Title V Air Operation Permit Administrative Amendment
Permit No. 0570040-051-AV

APPLICANT

The applicant for this project is Tampa Electric Company. The applicant's responsible official and mailing address are: Mr. Jeremy Cain, Director, Bayside Power Sation, Tampa Electric Company, H.L. Culbreath Bayside Power Station, P.O. Box 111, Tampa, FL 33601.

FACILITY DESCRIPTION

The H. L. Culbreath Bayside Power Station is an electric power plant consisting of six primary electrical generating units.

Unit 1 (EU 020 - EU 022) is a "3-on-1" combined cycle gas turbine system with a nominal generating capacity of 802 megawatt (MW), which consists of three gas turbines (183 MW each) and one steam-electrical generator (253 MW).

Unit 2 (EU 023 - EU 026) is a "4-on-1" combined cycle gas turbine system with a nominal generating capacity of 1,146 MW, which consists of four gas turbines (183 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 (NOx). Emissions of carbon monoxide (CO) and NOx are monitored with continuous emissions monitoring systems (CEMS).

Units 3 through 6 (EU 031 - EU 038) consist of four Pratt and Whitney Model No. FT8-3 SwiftPac® aero-derivative simple cycle combustion turbine-electrical generator sets to operate in simple cycle mode. For each SwiftPac®, two combustion turbines are coupled to one common electrical generator set having a total nominal gross generation capacity of 62 MW. Each unit fires natural gas, with NOx emissions controlled with water injection. Emissions of CO are monitored with CEMS.

This facility also includes four compression ignition (CI) internal combustion engines (ICE) consisting of: two diesel fired emergency generators (385 horsepower (HP) and 755 HP); a diesel fired black start engine (1,495 HP); and an emergency fire pump engine (207 HP).

REGULATED EMISSIONS UNIT IDENTIFICATION NUMBERS AND DESCRIPTIONS

EU No.	Brief Description
Bayside Unit 1 - 802-MW, 3-on-1 CCCT-Electrical Generator Set	
020	Bayside Unit 1A–183 MW CCCT-Electrical Generator
021	Bayside Unit 1B–183 MW CCCT-Electrical Generator
022	Bayside Unit 1C–183 MW CCCT-Electrical Generator
Bayside Unit 2 - 1,146 MW, 4-on-1 CCCT Set	
023	Bayside Unit 2A–183 MW CCCT-Electrical Generator
024	Bayside Unit 2B–183 MW CCCT-Electrical Generator
025	Bayside Unit 2C–183 MW CCCT-Electrical Generator
026	Bayside Unit 2D–183 MW CCCT-Electrical Generator
Bayside Unit 3 - 62 MW SCCT Peaking Unit with 2 CTs and 1 Electrical Generator	
031	Bayside Unit 3A–SCCT-Electrical Generator Peaking Unit
032	Bayside Unit 3B–SCCT-Electrical Generator Peaking Unit
Bayside Unit 4 - 62 MW SCCT Peaking Unit with 2 CTs and 1 Electrical Generator	
033	Bayside Unit 4A–SCCT-Electrical Generator Peaking Unit
034	Bayside Unit 4B–SCCT-Electrical Generator Peaking Unit
Bayside Unit 5 - 62 MW SCCT Peaking Unit with 2 CTs and 1 Electric Generator	

035	Bayside Unit 5A - SCCT-Electrical Generator Peaking Unit
036	Bayside Unit 5B - SCCT-Electrical Generator Peaking Unit
Bayside Unit 6 - 62 MW SCCT Peaking Unit with 2 CTs and 1 Electric Generator	
037	Bayside Unit 6A - SCCT-Electrical Generator Peaking Unit
038	Bayside Unit 6B - SCCT-Electrical Generator Peaking Unit
Compression Ignition Internal Combustion Engines	
039	Steam Plant Emergency Diesel Generator (385 HP)
040	SCCT Black Start Emergency Diesel Engine (1,495 HP)
041	Administrative Building Emergency Diesel Generator (755 HP)
042	Emergency Diesel Fire Pump Engine (207 HP)

APPLICABLE REGULATIONS

Based on the Title V air operation permit renewal application received on March 28, 2024, this facility is not a major source of hazardous air pollutants (HAP). The existing facility is a prevention of significant deterioration (PSD) major source of air pollutants in accordance with Rule 62-212.400, F.A.C. A summary of applicable regulations is shown in the following table:

Regulation	**EU Nos.**
Federal Rule Citations	
40 CFR 60, Subpart A: NSPS General Provisions	020 - 026, 031 - 038, 039 - 042
40 CFR 60, Subpart IIII: NSPS Stationary CI ICE	039 – 042
40 CFR 60, Subpart KKKK: NSPS Stationary Combustion Turbines	020 - 026, 031 - 038
40 CFR 63, Subpart A: NESHAP General Provisions	039 - 042
40 CFR 63, Subpart ZZZZ: NESHAP RICE	039 - 042
40 CFR 72: Acid Rain Program Permit Regulations	020 - 026, 031 - 038
40 CFR 75: Acid Rain Program Continuous Emissions Monitoring	020 - 026, 031 - 038
40 CFR 77: Acid Rain Program Excess Emissions	020 - 026, 031 - 038
40 CFR 78: Acid Rain Program Appeal Procedures	020 - 026, 031 - 038
State Rule Citations	
Rule 62-204.800, F.A.C.: Federal Regulations Adopted by Reference	020 - 026, 031 - 038, 039 - 042
Rule 62-212.400, F.A.C.: PSD of Air Quality	020 - 026
Rule 62-213.413, F.A.C.: Fast-Track Revisions of Acid Rain Parts.	020 - 026, 031 - 038
Chapter 62-214, F.A.C.: Sources Subject to the Federal Acid Rain Program	020 - 026, 031 - 038

PROJECT DESCRIPTION

The purpose of this permitting project is to administratively amend the Title V air operation permit for the above referenced facility. The amendment incorporates the applicable requirements of Permit No. 0570040-050-AC, which was issued as an enhanced NSR permit that satisfied the requirements of Rule 62-210.360(1)(f), F.A.C. Permit No. 0570040-050-AC authorized Emissions Units 031 through 038 (CTs 3A/3B, 4A/4B, 5A/5B, and 6A/6B) to operate as synchronous condensers to increase the stability of the power grid.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Final Air Construction Permit No. 0570040-050-AC issued **[January 6, 2025]**
Administrative Title V Amendment issued **[January 29, 2025]**

PRIMARY REGULATORY REQUIREMENTS

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

North American Industry Classification System (NAICS): 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.

CAM: Compliance Assurance Monitoring (CAM) does not apply to any of the units at the facility. Each CCCT (EU Nos. 020-026) is equipped with an SCR system to control NO_X emissions. Each SCCT (EU Nos. 031-038) is equipped with a water injection system to control NO_X emissions and an oxidation catalyst to control CO and VOC emissions. A CAM Plan is not required for any of these units because NO_X emissions from the SCCTs and CCCTs are continuously monitored using CEMS, and CO emissions from the SCCTs are continuously monitored using CEMS. Compliance with the SCCT VOC emissions limit is demonstrated by compliance with the CO limit. There are no other add on control equipment.

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

PROJECT REVIEW

Changes to the permit made as part of this administrative amendment are shown in ~~strike-through~~ format for deletions and in double underline format for additions. For ease of identification, all changes have also been highlighted in yellow within the permit document.

- Permit No. 0570040-050-AC authorized Emissions Units 031 through 038 (CTs 3A/3B, 4A/4B, 5A/5B, and 6A/6B) to operate as synchronous condensers to increase the stability of the power grid. To incorporate the applicable requirements of Permit No. 0570040-050-AC into the facility's Title V air operation permit, selected specific conditions in Section III, Subsection B, of the TV permit are revised as follows.

  a. Specific Condition B.3 is revised as follows to include the synchronous condenser mode of operation.

  B.3. Methods of Operation.
  a. *Fuels.* Natural gas with a maximum fuel sulfur content of 2 gr S/100 scf.
  b. *Simple Cycle Mode.* For any request to convert these units to combined cycle operation by installing or connecting to HSRG, including changes to the fuel or quantity related to combined cycle conversion that may cause an increase in short or long-term emissions, the permittee shall submit a full application for a PSD air construction permit modification complete with a proposed BACT determination as if the SCCT had never been built.
  c. *Synchronous Condenser Mode.* Pursuant to the requirements of Specific Condition **B.4**, each SCCT may operate as a synchronous condenser.
  [Rules 62-210.200(PTE) and 62-212.400(ESCPSD), F.A.C.; and, Permit Nos. ~~0890003~~ 0570040-024-AC and 050-AC.]

  b. Specific Condition B.4 is revised as follows to include the synchronous condenser mode in the hour limitations for the SCCTs.

  B.4. Hours of Operation.

a. *Normal Operation.* Each SCCT is limited to a maximum of 2,500 hours/year of operation. The maximum total hours of operation for EU Nos. 031-038 shall not exceed 16,000 hours per year of operation (2,000 hr/yr average across all eight SCCTs). [Rules 62-210.200(PTE) and 62-212.400(ESCPSD), F.A.C.; and, Permit No. 0570040-024-AC; Permit No. 0570040-042-AC/PSD-FL-449.] *{Permitting Note: The hours of operation, of this permit, have been revised to avoid PSD preconstruction review for VOC emissions. The permitted 16,000 hours per year of operation (averaged between all EUs in this subsection) is intended to restrict the PTE of Units 3 – 6 to approximately 35 TPY of VOC emissions, combined.}*

b. *Synchronous Condenser Mode.* To initiate synchronous condenser mode, each SCCT may be fired up to a maximum of 10 minutes. Each CT may operate in synchronous condenser mode up to a maximum of 2,500 hours per year. The maximum total hours of operation in synchronous condenser mode for EU Nos. 031 – 038 shall not exceed 16,000 hours per year (2,000 hour/year average across all 8 CTs). [Permit No. 0570040-050-AC] *{Permitting Note: CT operation to initiate synchronous condenser mode is expected to be 5 to 6 minutes on average. After the initial CT startup, the CT engine is shut off (no combustion) and the generator is driven by power from the grid. Operation as synchronous condensers will displace normal CT operation; therefore, each CT may operate up to its normal, previously authorized maximum hours of operation as a synchronous condenser.}*

c. Specific Condition B.15 is revised to include an exclusion for the CO CEMS during synchronous condenser mode. References to exclusions due to unit malfunctions are deleted because that allowance was removed after November 22, 2023. Refer to the introductory sentence of Specific Condition B.15; the CO emission limits for the SCCTs were established after October 23, 2016.

B.15. Excess CO Emissions Allowed - SIP. Excess emissions resulting from startup, shutdown or malfunction shall only apply to unit-specific emission limits established on or before October 23, 2016, pursuant to Rules 62-212.400 and 62-212.500, F.A.C. If excess CO emissions occur due to ~~malfunction,~~ tuning, ~~or~~ black start testing or black start events, or synchronous condenser operation, CEMS data collected during such periods may be excluded from the compliance averages in accordance with the following requirements provided that best operational practices to minimize emissions are adhered to and the duration of excess emissions are minimized. All periods of excluded data shall be consecutive for each such episode and only data obtained during the described episodes (~~malfunction, and~~ tuning, ~~and~~ black start testing and black start events, and synchronous condenser operation) may be excluded in accordance with the procedures described in the CEMS Data Requirements of Appendix CEMS of this permit. When determining excess emissions under this specific condition, all CO emissions shall not be corrected to 15% oxygen for any unit operating hour in which fuel is being burned without water injection for NO_x control.

~~a. *Malfunction.* No more than 120 minutes of CEMS data in a 24-hour period shall be excluded due to malfunctions of each CT or control system.~~

a~~b~~. *Tuning.* "Tuning" means any on-line adjustments necessary following maintenance work, adjusting the combustors in accordance with the manufacturer's recommendations or modifying the water-to-fuel ratio to affect a change in the post-combustion air emissions. Such tuning sessions are infrequent. Excess CEMS emissions data collected during tuning may be excluded from the compliance averages.

b~~c~~. *Simulated Facility Black Start Testing and Facility Black Start Events.* Up to 8 hours of CEMS data indicating an exceedance of emissions limits may be excluded from the compliance demonstration periods for the CT when operating less than full load for extended periods in relation to simulated or actual facility black start conditions.

c. *Synchronous Condenser Mode.* This operation briefly fires the CT for up to 10 minutes, synchronizes to the grid, disengages from the generator, and is shutdown. As required, the generator continues to spin on grid power to maintain grid stability and provide reliable power to customers. CO emissions associated with the brief operation of the CT may be excluded from the compliance averages.

[Permit Nos. 0570040-044-AC/PSD-FL-449A and 050-AC; Rules 62-210.200, 62-210.370(3) and 62-210.700(4), F.A.C.]

d. Specific Conditions B.17 and B.27 are revised to include recordkeeping requirements for operation in synchronous condenser mode in the Monthly Operations Summary for the SCCTs.

B.17. Monitoring of Capacity. The permittee shall monitor and record the heat input rate of each SCCT on a daily average basis, considering the number of hours of operation during each day (including the times of startup, shutdown and malfunction). Such monitoring shall be made by monitoring daily rates of fuel consumption and heating value of natural gas in accordance with the provisions of 40 CFR 75, Appendix D. The permittee shall monitor and record when each SCCT operates for the purposes of initiating synchronous condenser mode and the time spent (hours) operating as a synchronous condenser. [Rule 62-4.070(3), F.A.C.; and, Permit Nos. 0570040-024-AC and 050-AC.]

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B.27. Monthly Operations Summary: By the 15th calendar day of each month, the permittee shall record the following for each fuel in a written or electronic log for the combustion turbine for the previous month of operation: fuel consumption, hours of operation (normal operation and synchronous condenser mode), and the updated calendar year totals for each. Information recorded and stored as an electronic file shall be available for inspection and printing within at least three days of a request by the Department. [Rule 62-4.070(3), F.A.C.; and, Permit Nos. 0570040-024-AC and 050-AC.]

e. Specific Condition B.33 is revised to remove the malfunction reference under "excluded emissions report" and to include synchronous condenser operation under the "excluded emissions report" for CO. The facility should continue notifying the Department of emissions in excess of applicable CO limits due to malfunctions, but excess emissions due to malfunctions can no longer be excluded from compliance calculations with respect to the report required under paragraph b of the condition. Similar changes were made to Condition 16 of Appendix CEMS to align the appendix with the requirements in Section III, Subsection B of the permit.

B.33. Excess CO Emissions Reports. The permittee shall submit excess emissions notifications and excess emissions and excluded emissions reports as follows:

a. *Malfunction Notification*. If emissions in excess of the limits in Specific Condition **B.9.** (subject to the specified averaging period) occur due to malfunction, the permittee shall notify the Compliance Authority: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident.

b. *Quarterly Excess and Excluded Emissions Report*. Within 30 days following the end of each calendar quarter, the permittee shall submit a report to the Compliance Authority summarizing periods of CO emissions in excess of the permit the limits in Specific Condition **B.9.** (subject to the specified averaging period). A summary of data excluded from compliance calculations due to ~~malfunction,~~ tuning, simulated facility black start testing and facility black start events, and synchronous condenser operation should also be provided. In addition, the report shall summarize the CO CEMS monitor availability for the previous calendar quarter.

[Rules 62-4.070(1)&(3) & 62-210.700(5), F.A.C.]

CONCLUSION

This project administratively amends Title V Air Operation Permit No. 0570040-049-AV, which was effective on August 9, 2024. This administrative amendment of the Title V air operation permit is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210, and 62-213, F.A.C.