TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Tampa Electric Company
702 North Franklin Street
Tampa, Florida 33602

Big Bend Station
Facility ID No. 0570039

PROJECT

Project No. 0570039-096-AC
Application for Minor Source Air Construction Permit
SO_2 NAAQS Emission Limit

COUNTY

Hillsborough County, Florida

PERMITTING AUTHORITY

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

October 12, 2016

1. GENERAL PROJECT INFORMATION

1.1. Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Chapters 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations in Rule 62-204.800, F.A.C.

1.2. Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

1.3. Facility Description and Location

The Big Bend Station is an existing electric generation facility, which is categorized under Standard Industrial Classification Code No. 4911. The existing Big Bend Station is located in Hillsborough County (see **Figure 1**) at 13031 Wyandotte Road, Apollo Beach, Florida. The location of the Big Bend Station is shown in **Figure 2**. The UTM coordinates of this existing facility are Zone 17, 363.15 kilometers (km) East, and 3074.91 km North. This site is in an area of influence for a particulate matter maintenance and a sulfur dioxide non-attainment area, pursuant to Rule 62-204.340, F.A.C. An aerial view of the Big Bend Station is shown in **Figure 3**. Situated on Tampa Bay, the Big Bend Power Station is located on nearly 1,500 acres in the southeastern region of Hillsborough County.

Figure 1. Location of Hillsborough County.

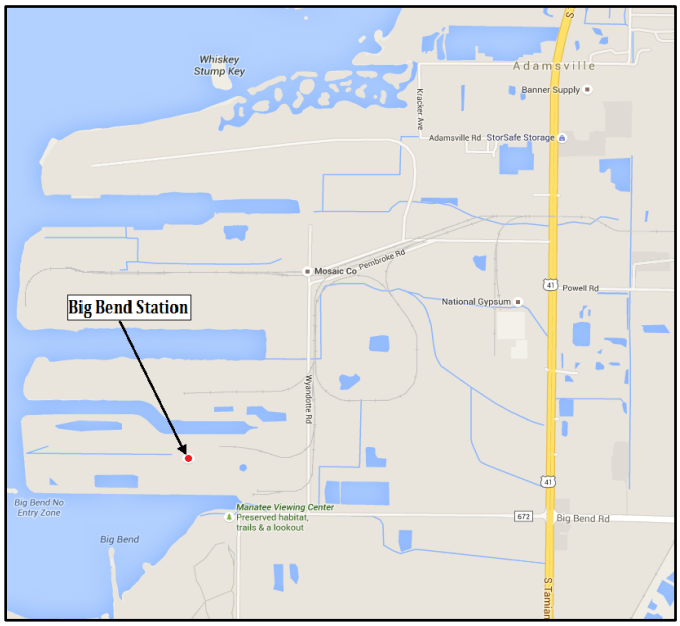

Figure 2. Location of Big Bend Station.

Figure 3. Aerial View of the Big Bend Station.

Tampa Electric Company (Tampa Electric) Big Bend Station is a electric generation facility. This facility consists of four fossil fuel fired boiler electrical generating Units 1 – 4 (EU 001 – EU 004); four steam turbine electrical generators; two simple-cycle combustion turbines (SCCT) 4A and 4B (EU 041 and EU 042) sharing a common electrical generator; solid fuels, fly ash, limestone, gypsum, slag, bottom ash storage and handling facilities; and, fuel oil storage tanks.

Units 1 through 4 have a combined electrical generation output of 1,821 MW. Units 1 through 3 each have a design electrical generating capacity of 445 MW. Unit 4 has a design electrical generating capacity of 486 MW. The fuel fired in all four units consists of coal, or a coal/petroleum coke blend containing a maximum of 20% petroleum coke by weight, or coal blended with coal residual generated from the Polk Power Station, or a coal/petroleum coke blend further blended with coal residual generated from the Polk Power Station, and on-site generated fly ash. In addition to the fuels allowed to be burned during normal operation, each unit burns natural gas during startup, shutdown, flame stabilization, low load operation (either alone or while co-firing solid fuels) and during the startup of an additional solid fuel mill on an already operating unit.

For each unit, nitrogen oxide (NO_X) emissions are controlled by low-NO_X burners and a selective catalytic reduction system. Unit 4 also has a separated over fire air system to further control NO_X emissions. On each unit, particulate matter (PM) emissions are controlled by a dry electrostatic precipitator while sulfur dioxide (SO_2) emissions are controlled by a wet flue gas desulfurization system. Units 1 through 3 are equipped with continuous emissions monitoring systems (CEMS) to measure NO_X, SO_2, PM and carbon dioxide (CO_2). Unit 4 is equipped with CEMS to measure carbon monoxide (CO), NO_X, SO_2, PM and CO_2. These units began operation in 1970 (Unit 1), 1973 (Unit 2), 1976 (Unit 3), and 1985 (Unit 4).

The SCCT 4A and 4B (EU 041 and EU 042) consist of one PWPS FT8-3® SwiftPac® aero-derivative SCCT-electrical generator to operate in simple cycle mode. The SwiftPac® consists of two combustion turbines coupled to one common generator having a nominal gross generation capacity of 62 MW. Each SCCT is allowed to fire natural gas and ultra-low sulfur distillate fuel oil. Each SCCT is equipped with water injection to minimize NO_X emissions and an oxidation catalyst to minimize CO and volatile organic compounds (VOC) emissions.

1.4. Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility operates units subject to the acid rain provisions of the Clean Air Act and Chapter 62-214, F.A.C.
- The facility is a Title V major source of air pollution in accordance with Chapter 62-213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

- The facility operates units subject to the NSPS of 40 CFR 60.
- The facility operates units subject to the NESHAP of 40 CFR 63.

1.5. Project Description

Tampa Electric applied for concurrent minor air construction permit to make minor revisions to Permit No. 0570039-074-AC that will be addressed in Permit No. 0570039-096-AC and incorporated in the Revised Title V Air Operation Permit No. 0570039-097-AV. This revision includes minor clarifications of the SO_2 emissions averaging calculations and the effective date.

The following existing emissions units (EU) will be affected by this project.

EU No.	Description
001	Fossil Fuel Fired Steam Generator Unit No. 1
002	Fossil Fuel Fired Steam Generator Unit No. 2
003	Fossil Fuel Fired Steam Generator Unit No. 3
004	Fossil Fuel Fired Steam Generator Unit No. 4

1.6. Processing Schedule

08/31/2016 Department received the application for an air pollution construction permit revision.

10/12/2016 Draft Permit Package issued by the Department.

2. PSD APPLICABILITY

The project will revise various specific conditions from a previously issued air construction permit. No physical construction is required or authorized. The project will not cause or authorize any increases in emissions nor change the allowable capacity of the units. Therefore, this project is not subject to PSD preconstruction review.

3. DEPARTMENT REVIEW

Tampa Electric is requesting minor revisions to Permit No. 0570039-074-AC, issued on February 26, 2015. The purpose of Permit No. 0570039-074-AC was to reduce the SO_2 emissions and ambient impacts from the Big Bend Station. The proposed revisions to permit language do not affect emissions, production rates or any other significant change. Descriptions of these requests are stated below, followed by the Department's position on the requested changes. This permit is being processed simultaneously with a Revised Title V Air Operation Permit No. 0570039-097-AV.

Tampa Electric Requested Revisions

Emission sources associated with the following revisions include the Fossil Fuel Fired Steam Generator Units 1 – 4 (EU 001 – EU 004).

<u>Permit No. 0570039-074-AC, Section 3, Subsection A.</u>

1. *Specific Condition 2, SO_2 Emissions Cap.*

   Request: Revise the SO_2 emissions cap of 3,162 lb/hour based on a 30-day rolling average to clarify that the limit is based on 30-boiler operating days. Revise the SO_2 emissions cap effective date which is based on 180 days of completing construction of the last natural gas igniter authorized in Permit No. 0570039-065-AC (issued, 8/2/2013) to Permit No. 0570039-084-AC (issued, 1/6/2016).

   Response: The Department will revise the language to clarify the SO_2 emissions cap is based on the boiler operating days. Permit No. 0570039-084-AC superseded all previously issued air construction permits for the natural gas igniter and process heater projects (Permit Nos. 0570039-065-AC, -070-AC, -073-AC, -078-AC, and -081-AC). Therefore, the Department will revise the effective date to comply with the issuance of Permit No. 0570039-084-AC.

2. *New Specific Condition 4, SO_2 Emission Rate Calculation.*

   Request: Add a new condition clarifying how an operating day is calculated.

   Response: The Department will renumber the permit to include a new specific condition to clarify how the SO_2 emission cap needs to be calculated and reported on a 30-boiler operating day rolling average to state the following:

   - SO_2 emissions shall be reported for all boilers combined (Units 1 – 4) on a 30-boiler operating day rolling average in the units of lb/hour, updated after each new boiler operating day.
   - Each 30-boiler operating day rolling average emission rate is the average of all of the valid hourly SO_2 emission rates in the 30-boiler operating day period.
   - Boiler operating day means a 24-hour period that begins at midnight and ends the following midnight during which any fuel is combusted at any time in the boiler, including startup, shutdown or malfunction periods.
   - It is not necessary for the fuel to be combusted the entire 24-hour period.

3. *Specific Condition 5 (renumbered to Specific Condition 6), SO_2 Reports.*

   Request: Revise this condition to read 30-boiler operating days.

   Response: The Department will revise to clarify the SO_2 emissions cap is based on 30-boiler operating days.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions. Lara Rabbath is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Department's Office of Permitting and Compliance at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400 at 850/717-9082 or by email Lara.Rabbath@dep.state.fl.us.