PRELIMINARY DETERMINATION

Alabama Power Company
Gaston Steam Electric Generating Plant
Air Facility ID 411-0005

Unit 5 Natural Gas Burner Project

On August 15, 2014, the Department received an Air Permit application from Alabama Power Company (APC) for the Gaston Steam Electric Generating Plant, located in Wilsonville, Shelby County, Alabama. In this application, APC proposed to retrofit Unit 5 by adding natural gas-fired burners to allow operation through natural gas combustion. As shown in the application as well as this analysis, the project qualifies for a Prevention of Significant Deterioration (PSD) review; however, per ADEM Admin. Code r. 335-3-14-.04(8)(m), the project also satisfies the definition of Environmentally Beneficial Activity. As such, the project is exempt from certain requirements of ADEM's PSD regulations, primarily the requirements of a BACT analysis. This is further explained in the PSD section of this document.

Project Description

Unit 5 is currently equipped to burn coal and fuel oil. The unit would continue to operate with coal as its primary fuel. Natural gas would be utilized as the primary ignitor fuel, but would also be co-fired with coal at times. Fuel oil would be maintained as a backup ignitor fuel. APC stated that this project would also include associated gas lateral, unit piping, valving, and appropriate monitoring equipment to ensure safe natural gas combustion and operation. After retrofitting Unit 5, the nominal heat input would be 8688 MMBtu/hr, while the full load gross generating capacity would remain at 895 MW. Unit 5 would continue to use its existing stack configuration.

Emissions

Baseline actual emissions (BAE) for electric utility steam generating units are defined as the average rate (TPY) at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding commencement of actual construction. For units other than electric utility steam generating units, BAE are the average rate (TPY) at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding either the date the owner or operator begins actual construction of the project, or the date a complete permit application is received by the Department for a permit required under this rule, whichever is earlier, except that the 10-year period shall not include any period earlier than November 15, 1990.

Regardless of the types of units, if the project involves multiple emissions units, the same consecutive 24-month period must be chosen to determine the BAE for all the emissions units being changed. However, a different consecutive 24-month period may be used for each regulated NSR pollutant. For a new emissions unit, the BAE shall equal zero.

Projected actual emissions are defined as the maximum annual rate (TPY) at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (consecutive 12-month period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source.

Potential emissions are emissions calculated at the source's maximum capacity under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is enforceable.

Major modification is defined as any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any regulated NSR pollutant. The Gaston Plant is classified as a major stationary source with regard to ADEM's PSD regulations.

Pursuant to ADEM Admin. Code r. 335-3-14-.04(1)(f), APC compared the BAE of Unit 5 to the unit's projected actual emissions in order to determine if any significant emissions increases resulted, thus triggering a major modification. The table listed below details this comparison of the regulated NSR pollutants associated with this project as asserted by APC.

Regulated NSR Pollutant	BAE* (TPY)	Future Projected Emissions (TPY)	Change in Emissions (TPY)	Significance Threshold (TPY)	Significant Net Emissions Increase?
SO_2	6117.6	4178.1	-1939.5	40	No
NO_x	4379.5	3995.4	-384.1	40	No
CO	587.2	799.0	211.8	100	Yes
VOC	70.5	95.5	25.0	40	No
PM	696.1	188.8	-507.3	25	No
PM_{10}	630.7	336.8	-293.9	15	No
$PM_{2.5}$	366.1	336.8	-29.3	10	No
Pb	0.100	0.075	-0.025	0.6	No
F	13.7	9.2	-4.5	3	No
H_2SO_4	169.6	28.5	-141.1	7	No
GHG (CO_2e)	5,781,579	6,175,901	394,322	75000	Yes

*APC utilized the timeframe of March 2011 – February 2013 as the 24-month baseline period for each pollutant except PM/PM_{10}/$PM_{2.5}$ and NO_X. For those pollutants, APC utilized the timeframe of January 2012 – December 2013, and February 2011 – January 2013, respectively.

PSD/Environmentally Beneficial Activity (EBA)

ADEM Admin. Code r. 335-3-14-.04(2)(ff) defines an EBA as any activity or project undertaken at an existing emissions unit, which as its primary purpose, reduces emissions of air pollutants from such unit. ADEM's regulations further limit the types of projects that may qualify as EBAs,

including ADEM Admin. Code r. 335-3-14-.04(2)(ff)(v), which allows activities or projects undertaken to accommodate switching to an inherently less polluting fuel, including but not limited to natural gas or coal reburning, or the cofiring of natural gas and other inherently less polluting fuels, for the purpose of controlling emissions, and including any activity that is necessary to accommodate switching to an inherently less polluting fuel.

APC's proposed project meets the above definitions as natural gas is an inherently less polluting fuel than coal, and all the activities included in the project are directly related to the fuel switch.

According to ADEM Admin. Code r. 335-3-14-.04(8)(m), any project that is an EBA should not be considered a major modification, as defined above, and would be exempt from all provisions of PSD permitting except:

1. Source Impact Analysis (ADEM Admin. Code r. 335-3-14-.04(10))
2. Air Quality Models (ADEM Admin. Code r. 335-3-14-.04(11))
3. Source Information (ADEM Admin. Code r. 335-3-14-.04(13))
4. Sources Impacting Federal Class I Areas (ADEM Admin. Code r. 335-3-14-.04(15))
5. Public Participation (ADEM Admin. Code r. 335-3-14-.04(16))

Source Impacts Analysis

The Department determined that a Source Impacts Analysis was not required for CO since there is no projected short-term increase in the CO emission rate. While the proposed project is also subject to a permitting review for GHGs, dispersion modeling is not required as there is no established NAAQS for this pollutant.

A Class I Area analysis was not required because there are no established maximum allowable increases for CO and GHGs.

Federal Regulation Applicability
National Emission Standards for Hazardous Air Pollutants (NESHAPS) and New Source Performance Standards (NSPS)

Unit 5 is an electric utility steam generating unit. It is not currently subject to an NSPS, including 40 CFR 60 Subpart Da, which is not applicable to EUSGUs constructed prior to September 18, 1978. The unit could become subject to Subpart Da if the proposed work met the definition of reconstruction in Part 60 or if the project resulted in an increase of the maximum hourly emission rates of PM, NO_X or SO_2 above the unit's historic maximum achievable hourly emission rates.

APC has asserted that the cost of the proposed project would not constitute reconstruction as defined by Part 60. Additionally, the emission rates of PM, NO_X, and SO_2 are expected to decrease. Therefore, applicability to Subpart Da would not be triggered by the proposed project.

APC's Plant Gaston is an existing major source of hazardous air pollutants (HAPs). As such, Unit 5 is subject to 40 CFR 63 Subpart UUUUU, also known as the Mercury and Air Toxics Standards (MATS) Rule. APC has asserted that the proposed project would help to ensure Unit 5's compliance with the MATS Rule.

The compliance date for the MATS Rule is April 16, 2015. In order to complete the work necessary to achieve compliance with the new rule, APC requested an extension of compliance with the MATS Rule. The Department granted this request in a letter dated March 7, 2013.

Periodic Monitoring/Compliance Assurance Monitoring, Recordkeeping, and Reporting

The proposed project would trigger no new emissions standards. Therefore, no new periodic monitoring, recordkeeping or reporting was deemed necessary. Unit 5 is subject to Compliance Assurance Monitoring (CAM) under Part 64 for PM emissions, and it is currently meeting the applicable CAM requirements in the existing Major Source Operating Permit. No additional CAM requirements would be necessary as a result of this project.

As stated previously, Unit 5 is subject to the MATS Rule. The MATS Rule requires monitoring, recordkeeping and reporting; however, no specific requirements would be applicable as a result of this project.

Recommendation

Pending the required public and EPA comment periods, I recommend, based on the review of APC's application and the above analysis, that the following Air Permit be issued for the proposed project as outlined below and with the attached draft permit provisos.

Air Permit Number	**Description**
411-0005-X005	Unit 5 Power Boiler with Supplemental Natural Gas

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Amy E. Graham
Industrial Minerals Section
Energy Branch
Air Division

DRAFT
Date

Alabama Department of Environmental Management

AIR PERMIT

PERMITTEE: ALABAMA POWER COMPANY

FACILITY NAME: GASTON STEAM ELECTRIC GENERATING PLANT

LOCATION: WILSONVILLE, SHELBY COUNTY, ALABAMA

PERMIT NUMBER	DESCRIPTION OF EQUIPMENT, ARTICLE, OR DEVICE
411-0005-X005	Unit 5 Power Boiler with Supplemental Natural Gas

In accordance with and subject to the provisions of the Alabama Air Pollution Control Act of 1971, as amended, Ala. Code §§22-28-1 to 22-28-23 (2006 Rplc. Vol and 2007 Cum. Supp.) (the "AAPCA") and the Alabama Environmental Management Act, as amended, Ala. Code §§22-22A-1 to 22-22A-15 (2006 Rplc. Vol and 2007 Cum. Supp.), and rules and regulations adopted there under, and subject further to the conditions set forth in this permit, the Permittee is hereby authorized to construct, install and use the equipment, device or other article described above.

ISSUANCE DATE: Draft

Alabama Department of Environmental Management

APC – GASTON
WILSONVILLE, ALABAMA
(PERMIT NO. 411-0005-X005)
PROVISOS

1. This permit is issued on the basis of Rules and Regulations existing on the date of issuance. In the event additional Rules and Regulations are adopted, it shall be the permit holder's responsibility to comply with such rules.

2. This permit is not transferable. Upon sale or legal transfer, the new owner or operator must apply for a permit within 30 days.

3. A new permit application must be made for new sources, replacements, alterations or design changes which may result in the issuance of, or an increase in the issuance of, air contaminants, or the use of which may eliminate or reduce or control the issuance of air contaminants.

4. The permittee shall keep this permit under file or on display at all times at the site where the facility for which the permit is issued is located and shall make the permit readily available for inspection by any or all persons who may request to see it.

5. Each point of emission, which requires testing, will be provided with sampling ports, ladders, platforms, and other safety equipment to facilitate testing performed in accordance with procedures established by Part 60 of Title 40 of the Code of Federal Regulations, as the same may be amended or revised.

6. Unless otherwise specified, in the event there is a breakdown of equipment in such a manner as to cause increased emission of air contaminants which are above an applicable standard, the person responsible for such equipment shall notify the Air Division within 24 hours or the next working day and provide a statement giving all pertinent facts, including the estimated duration of the breakdown. The Air Division shall be notified when the breakdown has been corrected.

7. Unless otherwise specified, this process, including all air pollution control devices and capture systems for which this permit is issued, shall be maintained and operated at all times in a manner so as to minimize the emissions of air contaminants. Procedures for ensuring that the above equipment is properly operated and maintained so as to minimize the emission of air contaminants shall be established.

8. This permit expires and the application is cancelled if construction has not begun within 24 months of the date of issuance of the permit.

9. On completion of construction of the device(s) for which this permit is issued, written notification of the fact is to be submitted to the Chief of the Air Division. The notification shall indicate whether the device(s) was constructed as proposed in the application. The device(s) shall not be operated until authorization to operate is granted by the Chief of the Air Division. Failure to notify the Chief of the Air Division of completion of construction and/or operation without authorization could result in revocation of this permit.

10. Submittal of other reports regarding monitoring records, fuel analyses, operating rates, and equipment malfunctions may be required as authorized in the Department's air pollution control rules and regulations. The Department may require stack emission testing at any time.

11. Additions and revisions to the conditions of this Permit will be made, if necessary, to ensure that the Department's air pollution control rules and regulations are not violated.

12. Nothing in this permit or conditions thereto shall negate any authority granted to the Air Division pursuant to the Alabama Environmental Management Act or regulations issued thereunder.

13. Any performance tests required shall be conducted and data reduced in accordance with the test methods and procedures contained in each specific permit condition unless the Director (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, or (3) approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific source is in compliance.

14. This permit is issued with the condition that, should obnoxious odors arising from the plant operations be verified by Air Division inspectors, measures to abate the odorous emissions shall be taken upon a determination by the Alabama Department of Environmental Management that these measures are technically and economically feasible.

15. Precautions shall be taken to prevent fugitive dust emanating from plant roads, grounds, stockpiles, screens, dryers, hoppers, ductwork, etc.

    Plant or haul roads and grounds will be maintained in the following manner so that dust will not become airborne. A minimum of one, or a combination, of the following methods shall be utilized to minimize airborne dust from plant or haul roads and grounds:

    (a) by the application of water any time the surface of the road is sufficiently dry to allow the creation of dust emissions by the act of wind or vehicular traffic;

    (b) by reducing the speed of vehicular traffic to a point below that at which dust emissions are created;

    (c) by paving;

    (d) by the application of binders to the road surface at any time the road surface is found to allow the creation of dust emissions;

    Should one, or a combination, of the above methods fail to adequately reduce airborne dust from plant or haul roads and grounds, alternative methods shall be employed, either exclusively or in combination with one or all of the above control techniques, so that dust will not become airborne. Alternative methods shall be approved by the Department prior to utilization.

16. Precautions shall be taken by the permittee and its personnel to ensure that no person shall ignite, cause to be ignited, permit to be ignited, or maintain any open fire in such a

manner as to cause the Department's rules and regulations applicable to open burning to be violated.

17. In accordance with ADEM Admin. Code. r. 335-3-4-.01(1), Unit 5 shall not discharge more than one 6-minute average opacity greater than 20% in any 60-minute period. At no time shall any source discharge a 6-minute average opacity of particulate emissions greater than 40%. Opacity shall be determined by 40 CFR Part 60, Appendix A, Method 9.

18. The permittee shall not use as a defense in an enforcement action that maintaining compliance with conditions of this permit would have required halting or reducing the permitted activity.

19. The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege.

20. On and after April 16, 2016, Unit 5 shall meet the applicable requirements of 40 CFR Part 63, Subpart UUUUU (aka the MATS Rule).

21. Following issuance of the Authorization to Operate under Proviso 9, a compliance certification shall be submitted yearly by November 30 covering the period from October 1 through September 30 unless more frequent periods are specified according to the specific rule governing the source or required by the Department. The compliance certification shall include the following:

    a. The identification of each term or condition of this permit that is the basis of the certification.
    b. The compliance status, whether continuous or intermittent.
    c. The method(s) used for determining the compliance status of the source, currently and over the reporting period.
    d. Other facts the Department may require to determine the compliance status of the source.
    e. The compliance certification shall contain certification by a responsible official of truth, accuracy and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

22. Nothing in this permit relieves the permittee's responsibility to comply with the facility's current Major Source Operating Permit.

23. The electrostatic precipitator (ESP) shall be operated, as necessary, in order to comply with the applicable regulatory requirements. During the combustion of only natural gas, the operation of the ESP is not required.

24. Compliance Assurance Monitoring, as required by the facility's current Major Source Operating Permit, is not an applicable requirement while Unit 5 is firing only natural gas.

Draft

Date