PUBLIC NOTICE COPY
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4
Atlanta, Georgia

Prevention of Significant Deterioration Permit
For Greenhouse Gas Emissions
Permit PSD-EPA-R4014

In accordance with the provisions of the Clean Air Act (CAA), Subchapter I, Part C, 42 U.S.C. § 7470, the implementing Prevention of Significant Deterioration (PSD) of Air Quality Regulations at the Code of Federal Regulations (CFR) Title 40, Section 52.21 (40 CFR § 52.21), and the Federal Implementation Plan (FIP) at 40 CFR § 52.37 [effective December 30, 2010, and published at 75 FR 82246 (Dec. 30, 2010)], the U.S. Environmental Protection Agency Region 4 hereby authorizes:

Tampa Electric Company
PO Box 111
Tampa, FL 33601-0111

to construct and operate Greenhouse Gas (GHG) air emissions units as a modification to the existing Polk Power Station located at 9898 State Road 37 South, Mulberry (Polk County), Florida.

This modification to the Polk Power Station shall be constructed and operated in accordance with the terms and conditions set forth in this permit.

This permit becomes effective on **[INSERT EFFECTIVE DATE]**.

This permit addresses GHG-related PSD requirements only. For this Project, the State of Florida, through the Florida Department of Environmental Protection (FDEP), retains jurisdiction over PSD permitting for regulated pollutants other than GHGs. This permit shall not relieve the owner or operator of the responsibility to comply fully with all applicable provisions of federal and state law.

_____
Date Signed

_____
Carol L. Kemker
Acting Director
Air, Pesticides, and Toxics
Management Division

AUTHORITY

The EPA issues this permit pursuant to Subchapter I, Part C, of the Clean Air Act (CAA), 42 U.S.C. § 7470, the implementing PSD Regulations at 40 CFR § 52.21, and the FIP at 40 CFR § 52.37 [effective December 30, 2010 and published at 75 FR 82246 (Dec. 30, 2010)]. This permit is based upon application materials submitted to the EPA by Tampa Electric Company (TECO), dated October 2012; December 19, 2012; April 15, 2013; and May 3, 2013; supplemental submittals in the administrative record for this permit action, and upon the technical analysis performed by the EPA.

APPLICANT

Tampa Electric Company
PO Box 111
Tampa, FL 33601-0111

PROJECT LOCATION

TECO's project will be located at the existing Polk Power Station located at 9898 State Road 37 South, Mulberry (Polk County), Florida.

PROJECT DESCRIPTION

TECO will modernize the existing Polk Power Station (PPS) by adding higher-efficiency, lower-emission combined cycle technology (Project) to the four (4) existing simple cycle combustion turbines (CTs). The Project will increase the total nominal capacity of these units from 660 to 1,160 megawatts (MW) and the total generating capacity of the PPS site to a nominal 1,420 MW (all net values).

PPS currently consists of a nominal 250 MW (net) solid fuel-based, integrated gasification and combined cycle plant in addition to the simple cycle CTs. The existing facility is authorized to operate pursuant to Florida Department of Environmental Protection (FDEP) title V operating permit No. 1050233-026-AV. The Project will modify the simple cycle CTs to add combined cycle operation in a 4-on-1 configuration consisting of: four (4) General Electric 7FA.03 CTs, each a nominal 165 MW (net) output; four (4) heat recovery steam generators (HRSGs), each equipped with duct burners; and one (1) nominal 500 MW (net) output steam turbine generator (STG). The HRSGs will utilize the waste heat from the CTs as well as natural gas-fired duct burners to produce steam to be utilized in the STG. Other equipment include: a six-cell mechanical draft cooling tower, a 500 kilowatt (kW) ultra-low sulfur diesel (ULSD) fuel oil-fired emergency generator engine, a new transmission line, and existing line upgrades.

This PSD permit for the Project requires the use of Best Available Control Technology (BACT) to limit emissions of GHGs, to the greatest extent feasible.

EQUIPMENT LIST

The following devices and activities are subject to this PSD permit:

Unit ID	Description
CTs/HRSGs with Duct Burners (4)	• 165 MW (net) simple cycle CTs • 1,160 MW (net) combined cycle CTs utilizing a 500 MW (net) STG in a 4-on-1 configuration • Maximum combined heat input rate of 8,924 million British thermal units per hour (MMBtu/hr) (Higher Heating Value)
Emergency Generator	• 500 kW; ULSD fuel oil-fired
STG	• 500 MW (net) output
Circuit Breakers (18)	• Totally-enclosed pressure systems containing sulfur hexafluoride (SF_6) • 0.5 % per year (by weight) annual leakage rate • Leak detection system
Natural Gas Component Leaks	• Fugitive GHG emissions (methane) resulting from leaks from piping components delivering natural gas to the duct burners of the HRSGs

PERMIT CONDITIONS

I. PERMIT EXPIRATION

As provided in 40 CFR § 52.21(r), this PSD permit shall become invalid if construction:

A. is not commenced [as defined in 40 CFR § 52.21(b)(9)] within 18 months after the approval takes effect; or

B. is discontinued for a period of 18 months or more; or

C. is not completed within a reasonable time.

II. PERMIT NOTIFICATION REQUIREMENTS

Pursuant to **Condition IX: *SPECIAL CONDITIONS***, Permittee shall notify the EPA Region 4 of the:

A. date construction is commenced, postmarked within 30 days of such date;

B. actual date of initial setting in operation for any purpose, postmarked within 15 days of such date; and

C. date upon which initial certification tests will commence, in accordance with the provisions of **Condition IX.E**, postmarked not less than 21 days prior to such date. Notification may be provided with the submittal of the certification test protocol required pursuant to **Condition IX.E**.

III. FACILITY OPERATION

A. At all times, including periods of startup, shutdown, shakedown, and malfunction, Permittee shall, to the extent practicable, maintain and operate the facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the EPA, which may include, but is not limited to, monitoring results, opacity observations, review of operating maintenance procedures and inspection of the facility.

B. The Permittee shall operate and maintain the CTs and associated components in a manner consistent with good engineering practices for its full utilization.

C. As soon as practicable following initial startup of the CTs (as defined in 40 CFR § 60.2) but prior to commencement of commercial operation (as defined in 40 CFR § 72.2), and thereafter, the Permittee shall develop and implement an operation and maintenance plan for the facility, consistent with **Condition III.B** above. At a minimum, the plan shall identify measures for assessing the performance of the facility, the acceptable range of the plant performance measures for achieving the design electrical output, the methods for monitoring the plant performance measures, and the routine procedures for maintaining the facility in good operating condition.

IV. MALFUNCTION REPORTING

A. Permittee shall notify the EPA Region 4 via the contact information provided in **Condition X: *AGENCY NOTIFICATIONS*** within two (2) calendar days following the discovery of any failure of air pollution control equipment or process equipment, or failure of a process to operate in a normal manner, which results in an increase in emissions above the allowable emission limits stated in *Condition IX* of this permit.

B. In addition, pursuant to **Condition X: *AGENCY NOTIFICATIONS***, Permittee shall provide written notification to the EPA within fifteen (15) calendar days of any such failure described under **Condition IV.A** above. This notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial malfunction, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those

allowed in **Condition IX: *SPECIAL CONDITIONS***, and the methods utilized to mitigate emissions and restore normal operations.

C. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violation of this permit or any law or regulation such malfunction may cause.

V. RIGHT OF ENTRY

The EPA Regional Administrator, and/or an authorized representative, upon the presentation of credentials, shall be permitted:

A. to enter the premises where the facility is located or where any records are required to be kept under the terms and conditions of this PSD permit;

B. during normal business hours, to have access to and to copy any records required to be kept under the terms and conditions of this PSD permit;

C. to inspect any equipment, operation, or method subject to requirements in this PSD permit; and

D. to sample materials and emissions from the source(s).

VI. TRANSFER OF OWNERSHIP

In the event of any changes in control or ownership of the facility, this PSD permit shall be binding on all subsequent owners and operators. Within 14 days of any such change in control or ownership, Permittee shall notify the succeeding owner and operator of the existence of this PSD permit and its conditions by letter. Permittee shall send a copy of this letter pursuant to **Condition X: *AGENCY NOTIFICATIONS*** to the EPA Region 4 within thirty (30) days of its issuance.

VII. SEVERABILITY

The provisions of this PSD permit are severable, and, if any provision of the PSD permit is held invalid, the remainder of this PSD permit shall not be affected.

VIII. ADHERENCE TO APPLICATION AND COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

A. Permittee shall construct the Project in compliance with this PSD permit, the application on which this permit is based, and all other applicable federal, state, and local air quality regulations. This PSD permit does not release the Permittee from any liability for compliance with other applicable federal, state and local environmental laws and regulations, including the Clean Air Act.

B. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, or any other physical remains that could be associated with Native American cultures, or early colonial or America settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. Upon such discovery, Permittee, or other designee, shall contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at 850.245.6333 or 800.847.7278, as well as the appropriate permitting agency office (FDEP and the EPA Region 4). Project activities shall not resume without verbal and/or written authorization from the Division of Historical Resource. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes.*

IX. SPECIAL CONDITIONS

A. Air Pollution Control Equipment and Operation

Permittee shall perform any necessary operations to minimize emissions so that emissions are at or below the emission limits specified in this permit.

B. Combustion Turbine Emission and Operational Limits and Work Practices

1. For maximized efficiency, the Permittee shall:

   a. For the CTs: use inlet cooling, perform periodic burner tuning, insulate the unit, and utilize instrumentation/controls to achieve high-efficiency/low-emissions performance; and

   b. For the HRSGs: utilize efficient heat exchanger design, insulate all gas path surfaces exposed to ambient air, perform periodic cleaning of heat exchanger surfaces, and minimize steam venting and timely repair of steam leaks.

2. At all times, Permittee shall not discharge, or cause the discharge of, emissions from any CT unit into the atmosphere in excess of the following:

Operating Scenario	GHG Emission Limit[1] (per CT on gross output basis)
Combined Cycle/Natural Gas (with or without Duct Burners)	877 pounds (lb) of carbon dioxide equivalent (CO_2e) per megawatt-hour (MWh) (12-month rolling average)
Combined Cycle/ULSD Fuel Oil	1,235 lb CO_2e/MWh (3-hour rolling average)
Simple Cycle/Natural Gas	1,320 lb CO_2e/MWh (3-hour rolling average)
Simple Cycle/ULSD Fuel Oil	1,868 lb CO_2e/MWh (3-hour rolling average)

[1]Compliance with the above limits shall be demonstrated in accordance with **Condition IX.D.10**.

3. The duct burners (of each HRSG) shall be limited to 4,000 hours per 12-month rolling period (as an average across the four HRSGs). Permittee shall monitor and record the number of hours the duct burners operate monthly and totalled every month for the previous 12 months.

4. Beginning the first full calendar year after demonstrating initial compliance in combined cycle mode, each CT shall be limited to operating 900 hours per calendar year (as an average across the four CTs) in simple cycle mode, except that:

    a. During the first full calendar year, a one-time allocation of 3,480 hours per CT (as an average across the four CTs) shall be available for use by Permittee for events when the STG is unavailable (including, but not limited to, planned outages, forced outages, and derates);

    b. If the one-time allocation is not fully used within the first full calendar year, the remainder may be carried over into the next calendar year; and

    c. If the annual limit of 900 average hours per CT is not fully used in the first full calendar year (or any calendar year thereafter), the remainder may be added to the current year-end balance of the one-time allocation and carried over into the next calendar year, but never to exceed 3,480 average hours per CT.

5. Combined the CTs shall be limited to operating 3,000 hours per 12-month rolling period when burning ULSD fuel oil, but no more than 48 hours per rolling 24-hour period. Of the 3,000 hours, no more than 1,500 hours may be in simple cycle mode. Permittee shall monitor and record the number of hours each CT operates on ULSD (as well as the corresponding operating mode) monthly and totalled every month for the previous 12 months.

C. Auxiliary Equipment Emission and Operational Limits and Work Practices

1. The emergency generator shall be properly operated and maintained in accordance to manufacturer's specifications.

2. The emergency generator shall be limited to operation of the engine for maintenance and testing purposes, except during an emergency. Annual hours of operation for an emergency stationary reciprocating internal combustion engine (as defined in 40 CFR part 63, subpart ZZZZ) for maintenance and testing shall not exceed 100 hours per rolling 12-month period. Compliance with this condition shall be demonstrated in conjunction with **Condition IX.E.1**.

3. Circuit breakers shall be used as electrical interrupters in the event of a power surge. Circuit breakers shall be totally-enclosed, equipped with pressure gauges with internal set points, and include an alarm system that signals low pressure. Records of inspection shall be kept in accordance with **Condition IX.F**.

4. Piping components used for the transmission of natural gas to the duct burners of the HRSGs shall be inspected on a daily basis for potential leaks. Any detected leaks must be repaired immediately. Records of inspection, detected leaks, and repairs (including action taken and duration) shall be kept in accordance with **Condition IX.F**.

D. Continuous Monitoring of CO_2 for CTs

1. Permittee shall install and certify monitoring systems for quantifying CO_2 emissions from each CT in accordance with the applicable requirements of 40 CFR part 75. Consistent with 40 CFR § 75.4(b), all applicable certification tests shall be completed within 180 calendar days after the date the unit commences commercial operation (as defined in 40 CFR § 72.2).

2. Following initial certification, the CO_2 continuous monitoring systems shall be quality assured in accordance with the applicable requirements of 40 CFR part 75.

3. The CO_2 continuous monitoring systems shall be capable of producing hourly determinations of CO_2 mass emissions in tons per hour (tons/hr).

4. In accordance with 40 CFR § 75.62, an initial monitoring plan shall be submitted identifying the methodology for which CO_2 mass emissions will be continuously monitored. The initial monitoring plan shall be submitted no later than 21 days prior to the initial certification tests.

5. Permittee shall provide notifications as specified in 40 CFR § 75.61 for any event related to the continuous measurement of CO_2.

6. Permittee shall measure and record, for each CT, the actual heat input (Btu) on an hourly basis in accordance with 40 CFR part 75.

7. Permittee shall measure and record, for each CT, the following on an hourly basis:

    a. Gross energy output rate (MW);

    b. CO_2 mass emission rate (tons CO_2/hr);

    c. Heat input rate (MMBtu/hr);

    d. Unit operating time, as described in 40 CFR § 75.57(b)(2);

    e. The type of fuel (natural gas or ULSD fuel oil) burned;

8. Permittee shall calculate and record, for each CT, the following on a monthly basis:

    a. Monthly average CO_2 emission rate (lb CO_2/MWh) calculated as the sum of each hourly CO_2 mass emission rate times the unit operating time for the hour divided by the sum of the recorded energy output rates times the unit operating time for the hour for all hours of operation in each month. If more than one fuel is utilized in a month, a separate average CO_2 emissions rate shall be calculated for each fuel.

    b. Monthly average heat rate (Btu/kWh) calculated as the sum of each hourly heat input rate times the unit operating time for the hour divided by the sum of the recorded energy output rates times the unit operating time for the hour for all hours of operation in each month times 1000. If more than one fuel is utilized in a month, a separate average heat input rate shall be calculated for each fuel.

9. Permittee shall calculate and record, for each CT, the following on an annual basis:

    a. The 12-month rolling average CO_2 emission rate (lb CO_2/MWh), for each fuel combusted in the previous 12 months, shall be calculated as the sum of each monthly average value times the monthly energy output (MWh) divided by the sum of the energy output (MWh) generated during the 12-month period.

    b. The 12-month rolling average heat rate (Btu/kWh), for each fuel combusted in the previous 12 months, shall be calculated as the sum of each monthly average heat rate value times the monthly energy output (kWh) divided by the sum of the energy output (kWh) generated during the 12-month period.

10. For demonstrating compliance with the limits specified in **Condition IX.B.2**, Permittee shall use the procedures set forth in 40 CFR parts 75 and 98 to determine resulting GHG emissions (as CO_2e) based on the combination of measured CO_2 emissions (from continuous monitoring system) and calculated CO_2e of other GHG pollutants [as specified in **Condition H: *GLOBAL WARMING POTENTIAL (GWP)***]. Permittee shall apportion the STG output (gross MW) based on the output (gross MW) of the individual CTs. Permittee shall keep adequate records of these GHG emission calculations according to requirements in **Condition IX.F.1.**

E. Monitoring and Compliance for Auxiliary Equipment

1. Permittee shall install and maintain an operational, non-resettable, elapsed-time meter for the emergency generator to be recorded monthly and totalled every month for the previous 12 months.

2. Permittee shall:

   a. Continuously monitor and record circuit breaker pressure;

   b. Visually inspect, in accordance with manufacturer's standards, circuit breakers and components on a daily basis;

   c. Provide periodic maintenance of the circuit breakers and components; and

   d. Repair any leaks and replace equipment as needed.

F. Recordkeeping and Reporting

1. Permittee shall maintain a file of all records, data, measurements, reports, and documents related to the operation of the facility, including, but not limited to, the following:

   a. All records or reports pertaining to adjustments and/or maintenance performed on any system or device at the facility;

   b. All records relating to performance tests and monitoring of auxiliary combustion equipment; and

   c. All other information that this permit requires the Permittee to obtain, maintain, or develop, recorded in a permanent form suitable for inspection.

2. Permittee shall maintain continuous monitoring system records that include the following: the occurrence and duration of any startup, shutdown, shakedown, or malfunction, performance testing, evaluations, calibrations, checks, adjustments, maintenance, duration of any periods during which a continuous monitoring system or monitoring device is inoperative, and corresponding emission measurements.

3. Permittee shall maintain records of all source tests and monitoring and compliance information required by this permit.

4. Permittee shall maintain records and submit a written report of all deviations from permit requirements to the EPA semi-annually, except when: more frequent reporting is specifically required by an applicable subpart; or the Administrator, on a case-by-case basis, determines that more frequent reporting is necessary to accurately assess the compliance status of the source. The report is due on September 30th and March 31st and shall include the following:

a. If applicable, time intervals, data and magnitude of the excess emissions, the nature and cause (if known), corrective actions taken and preventive measures adopted;

b. If applicable, the time and date of each period during which the continuous monitoring system was inoperative (monitor down-time), except for zero and span checks, and the nature of continuous monitoring system repairs or adjustments;

c. A statement in the report of a negative declaration; that is, a statement when no excess emissions occurred or when the continuous monitoring system has not been inoperative, repaired, or adjusted;

d. Any failure to conduct any required source testing, monitoring, or other compliance activities; and

e. Any violation of limitations on operation, including but not limited to restrictions on hours of operation.

5. Excess emissions shall be defined as any period in which the facility emissions exceed the maximum emission limits set forth in this permit.

6. A period of monitor down-time shall be any unit operating clock hour in which sufficient data are not obtained by the continuous monitoring system to validate the hour for CO_2.

7. Excess emissions indicated by the continuous monitoring system, source testing, or compliance monitoring shall be considered violations of the applicable emission limit for the purpose of this permit.

8. Permittee shall maintain a copy of the current operation and maintenance plan for the facility, and shall keep a copy of all prior versions of the plan for a minimum of five years. Permittee shall also keep records of the monitoring data for each of the facility performance measures and all maintenance activities; the Permittee shall maintain such records for a minimum of five years following the date they are created

9. Unless otherwise specified herein, all records required by this PSD permit shall be retained for not less than five (5) years following the date of such measurements, maintenance, reports, and/or records. These records shall be made available for review upon request by the Agency or authorized representative during the course of an inspection.

G. Shakedown Periods

The combustion turbine and auxiliary equipment emission limits and requirements in **Conditions IX.B** and **IX.C** shall not apply during combustion shakedown periods. Shakedown is defined as the period beginning with initial startup and ending no later than initial performance testing, during which the Permittee conducts operational and contractual testing and tuning to ensure the safe, efficient and reliable operation of the

plant. The shakedown period shall not exceed 180 days. The requirements of *Section III* of this permit shall apply at all times.

H. Global Warming Potential (GWP)

For the purposes of showing compliance with any GHG emission limit in this permit, the GWP factors listed in 40 CFR part 98, subpart A, Table A-1 as of the date of this permit shall be used. The current GWP factors are listed below:

GHG Pollutant	GWP Factor
CO_2	1
CH_4	21
N_2O	310
SF_6	23,900

X. AGENCY NOTIFICATIONS

All notifications, reporting or other communications relating to this permit shall be submitted to:

Chief
Air & EPCRA Enforcement Branch
Air, Pesticides and Toxics Management Division
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

In addition, electronic copies of the above-referenced notifications and communications shall be submitted to the following individuals at their corresponding email address:

Name	Email	Phone
Jason Dressler	dressler.jason@epa.gov	404-562-9208
Katy R. Lusky	forney.kathleen@epa.gov	404-562-9130
Heather Ceron	ceron.heather@epa.gov	404-562-9185