Title V Air Operation Permit Renewal
Permit No. 0570040-035-AV

APPLICANT

The applicant for this project is Tampa Electric Company. The applicant's responsible official and mailing address are: Frank Busot, Director, Tampa Electric Company, H. L. Culbreath Bayside Power Station, Post Office Box 111, Tampa, Florida 33601-0111.

FACILITY DESCRIPTION

The applicant operates the existing H. L. Culbreath Bayside Power Station, which is located in Hillsborough County at 3602 Port Sutton Road, Tampa, Florida.

This existing facility consists of six primary electrical generating units. Unit 1 is a "3-on-1" combined cycle gas turbine system with a nominal generating capacity of 746 megawatt (MW), which consists of three gas turbines (169 MW each) and one steam-electrical generator (239 MW). Unit 2 is a "4-on-1" combined cycle gas turbine system with a nominal generating capacity of 1,090 MW, which consists of four gas turbines (169 MW each) and one steam-electrical generator (414 MW). These units fire natural gas as the exclusive fuel and employ selective catalytic reduction (SCR) to reduce emissions of nitrogen oxides (NO_X). Emissions of carbon monoxide (CO) and NO_X are monitored with continuous emissions monitoring systems (CEMS).

Units 3 through 6 consist of four simple cycle combustion turbine (SCCT)-electrical generator sets designed to operate only in simple cycle mode. For each electrical generator set, two SCCT are coupled to one common electrical generator providing a total nominal gross generation capacity of 62 MW. Each SCCT fires natural gas, with NO_X emissions controlled by water injection and CO emissions with catalytic oxidation. Emissions of CO and NO_X are monitored with CEMS.

This facility also includes four compression ignition (CI) Reciprocating internal combustion engines (RICE) consisting of: two diesel fired emergency generators (385 brake-horsepower (bhp) and 755 bhp); a diesel fired black start engine (1,495 bhp); and a diesel fired emergency fire pump engine (188 bhp).

This facility also includes miscellaneous unregulated/insignificant emissions units and/or activities.

PROJECT DESCRIPTION

The purpose of this permitting project is to renew the existing Title V permit for the above referenced facility which reflects the standards and requirements to be established in the concurrently issued Air Construction Permit No. 0570040-034-AC. Further details are included in the Technical Evaluation and Preliminary Determination accompanying the draft air construction permit.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Application for a Title V Air Operation Permit Renewal received on January 20, 2014

PRIMARY REGULATORY REQUIREMENTS

Standard Industrial Classification (SIC) Code: 4911 – Electrical Generation.

North American Industry Classification System (NAICS) Code: 221112 – Fossil Fuel Electric Power Generation.

HAP: The facility is not identified as a major source of hazardous air pollutants (HAP).

Title IV: The facility operates units subject to the acid rain provisions of the Clean Air Act.

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.).

PSD: The facility is a Prevention of Significant Deterioration (PSD)-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

NSPS: The facility operates units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60.

NESHAP: The facility operates units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

CAIR: The facility operates units subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.

CAM: Compliance Assurance Monitoring (CAM) does not apply to any of the units at the facility. Each combined cycle gas turbine (EU-020 - EU-026) is equipped with an SCR system to control NO_x emissions; however, compliance is continuously demonstrated by CEMS. Each simple cycle combustion turbine (EU-031 - EU-038) is equipped with an SCR system to control NO_x emissions; however, compliance is continuously demonstrated by CEMS. There are no other add on control equipment.

GHG: The facility is not identified as a major source of green house gas (GHG) pollutants.

PROJECT REVIEW

The renewal permit includes the following changes.

Section I. Facility Information

Subsection A. Facility Description

1. Added the four CI RICE to the facility description.

Section III. Emission Units and Specific Conditions

Subsection A. Combined Cycle Gas Turbines (EU-020 - EU-026)

2. Updated and combined **Conditions A.7.** "Emission Standards Based on Performance Tests" and **Condition A.8.** "Emission Standards Based in CEMS Data" by removing the obsolete initial testing requirements for emissions CO (28.7 pounds per hour (lb/hour) and 7.8 parts per million by volume, dry (ppmvd) corrected to 15% oxygen) and NO_X (23.1 lb/hour and 3.5 ppmvd corrected to 15% oxygen) since these testing requirements were met. Continuous compliance with CO and NO_X are demonstrated by CEMS. Therefore, these conditions were combined under a new subtitle "Emission Standards."
3. Air Construction Permit No. 0570040-034-AC revised **Condition A.7.d.** (PM/PM_{10} Emissions) and **Condition A.7.f.** (Visible Emissions) since the annual visible emissions on the combined cycle units are not required.
4. Air Construction Permit No. 0570040-034-AC revised **Condition A.13.f.** the CEMS quarterly excess emissions report will be required only if the units operate more than 760 hours.
5. Air Construction Permit No. 0570040-034-AC revised **Condition A.16.** (Annual Compliance Test Requirements) by removing the requirement to do a visible emission test.

Subsection B. Fuel Yard (EU 008)

6. Emission unit 008 (Fuel Yard) was deleted in its entirety (old Subsection B.) as requested by TEC since coal is no longer fired at this facility and the fuel yard no longer exists.

Subsection D. Simple Cycle Combustion Turbines (EU 031 – EU 038)

7. Moved to new Subsection B.
8. Revised the emission unit description table and included a permitting note identifying the applicable regulations for consistency.
9. Air Construction Permit No. 0570040-034-AC revised **Conditions B.8. – B.13.** to update the following emission limitations and standards:

a. Reformatted by putting the emissions standards and testing methods into a text-based format to clarify the allowable emissions standards and, for informational purposes only, by identifying the equivalent emissions limits based on an inlet temperature of 59 degrees Fahrenheit (ºF).
b. Emission limit for NO_X was updated to meet the applicable regulation in NSPS, Subpart KKKK of 40 CFR 60.
c. Revised by removing the requirement to do an annual visible emission test.

10. Removed the sulfur dioxide (SO_2) excess emissions requirement in **Condition B.17.** to be regulated in accordance with 40 CFR 60.4385 since 40 CFR 60.4365 allows the owner or operator to elect not to monitor the total sulfur content of the fuel combusted in the turbine, if the fuel is demonstrated not to exceed potential sulfur emissions of 0.06 lb SO_2/million British thermal units (MMBtu) heat input. 40 CFR 60.4385 defines SO_2 excess emissions and monitoring downtime if the permittee chose the option to monitor the sulfur content by sampling the fuel. Compliance with the fuel sulfur limit for natural gas is demonstrated by keeping reports of valid purchase contract, tariff sheet or transportation contract obtained from the vendor demonstrating the maximum total sulfur content as 2 grains of sulfur or less per 100 standard cubic feet of gas and has potential sulfur emissions of less than 0.06 lb SO_2/MMBtu of heat input. Therefore, the Department established a new **Condition B.28.** (Fuel Sulfur Monitoring) to clarify that excess emissions for SO_2 requirements apply to the sampling of fuel.

    Excess Emissions - NSPS: Excess NO_X emissions shall be regulated in accordance with 40 CFR 60.4350 and 60.4380. ~~Excess SO_2 emissions shall be regulated in accordance with 40 CFR 60.4385.~~ See Appendix KKKK (NSPS Subpart KKKK Requirements for Stationary Combustion Turbines) of this permit. [NSPS Subpart KKKK in 40 CFR 60 and Rule 62-204.800, F.A.C.]

    (New Condition) Fuel Sulfur Monitoring. The permittee shall obtain the representative fuel sulfur concentration in the pipeline-quality natural gas as determined by the pipeline vendor specifying that that the maximum total sulfur content for natural gas is 2 grains of sulfur/100 scf or less. Compliance with the fuel specification shall be demonstrated by keeping records of the fuel sulfur content. [NSPS 40 CFR 60.4365, Subpart KKKK]

11. Removed the NSPS Compliance Demonstrations *(previous **Condition D.19.**)* since these regulations are provided in the appendices.

12. Air Construction Permit No. 0570040-034-AC revised **Condition B.20** (Test Methods), **Condition B.22.** (Annual Compliance Requirements) and **Condition B.23** (Testing Requirements) by removing the requirement to do an annual visible emissions test and test method.

13. Air Construction Permit No. 0570040-034-AC added a new **Condition B.25.** for an existing combustion turbine to be temporarily replaced with a "like-kind" combustion turbine while the existing CT is undergoing routine maintenance.

Subsection C. through E. Reciprocating Internal Combustion Engines (EU 039 – EU 042)

14. Four Diesel Emergency Engines (EU 039) have been assigned individual emission unit numbers and the applicable requirements have been identified in their new subsections.

Appendices

15. Appendix BD. Final BACT Determination and Emissions Standards (Units 1 and 2) were removed since it is identified in the air construction permit and appendices.

CONCLUSION

This project renews Title V Air Operation Permit No. 0570040-027-AV, which was effective on January 1, 2010. This Title V air operation permit renewal is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210, 62-213 and 214, F.A.C.