Florida Department of Environmental Protection
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2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

PERMITTEE

Tampa Electric Company (TEC)
13031 Wyandotte Road
Apollo Beach, Florida 33572

Authorized Representative:
Mr. Byron Burrows, P.E.
Manager - Air Programs

Permit No. 0570039-058-AC
Permit Expires: 6/1/14
Minor Air Construction Permit

Big Bend Station
Unit 3 Furnace and ESP Enhancements

PROJECT

This is the final air construction permit, which authorizes modifications and maintenance on the Unit 3 furnace and upgrades to the ESP. This permit also removes the annual consumption limit for evaporation of onsite-generated boiler cleaning wastes which was contained in recently issued permit No. 0570039-053-AC. Section 3, Condition 3c, inadvertently established a federally enforceable limitation on gallons per year of evaporated boiler cleaning wastes under the Methods of Operation for this potentially insignificant activity. The proposed work will be conducted at the existing Big Bend Station, which is a electrical power generation plant categorized under Standard Industrial Classification No. 4911. The existing facility is located in Hillsborough County at 13031 Wyandotte Road, Apollo Beach, Florida. The UTM coordinates are Zone 17; 361.9 km East and 3075.0 km North.

This final permit is organized into the following sections: Section 1 (General Information); Section 2 (Administrative Requirements); Section 3 (Emissions Unit Specific Conditions); and Section 4 (Appendices). Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of Section 4 of this permit.

STATEMENT OF BASIS

This air pollution construction permit is issued under the provisions of: Chapter 403 of the Florida Statutes (F.S.) and Chapters 62-4, 62-204, 62-210, 62-212, 62-296 and 62-297 of the Florida Administrative Code (F.A.C.). The permittee is authorized to conduct the proposed work in accordance with the conditions of this permit. This project is subject to the general preconstruction review requirements in Rule 62-212.300, F.A.C. and is not subject to the preconstruction review requirements for major stationary sources in Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Upon issuance of this final permit, any party to this order has the right to seek judicial review of it under Section 120.68 of the Florida Statutes by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel (Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000) and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within 30 days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida

(REVISED DRAFT)

Jeffery F. Koerner, Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

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CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Determination and Final Permit with Appendices) was sent by electronic mail, or a link to these documents made available electronically on a publicly accessible server, with received receipt requested before the close of business on the date indicated below to the following persons.

Mr. Byron Burrows, P.E., TEC: btburrows@tecoenergy.com
Mr. Rob Velasco, P.E., TEC: ravelasco@tecoenergy.com
Mr. Robert Wong, SWD: robert.wong@dep.state.fl.us
Ms. Diana Lee, HCEPC: lee@epchc.org
Ms. Cindy Zhang-Torres, DEP – SWD: cindy.zhang-torres@dep.state.fl.us
Ms. Anne Harvey, Earth Justice: aharvey@earthjustice.org
Ms. Kathleen Forney, U.S. EPA Region 4: forney.kathleen@epa.gov
Ms. Heather Ceron, US EPA Region 4: ceron.heather@epa.gov
Ms. Barbara Friday, DEP - OPC: barbara.friday@dep.state.fl.us
Ms. Lynn Scearce, DEP - OPC: lynn.scearce@dep.state.fl.us

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to Section 120.52(7), Florida Statutes, with the designated agency clerk, receipt of which is hereby acknowledged.

(REVISED DRAFT)

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FACILITY DESCRIPTION

The existing facility consists of the following emissions units.

ID No.	Emission Unit Description
Unit 1-4	Fossil Fuel Fired Steam Generators
SCCT4A & B	Simple Cycle Combustion Turbines
	Coal, Petroleum Coke, Limestone, Gypsum, Slag, Ash and fuel oil storage and handling

PROPOSED PROJECT

This project will modify the following emissions units.

ID No.	Emission Unit 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

FACILITY REGULATORY CLASSIFICATION

- 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 (CAA).
- 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(PSD), F.A.C.

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SECTION 2. ADMINISTRATIVE REQUIREMENTS

1. Permitting Authority: The permitting authority for this project is the Office of Permitting and Compliance in the Division of Air Resource Management of the Department of Environmental Protection (Department). The Office of Permitting and Compliance mailing address is 2600 Blair Stone Road (MS #5505), Tallahassee, Florida 32399-2400.

2. Compliance Authority: All documents related to compliance activities such as reports, tests, and notifications shall be submitted to the Hillsborough County Environmental Protection Commission (HCEPC), Air Management Division. The mailing address and phone number of the HCEPC are 3629 Queen Palm Drive, Tampa, Florida 33619-1309; (813) 627-2600 and (813) 627-2620 (fax).

3. Appendices: The following Appendices are attached as a part of this permit: Appendix A (Citation Formats and Glossary of Common Terms); Appendix B (General Conditions); and Appendix C (Common Conditions).

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise specified in this permit, the construction and operation of the subject emissions units shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of: Chapter 403, F.S.; and Chapters 62-4, 62-204, 62-210, 62-212, 62-213, 62-296 and 62-297, F.A.C. Issuance of this permit does not relieve the permittee from compliance with any applicable federal, state, or local permitting or regulations.

5. New or Additional Conditions: For good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Modifications: The permittee shall notify the Compliance Authority upon commencement of construction. No new emissions unit shall be constructed and no existing emissions unit shall be modified without obtaining an air construction permit from the Department. Such permit shall be obtained prior to beginning construction or modification. [Rules 62-210.300(1) & 62-212.300(1)(a), F.A.C.]

7. Construction and Expiration: The expiration date shown on the first page of this permit provides time to complete the physical construction activities authorized by this permit, complete any necessary compliance testing, and obtain an operation permit. Notwithstanding this expiration date, all specific emissions limitations and operating requirements established by this permit shall remain in effect until the facility or emissions unit is permanently shut down. For good cause, the permittee may request that that a permit be extended. Pursuant to Rule 62-4.080(3), F.A.C., such a request shall be submitted to the Permitting Authority in writing before the permit expires. [Rules 62-4.070(4), 62-4.080 & 62-210.300(1), F.A.C.]

8. Source Obligation:

   a. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   b. At such time that a particular source or modification becomes a major stationary source or major modification (as these terms were defined at the time the source obtained the enforceable limitation) solely by exceeding its projected actual emissions, then the requirements of subsections 62-212.400(4) through (12), F.A.C., shall apply to the source or modification as though construction had not yet commenced on the source or modification.

   [Rule 62-212.400(12), F.A.C.]

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9. Application for Title V Permit: This permit authorizes construction of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V air operation permit is required for regular operation of the permitted emissions unit. The permittee shall apply for a Title V air operation permit at least 90 days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the appropriate Permitting Authority with copies to the Compliance Authority. [Rules 62-4.030, 62-4.050, 62-4.220 and Chapter 62-213, F.A.C.]

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Subsection A: Unit 3 Boiler

This section of the permit addresses the following emissions unit.

ID No.	Emission Unit Description
Unit 3	*445 MW Coal fired Steam Generator with FGD, SCR and ESP including a continuous PM monitor*.

Unit No. 3 is a fossil fuel fired steam boiler electrical generating unit with a design capacity rating of 4,115 MMBtu/hour and a design electrical generating capacity of 445 MW. It is a wet bottom utility boiler manufactured by Riley Stoker Corporation. Sulfur dioxide (SO_2) emissions from Unit No. 3 are controlled by wet flue gas desulfurization (FGD) equipment installed in 1995 and manufactured by Research Cottrell. NO_X emissions from Unit No. 3 are controlled by low NO_X burners (LNB) and a Selective Catalytic Reduction (SCR) system. The SCR system on Unit No. 3 was installed in 2008. Particulate matter emissions generated during the operation of the unit are controlled by a dry electrostatic precipitator (ESP) manufactured by Research-Cottrell, Inc. The ESP control efficiency is 99.7%. Unit No. 3 began commercial operation in 1976. The Unit No. 3 stack (stack identification BB-003) parameters are: height, 490 feet: diameter, 24.0 feet; exit temperature, 127 degrees F; and, actual stack gas flow rate, 1,389,740 acfm.

EQUIPMENT

A.1. Revisions to Unit 3 Boiler: The permittee is authorized to modify the furnace nose arch and radiant and convective sections of the furnace, which will result in additional boiler tube surface area, and also to upgrade the Unit 3 ESP with rigid electrodes, wide plate spacing and electrical component upgrades. Specifically, in order to reduce slagging and fouling of boiler tubes, the applicant is authorized to replace the high temperature superheater (HTSH), reheater (HTR), the economizer, the radiant superheater (RSH), and to modify the nose arch by extending it. The ESP upgrades are authorized to implement the Consent Decree requirements and the EPA approved Best Operating Practices (BOP) for PM. [Application No. 0570039-058-AC and Big Bend Generating Station BOP for Particulate Matter revised October, 2005]

PERFORMANCE RESTRICTIONS

A.2. No new performance restrictions are imposed by this permit. All previously established performance restrictions remain in effect and are unchanged. [62-4.070, F.A.C.]

EMISSIONS STANDARDS

A.3. No new emission standards are imposed by this permit. All previously established emissions limiting conditions remain in effect and are unchanged. [62-4.070, F.A.C.]

TESTING REQUIREMENTS

A.4. No new testing requirements are imposed by this permit. All previously established testing requirements remain in effect and are unchanged. [62-4.070, F.A.C.]

MONITORING REQUIREMENTS

A.5. No additional monitoring requirements are imposed. All previously established monitoring requirements remain in effect and are unchanged. [62-4.070, F.A.C.]

RECORDS AND REPORTS

A.6. No additional records or reports are required. All previously established record keeping and reporting requirements remain in effect and are unchanged. [62-4.070, F.A.C.]

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Subsection B. Emissions Units 1 - 4

This section of the permit addresses the following emissions units.

E.U. ID No.	Emission Unit 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

B.1. Other Permits and Submission of Information. Permit No. 0570039-053-AC established federally enforceable limitations for Methods of Operation at the request of Tampa Electric Company (TEC). Subsequent to the publication of the Public Notice for that project, TEC commented that the number of gallons of boiler chemical cleaning wastes allowed to be evaporated annually were not enough due to the size of Boiler 4 and requested to increase the allowed amount to 300,000 gallons annually. Upon review of the origin of this condition, it was discovered that the limit of 150,000 gallons per year had been established in the original Title V permit in an effort to identify this as an insignificant activity. A review of the components of similar boiler cleaning chemicals used at other facilities indicates that more than 150,000 gallons per year could potentially be evaporated and still qualify as an Insignificant Activity in the Title V air operation permit, pursuant to the provisions of Rule 62-213.430(6), F.A.C. As such, the Department is agreeable to removing the limit of 150,000 gallons per year from the Methods of Operation condition to provide the ability for TEC to submit a request that this activity be incorporated into their Title V permit as an Insignificant or Unregulated Activity the next time the Title V permit is revised or renewed. With that request, TEC shall include manufacturer's safety data sheet (MSDS) information specific to the boiler cleaning chemicals used at the Big Bend Station. Based on the listed chemical components and number of gallons TEC wishes to evaporate on an annual basis, calculations showing the total potential emissions of each of the chemical components shall also be submitted to determine if the activity qualifies as an Insignificant Activity pursuant to Rule 62-213.430(6), F.A.C., or if it should be listed as an Unregulated Activity upon incorporation into the Title V permit the next time it is opened. Based on the above reasoning, Specific Conditions **3.** and **4.** of permit No. 0570039-053-AC are completely replaced by the following new Specific Conditions **B.2.** and **B.3.** [Rules 62-4.070 & 62-213.440(6), F.A.C.; and Applicant Request in Comment Letter Dated August 3, 2012]

B.2. Methods of Operation.

a. *Fuels - Normal Operation*. The only fuels allowed to be burned in Unit Nos. 1, 2 and 3 shall consist of coal, or a coal/petroleum coke blend, or coal blended with raw coal residual, or a coal/petroleum coke blend further blended with raw coal residual. In any case, the petroleum coke content of any fuel blend shall not exceed 20% by weight.

b. *Fuels - Startup, Shutdown, Flame Stabilization*. In addition to the fuels allowed to be burned during normal operation, each unit may also burn new No. 2 fuel oil during startup, shutdown, flame stabilization, and during the start of an additional solid fuel mill on an already operating unit.

c. *Other Operation.*

(1) Raw Coal Residual. The total amount of raw coal residual fired at Big Bend Station (all Unit Nos. 1 - 4 combined) shall be limited to 200 tons per day. The raw coal residual is a by-product of the gasification of coal at the Polk Power Station. The permittee shall only fire raw coal residual in the event of a gasification process malfunction at the Polk Power Station that results in raw coal residual that has some remaining fuel value. The permittee shall document all gasification process malfunctions and record the amount of raw coal residual, if any, fired at Big Bend Station. These records should be kept on site at Big Bend and made readily available to the Department and the Environmental Protection Commission of Hillsborough County upon request.

(2) Supplemental Material Injection. The following materials may be injected as needed for boiler conditioning and energy recovery purposes:

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(a) Magnesium Oxide. Supplemental injection of liquid magnesium oxide as needed to reduce upper furnace pluggage.
(b) Fluxing. Supplemental injection of iron ore to assist in lowering the ash fusion temperature.
(c) Fly Ash. Reinjection of on-site generated flyash for energy recovery.
(d) Limestone. Mixed with the fuel in-feed as needed to optimize coal blend.

d. *Daily Log*. The permittee shall maintain a daily log of the amounts and types of fuels used and copies of fuel analyses containing information on sulfur content, ash content and heating values.

e. *Control Devices*. All air pollution control devices shall be in operation according to manufacturer's recommendations whenever the boilers are in operation. Note: under current permitted ductwork configuration, none of the air pollution control devices can be physically bypassed. In the event of a control device malfunction resulting in excess emissions beyond the allowable periods established for these units, the associated boiler shall be removed from service until such time that the control device resumes normal operation.

[Rules 62-4.160(2), 62-210.200, 62-4.070(1) & (3), F.A.C.; and, Application No. 0570039-053-AC]

{Permitting note: "Flame stabilization" is defined as the use of new No. 2 fuel oil to stabilize a flame during times of unexpected poor coal quality or equipment failure such as coal piping pluggage. Flame stabilization due to poor coal quality occurs when coal is wet or does not provide the necessary heat to maintain a stable flame. In this situation, new No. 2 fuel oil is combusted to provide the additional required heat input to maintain a stable flame. Flame stabilization due to equipment failure occurs when coal piping is plugged, or equipment is otherwise damaged, that results in an inconsistent amount of coal reaching the burners. Under certain conditions, this may result in the burners intermittently seeing large amounts of fuel at one time, causing a potentially explosive flame "puff". In this situation, new No. 2 fuel oil must be used for stabilization to prevent flame "puffing" and ensure safe operation. Combustion of No. 2 fuel oil is also necessary during periods of load change to initialize and stabilize the flame until coal flow to the burners reaches steady state. As defined in 62-210.700(3), F.A.C., load change occurs when the operational capacity of a unit is in the 10 to 100 percent capacity range, other than startup or shutdown, which exceeds 10 percent of the unit's rated capacity and which occurs at a rate of 0.5 percent per minute or more.}

B.3. Methods of Operation.

a. *Fuels - Normal Operation*. The only fuels allowed to be burned in Unit No. 4 shall consist of coal, or a coal/petroleum coke blend, or coal blended with raw coal residual, or a coal/petroleum coke blend further blended with raw coal residual. In any case, the petroleum coke content of any fuel blend shall not exceed 20% by weight.

b. *Fuels - Startup, Shutdown, Flame Stabilization*. In addition to the fuels allowed to be burned during normal operation, each unit may also burn new No. 2 fuel oil during startup, shutdown, flame stabilization, and during the start of an additional solid fuel mill on an already operating unit.

c. *Other Operation.*

(1) Raw Coal Residual. The total amount of raw coal residual fired at Big Bend Station (all Unit Nos. 1 - 4 combined) shall be limited to 200 tons per day. The raw coal residual is a by-product of the gasification of coal at the Polk Power Station. The permittee shall only fire raw coal residual in the event of a gasification process malfunction at the Polk Power Station that results in raw coal residual that has some remaining fuel value. The permittee shall document all gasification process malfunctions and record the amount of raw coal residual, if any, fired at Big Bend Station. These records should be kept on site at Big Bend and made readily available to the Department and the Environmental Protection Commission of Hillsborough County upon request.

(2) Supplemental Material Injection. The following materials may be injected as needed for boiler conditioning and energy recovery purposes:

(a) Magnesium Oxide. Supplemental injection of liquid magnesium oxide as needed to reduce upper furnace pluggage.
(b) Fluxing. Supplemental injection of iron ore to assist in lowering the ash fusion temperature.
(c) Fly Ash. Reinjection of on-site generated flyash for energy recovery.

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(d) Limestone. Mixed with the fuel in-feed as needed to optimize coal blend.

d. *Daily Log*. The permittee shall maintain a daily log of the amounts and types of fuels used and copies of fuel analyses containing information on sulfur content, ash content and heating values.

e. *Control Devices*. All air pollution control devices shall be in operation according to manufacturer's recommendations whenever the boilers are in operation. Note: under current permitted ductwork configuration, none of the air pollution control devices can be physically bypassed. In the event of a control device malfunction resulting in excess emissions beyond the allowable periods established for these units, Unit 4 shall be removed from service until such time that the control device resumes normal operation.

[Rules 62-4.160(2), 62-210.200, 62-4.070(1) & (3), F.A.C.; Power Plant Siting Certification PA 79-12; and, Application No. 0570039-053-AC.]

{Permitting note: "Flame stabilization" is defined as the use of No. 2 fuel oil to stabilize a flame during times of unexpected poor coal quality or equipment failure such as coal piping pluggage. Flame stabilization due to poor coal quality occurs when coal is wet or does not provide the necessary heat to maintain a stable flame. In this situation, No. 2 fuel oil is combusted to provide the additional required heat input to maintain a stable flame. Flame stabilization due to equipment failure occurs when coal piping is plugged, or equipment is otherwise damaged, that results in an inconsistent amount of coal reaching the burners. Under certain conditions, this may result in the burners intermittently seeing large amounts of fuel at one time, causing a potentially explosive flame "puff". In this situation, No. 2 fuel oil must be used for stabilization to prevent flame "puffing" and ensure safe operation. Combustion of No. 2 fuel oil is also necessary during periods of load change to initialize and stabilize the flame until coal flow to the burners reaches steady state. As defined in 62-210.700(3), F.A.C., load change occurs when the operational capacity of a unit is in the 10 to 100 percent capacity range, other than startup or shutdown, which exceeds 10 percent of the unit's rated capacity and which occurs at a rate of 0.5 percent per minute or more.}

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