PERMITTEE

Tampa Electric Company (TEC)
13031 Wyandotte Road
Gibsonton, Florida 33534-5833

PERMITTING AUTHORITY

Florida Department of Environmental Protection (Department)
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS #5505
Tallahassee, Florida 32399-2400

PROJECT

Air Permit No. 0570039-120-AC
Minor Air Construction Permit
Big Bend Station

This project removes all coal and solid fuels from the list of permitted fuels in Big Bend Units 1 and 2 so that the units are no longer subject to the National Emission Standards for Hazardous Air Pollutants for Coal- and Oil-Fired Electric Utility Steam Generating Units in Subpart UUUUU in Title 40, Part 63 of the Code of Federal Regulations (40 CFR 63), also called the Mercury and Air Toxic Standards (MATS) or MATS rule. Emissions Units 008, 015, and 016 will be removed as part of this project because the units are not necessary for natural gas firing operations. Additionally, this project will authorize relocation of the existing monitoring points for the nitrogen oxides, carbon dioxide, and ammonia Continuous Emissions Monitoring Systems (CEMS) from the common stack for Units 1 and 2 to the common inlet duct of the flue gas desulfurization system for Units 1 and 2. Since natural gas contains little sulfur, the permit authorizes removal of the sulfur dioxide (SO_2) CEMS for Units 1 and 2 and requires monitoring in accordance with the calculation method allowed for gas-fired acid rain units in 40 CFR 75.

NOTICE AND PUBLICATION

The Department distributed a draft minor air construction permit package on October 1, 2018. The applicant published the Public Notice in the La Gaceta on October 12, 2018. The Department received the proof of publication on October 16, 2018. No requests for administrative hearings or requests for extensions of time to file a petition for administrative hearing were received.

COMMENTS

Sierra Club Comments

On October 26, 2018, the Department received comments from the Sierra Club[1]. A summary of the comments and the Department's response is provided below.

1. The Sierra Club commented that it is inappropriate for the draft permit to remove the requirement to operate the CEMS to measure hourly SO_2 emissions from Units 1 and 2, especially considering the proximity of the Big Bend Station to a densely populated area with ongoing SO_2 air pollution problems. The Sierra Club asserts that the draft permit requirements to estimate hourly SO_2 emissions from Units 1 and 2 using procedures from Appendix D to 40 CFR 75 are a less accurate method than SO_2 CEMS. The Sierra Club believes that the Department should require TEC to continue to use the existing CEMS or, at the very least, the Department should explain its justification. However, if the Department allows removal of the CEMS, then it must specify the method(s) from Appendix D in 40 CFR 75 that are the most conservative, to assure TEC is required to account for the worst-case SO_2 emissions in assessing compliance with the plant-wide pound per hour SO_2 limit.

[1] Documents available here. Click "Public Oculus Login."

Response: The area mentioned by the Sierra Club is meeting the 1-hour SO_2 Ambient Air Quality Standard based on more than three years of ambient monitoring data. Removing coal and solid fuels from the fuel slate for Units 1 and 2 will further reduce SO_2 emissions in this area.

Records for the last two years indicate the actual fuel sulfur content of the supplied natural gas to be between 0.04 and 0.16 grains of sulfur per 100 cubic feet of natural gas (gr. S/hcf), which is equivalent to approximately 0.0001 to 0.0004 lb SO_2/MMBtu. The MATS limit is 0.20 lb/MMBtu based on a 30-day average. So if the CEMS were to remain in service for Units 1 and 2 while firing only natural gas, they would need to monitor emissions at one-two thousandth to one-five hundredth of the stack concentrations in Units 3 and 4 when firing coal.

Units 1 through 4 are subject to the federal Acid Rain Program in 40 CFR 75 of the Code of Federal Regulations. The Acid Rain Program classifies the natural gas to be fired in Units 1 and 2 as "pipeline natural gas" (40 CFR 72.2). Sections 2.3.1 (pipeline natural gas) and 2.3.2 (natural gas) of Appendix D to Part 75 of this regulation include separate requirements for documentation of the procedures and how frequently to sample the natural gas.

Pipeline natural gas is defined in 40 CFR 72.2 as natural gas with 0.5 gr. S/hcf or less and contains 70% methane by volume or has a gross calorific value between 950 and 1,100 Btu per scf. Based on the data provided by TEC from the gas suppliers, the natural gas combusted at TEC qualifies "pipeline natural gas." Section 2.3.1 identifies a default value of 0.0006 lb SO_2/MMBtu for pipeline natural gas. This is greater than the actual sulfur content of the gas fired at the facility, as noted above. As such, the regulation would allow calculation of SO_2 emissions based on the default value sulfur content of natural gas, the heating value of natural gas, and the gas firing rates.

This method does result in conservatively higher calculated SO_2 emissions and would be used to demonstrate compliance with the four-unit SO_2 emissions cap, as suggested by the Sierra Club.

No changes were made to the permit.

2. The Sierra Club asserts that the draft permit would allow Big Bend Units 3 and 4 to fire more coal and operate differently than currently permitted, thus this project should include a new modeling analysis to ensure compliance with the 1-hour SO_2 NAAQS. The Sierra Club also claims that Rule 62-210.350(2)(a)1, Florida Administrative Code (F.A.C.), requires the Department to make publicly available an analysis of the effect of a proposed modification at a source on ambient air quality.

   Response: The draft permit does not authorize an increase in coal combustion in Units 3 and 4; the permit removes solid fuels from the permitted fuel slate for Units 1 and 2. TEC completed installation of the current natural gas firing capabilities in 2015. Therefore, the units are already capable of operating in a mode in which only gas is fired in Units 1 and 2, and, since the beginning of 2018, these units have only fired natural gas. The only change in operation after this project is Units 1 and 2 will no longer be allowed to fire coal or other solid fuels. Units 3 and 4 will continue to operate as permitted. If TEC decides to operate Unit 3 or 4 differently in the future, it will be entirely consistent with modes of operation that are already permitted. This project will not change the operation of Unit 3 or 4.

   Included as part of its comments, the Sierra Club referenced operational data for Units 1 through 4 for calendar years 2016 and 2017 to illustrate the coal and gas usage of those units. The Sierra Club's comment is that the percentage of coal usage for Units 3 and 4 increased from 2016 to 2017, when the percentage of gas firing in Units 1 and 2 increased. Using the Sierra Club's numbers, actual coal firing for Units 3 and 4 combined decreased by 1.9% from 2016 to 2017.

   Also, based on the Annual Operating Reports submitted for 2013 through 2017, SO_2 emissions from Units 1 - 4 have decreased from approximately 11,000 tons/year in 2013 to 4,625 tons/year in 2017. The addition of natural gas has reduced SO_2 emissions and ambient impacts.

   The four-unit cap of 3,162 lb SO_2/hour based on a 30-boiler operating day average established by Permit No. 0570039-096-AC applies to Big Bend Units 1 through 4. The permit established this cap to be protective of

the 2010 Sulfur Dioxide NAAQS and is based on worst-case operating scenarios considering the physical design, heat input, and emissions variability of each unit. As a result of this permit action, which will reduce emissions of SO_2 from Units 1 and 2, TEC has requested[2] a reduction of the four-unit cap from 3,162 lb/hour to 2,156 lb/hour on a 30-boiler operating day average. The revised cap represents an approximately 32% reduction from the previous cap and is more protective of the 2010 SO_2 NAAQS.

Rule 62-210.350(2)(a)1, F.A.C., requires an analysis of a proposed modification at a source on ambient air quality only for Prevention of Significant Deterioration (PSD) applications. The PSD requirements are not applicable because the significant emissions rates for any pollutant are not exceeded by this project. This project results in a decrease of emissions. With SO_2 emissions rates for Units 1 and 2 that are 0.05% of the MATS limit, higher stack exit temperature, and continued compliance with the four-unit SO_2 emissions cap, the Department has no justification to require a new modeling analysis.

The Sierra Club refers to a limit of "200 tons of coal use per day" for Units 1 through 4 and contends the draft permit will allow Units 3 and 4 to consume more coal under this limit because Units 1 and 2 will no longer fire coal. This is incorrect for several reasons. The "200 tons per day limit" is for firing of *raw coal residual*, which is a by-product of the gasification of coal at the Polk Power Station. Units 1 – 4 are currently permitted only to fire raw coal residual when there is a gasification process malfunction at the Polk Power Station. However, based on data submitted in Annual Operating Reports, raw coal residual has not been fired in Units 1 through 4 since 2008.

The draft Title V air operation permit allows Units 3 and 4 to use emissions averaging for compliance with the SO_2, mercury, and particulate matter limits in accordance with the MATS rule. Units subject to the MATS rule may comply by emissions averaging if they meet the eligibility requirements in the rule, which Units 3 and 4 do. This change will not allow Units 3 and 4 to fire more coal. Also, the project results in actual decreases in particulate matter, mercury, and hydrogen chloride emissions because Units 1 and 2 will no longer fire coal or other solid fuels.

The Department changed Section 3, Subsection A, Specific Condition 8 of Permit No. 0570039-109-AC to correct an error made in that earlier permit. The 0.25 lb SO_2/MMBtu limit should not have been changed to 0.82 lb/MMBtu in Permit No. 0570039-109-AC (PSD-FL-040C) nor included a 90% SO_2 removal efficiency. The changes made as part of this draft permit were to restore the intent of the condition to limit SO_2 emissions when firing solid fuels from when it was originally permitted in Permit No. 0570039-071-AC (PSD-FL-040B).

3. The Sierra Club claims the Department must evaluate how the increase in actual emissions from Units 3 and 4 allowed by the Draft Permit and draft Title V permit impact the analysis of net emissions increase conducted for the "Unit 1 Modernization Project" permit (Permit No. 0570039-119-AC).

   Response: Removal of solid fuels from the permitted fuel slate for Units 1 and 2 will not affect the operation of Units 3 and 4. These units are already capable of being operated in the manner envisioned in this project and have been operated in this manner (*i.e.*, without coal firing in Units 1 and 2) since the beginning of 2018.

   The "Unit 1 Modernization Project" in Permit No. 0570039-119-AC is for a 2-on-1 combined-cycle combustion turbine project with an overall efficiency of approximately 65%. The boilers for existing Units 1 and 2 will be shut down before commercial operation of the new combined-cycle unit, according to Permit No. 0570039-119-AC. Firing natural gas in a unit with this cycle efficiency would make it one of the most efficient units available and likely be fully dispatched before the other units.

   As previously stated, this draft permit will reduce SO_2 emissions from this plant. No changes were made to the permit.

4. The Sierra Club claims the Department proposes to waive the requirement for Units 1 and 2 to operate Low-NOx Burners (LNB) for Units 1 and 2 in the draft Title V permit, but the Department failed to address this "waiver" in the air construction Draft Permit.

[2] Letter from TEC to the Department, December 7, 2018. Documents available here. Click "Public Oculus Login."

Response: The term "Low NOx Burners" (LNB) for Units 1 and 2 originally appeared in Permit No. 0570039-014-AC for Units 1 through 4 and referred to the low-NOx capabilities when firing coal. The Title V Air Operation Permit was revised to remove this obsolete terminology. As described in the Statement of Basis for Title V Permit No. 0570039-121-AV, since the draft air construction permit removed the capability of firing coal in Units 1 and 2, the obsolete terminology was removed under the authority of Rule 62-210.300(1)(b)1., F.A.C., without the need for an air construction permit change. Please note that NO_X emissions from Units 1 and 2 will remain controlled through the inherent low-NO_X capability of the natural gas igniters and through post-combustion selective catalytic reduction technology.

No changes were made to the permit.

5. The Sierra Club claims that the public notice for the draft permit did not adequately address changes to Units 3 and 4 and that another public notice and comment period should be required.

   Response: Removal of solid fuels from the permitted fuel slate for Units 1 and 2 will not affect the operation of Units 3 and 4. These units are already capable of being operated in the manner envisioned in this project and have been operated in this manner (*i.e.*, without coal firing in Units 1 and 2) since the beginning of 2018. The permit makes no substantive changes to the requirements for Units 3 and 4.

   The Department will not require a revised public notice or second comment period.

Applicant

On October 25, 2018, the Department received comments from the applicant, the Tampa Electric Company[3]. The following summarizes the comments and the Department's response.

Comments: The applicant claims the existing permit contains inconsistent language in the limits for PM, SO_2, and NOx for each unit. The applicant states that the language is also inconsistent between Units 3 and 4. The applicant believes that the Department should address the CO monitoring conflict between air construction Permit No. 0570039-027-AC and Title V air operation Permit No. 0570039-110-AV. The applicant also suggests numerous small changes without justification.

Response: These requests are outside the scope of the current project. Additionally, the Department does not believe there is a conflict in the CO monitoring requirements. No changes were made to the permit.

CONCLUSION

The final action of the Department is to issue the permit with the minor change described above.

[3] Documents available here. Click "Public Oculus Login."