may be feasible based on previous studies, operational data, and information from other similar units.

5. When identifying all available retrofit control technologies, the "Guidelines for BART Determinations Under the Regional Haze Rule" (BART Guidelines) clarify that consideration should be given not only to add-on controls but also improvement in the performance of existing controls and P2. The analysis does not discuss the facility's evaluation of any P2 options for the four BART-eligible units.

6. On page 1-2 and at several other points, the report compares potential BART cost per ton controlled values for Plant Bowen to threshold values used in previous BACT determinations. The report indicates that costs above $10,000 per ton controlled are considered to be prohibitive. However, most past BACT determinations are conducted for new units and establish a cost/ton value for each control option that assumes an uncontrolled baseline. This is clearly not the case in this BART analysis since controls currently exist. It would be more appropriate to compare the cost per ton values to incremental costs in past BACT determinations. Incremental costs are quantified as a tool to evaluate the point where diminishing returns might be expected as several increasingly expensive options are compared. This point of diminishing returns is case-specific and can be significantly higher than $10,000/ton.

7. On page 4-22 it is indicated that biannual PM stack tests from 2003-2005 were used to establish baseline emission rates. The data was then used to estimate tons reduced for each technology being evaluated. Since very limited data was available (two tests for three years), EPA recommends that an analysis be conducted to evaluate whether the stack test-measured emissions are likely to be representative of emissions during the rest of the period. Examples of possible information that should be evaluated are the electrical parameters of the ESP during the stack tests as compared to the rest of the operating year. This data should be readily available at the plant. If, for example, the overall secondary current to a particular ESP was significantly greater during the stack test than the rest of the year, it would be appropriate to adjust baseline emissions higher as well as the tonnages expected to be controlled by each technology option.

Enclosure 2: Modeling Analysis

1. Overall, the modeling procedures followed the VISTAS BART Modeling Protocol and are acceptable.

2. Estimated PM emission reductions were modeled for two emission control scenarios. The results of the modeling indicate that the estimated visibility improvement at the Cohutta Class I area was low. On page 5-2 of Section 5.0, the GPC document states several reasons why a 0.2 deciview (dv) improvement in visibility at Cohutta is considered by the facility to be too small to merit the additional costs of using a wet ESP. References are made to "…the level that EPA considers to be detectable (approximately one deciview), and is also below the level (0.5 deciview) that EPA has recommended be used for visibility contribution analyses…" This statement appears to imply the controls are not considered to make enough of an improvement in visibility at the Cohutta Wilderness Area. We note; however, that there is no bright line for evaluating in the BART determination analysis the degree of visibility improvement that is considered significant enough to warrant BART controls. Rather, a State has flexibility in setting absolute thresholds and determining the weight and significance to be assigned to each BART factor. (See 70 FR 39170, 1st col., July 6, 2005.) In addition, EPA suggests that GA EPD carefully evaluate the other four BART statutory factors in assessing the Wet ESP control option. Visibility improvement based on modeling results is only one of the factors that should be assessed in this decision.

3. The modeling results presented in Appendix E of the report indicate that the primary contributor to the visibility impairment at the Cohutta Class I area is sulfate concentrations, which are the result of sulfuric acid emissions. Since SO_2 emissions are not being modeled (because they will be addressed under the Clean Air Interstate Rule rule), potential controls for sulfuric acid emissions should be examined closely. Section 4.2 of the report (Pages 4-9 & 4-10) discusses the potential sulfuric acid controls. One control option that is considered feasible is sorbent (lime) injection. Section 4.4 indicates that lime injection has been shown to be an effective method for reducing flue gas SO_3 and thus controlling sulfuric acid emissions. However, the report indicates that the addition of the lime adds to total PM_{10} emissions and therefore the total PM_{10} emissions reductions are low with this control option. Since the total PM_{10} emission reductions are low, the cost effectiveness for lime injection in $/ton is shown to be very expensive (Tables 4-15 thru 4-18). If this analysis considered the cost effectiveness of reducing sulfuric acid emissions (since sulfuric acid is the primary contributor to the visibility impairment), the conclusions may be different. EPA suggests that this option be reconsidered and that modeling of the lime injection control scenario be conducted to evaluate the visibility impacts.

4. Page 2-5 of the Modeling Protocol contained in Appendix D of the report describes how the PM emissions were speciated into the coarse and fine fractions.

The discussion references AP-42 Table 1-1.6. It is unclear how the values of 55.6% coarse and 44.4% fine were calculated from the information in AP-42 Table 1.1-6. It would be helpful if additional information describing the PM speciation procedures was provided.

5. Section 4.4 of the Modeling Protocol contained in Appendix D of the report indicates that visibility impacts presented in the report were developed using the New IMPROVE equation as implemented in an external spreadsheet created by Dr. Ivar Tombach. The report provides very limited discussion of the rationale for using the New IMPROVE algorithm instead of the default IMPROVE algorithm that is contained in CALPOST. The report should provide additional justification for using the new algorithm. Sea salt is not an issue for the Cohutta Class I Area. The additional justification should focus on the why the new IMPROVE algorithm is preferred for this specific application.

6. Page 3-3 of the report indicates that an external hard drive containing all the modeling files and data was provided with the report. EPA did not have access to this information and thus was unable to do a complete review. EPA suggests that GA EPD carefully evaluates the modeling files and data contained on this hard drive to ensure that the modeling was conducted as it was described in the report.

7. The State has flexibility in determining how the five statutory BART factors should be addressed. EPA recommends that the modeling should be discussed for each control used in the determination.

Enclosure 3: Text Clarifications

Below is clarification to certain statements in the text.

1. Factors Identified in Section IV.E. of the BART Guidelines: The first paragraph on page 5-1 of Section 5.0 states that the BART Guidelines "…indicate that, for each option, the emissions reduction, costs, energy and non-air quality environmental impacts, and modeled visibility improvement must be considered." A footnote is provided to Section IV.E. of the BART Guidelines. EPA notes that the remaining useful life of the source is missing from the list of factors referenced on page 5-1. This factor is listed in the referenced Section IV.E. of the Guidelines (see page 70 FR 39170, 3rd column).