FLORIDA DEPARTMENT OF
Environmental Protection

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2600 Blair Stone Road
Tallahassee, Florida 32399-2400

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Governor

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Lt. Governor

Noah Valenstein
Secretary

PERMITTEE

Tampa Electric Company
13031 Wyandotte Road
Gibsonton, Florida 33534-5833

Authorized Representative:
Dave Pickles, Director of Big Bend Station

Air Permit No. 0570039-120-AC
Permit Expires: December 31, 2019
Minor Air Construction Permit
Big Bend Station
Natural Gas Firing for Units 1 and 2

PROJECT

This is the final air construction permit, which revises multiple air construction permits for the following items: fuel slate restrictions and monitoring point locations for Big Bend Units 1 and 2. The Big Bend Station is an existing electric generation facility, categorized under Standard Industrial Classification No. 4911. The existing facility is in Hillsborough County at 13031 Wyandotte Road in Gibsonton, Florida. The UTM coordinates are Zone 17, 363.15 kilometers (km) East and 3,074.91 km North.

This final permit is organized into the following sections: Section 1 (General Information) and Section 2 (Permit Revisions). As noted in the Final Determination provided with this final permit, only a minor change was made to the draft 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.). 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. A copy of this permit modification shall be filed with the referenced permit and shall become part of the permit.

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.

David Lyle Read, P.E.
2018.12.14 13:01:14 -05'00'

For:
Syed Arif, P.E., Program Administrator
Office of Permitting and Compliance
Division of Air Resource Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Final Air Permit package (including the Final Permit Revision, Technical Evaluation and Preliminary Determination, Final Determination, and 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. Dave Pickles, Tampa Electric Company: dpickles@tecoenergy.com
Mr. Rob Velasco, P.E., Tampa Electric Company: ravelasco@tecoenergy.com
Mr. Byron Burrows, P.E., Tampa Electric Company: btburrows@tecoenergy.com
Southwest District Compliance: SWD_Air@dep.state.fl.us
Southwest District Air Permitting: SWD_Air_Permitting@dep.state.fl.us
Ms. Diana Lee, Hillsborough County Environmental Protection Commission: lee@epchc.org
DEP Siting Office: SCO@dep.state.fl.us
Ms. Alisa Coe, Earth Justice: acoe@earthjustice.org
EPA Region 4: R4TitleVFL@epa.gov
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.

Lynn Scearce Digitally signed by Lynn Scearce
Date: 2018.12.14 13:37:33 -05'00'

FACILITY DESCRIPTION

The Big Bend Station is a nominal 1,892 megawatt (MW) electric generation facility. This facility consists of four fossil fuel fired electric generating units (Units 1 – 4); four steam turbines; a simple cycle combustion turbine (SCCT)-generator peaking unit set; solid fuels, fly ash, limestone, gypsum, slag, and bottom ash storage and handling facilities; and, fuel oil storage tanks. Units 1 through 4 each has a nominal maximum heat input of 4,037, 3,996, 4,115 and 4,330 million British thermal units per hour (MMBtu/hour), respectively. Units 1 and 2 are fired with natural gas only. Units 3 and 4 are fired with natural gas only or co-fired natural gas and solid fuels consisting 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. The combustion turbine is fired with pipeline-quality natural gas and ultra-low sulfur diesel (ULSD) fuel.

The existing facility consists of the following emissions units (EU).

EU No.	Emission Unit Description
Regulated Emissions Units	
Fossil Fuel Fired Steam Generator Units	
001	Fossil Fuel Fired Steam Generator No. 1
002	Fossil Fuel Fired Steam Generator No. 2
003	Fossil Fuel Fired Steam Generator No. 3
004	Fossil Fuel Fired Steam Generator No. 4
Simple Cycle Combustion Turbines	
041	SCCT 4A with a common electric generator that it shares with SCCT 4B
042	SCCT 4B with a common electric generator that it shares with SCCT 4A
Solid Fuel Yard	
010	Solid Fuel Yard Fugitive Emissions
029	Fuel Blending Bin Cyclone Collectors
030	Fuel Mill Cyclone Collectors
046	Transloading and Off-site Transfer of Solid Fuels and Slag
047	Railcar Unloading and Conveying System
048	Supplemental Material Handling J3 Conveyor System
Coal Bunkers with Roto-Clones	
015	Unit No. 1 Coal Bunker with Roto-Clone
016	Unit No. 2 Coal Bunker with Roto-Clone
017	Unit No. 3 Coal Bunker with Roto-Clone
039	Unit No. 4 Coal Bunker with Roto-Clone
Limestone Handling and Storage	
012	Limestone Silo A and Baghouses (2)
013	Limestone Silo B and Baghouses (2)
023	Limestone Conveyor LB/LC and Baghouse
050	Limestone Conveyor LD/LE and Baghouse
Limestone Handling for FGD System for Units 1 & 2	
020	Limestone Conveyors LE/LF/LG/Silo C Belt Feeder Baghouse
021	Silo C and Baghouse

EU No.	Emission Unit Description
Wastewater Treatment Plant	
022	Lime Silo for Wastewater Treatment Plant and Baghouse
Fly Ash Handling and Storage Silo Nos. 1 – 3	
008	Fly Ash Silo No. 1 and Baghouse
009	Fly Ash Silo No. 2 and Baghouse
014	Fly Ash Silo No. 3 and Baghouse
Coal Residual Storage and Transfer from the Polk Power Station	
037	Coal Residual and Supplemental Additives Storage Facility
038	Coal Residual and Supplemental Additives Transfer System
Surface Coating Operations	
032	Surface Coating of Miscellaneous Metal Parts
Compression Ignition (CI) Internal Combustion Engines (ICE)	
043	SCCT Black-Start Emergency Diesel Engine (1,495 HP)
044	Units 3 & 4 Emergency Diesel Generator (1,046 HP)
053	Units 1 & 2 Emergency Diesel Generator (197 HP)
Unregulated Emissions Units and/or Activities	
036	Slag and Bottom Ash Sources BH-001 through BH-004
	Gypsum Handling and Storage Sources GH-001 through GH-017
	No. 2 Fuel Oil Storage Tanks > 550 gallons
	Vehicle Refueling Operations
045	FGD Area Emergency Diesel Generator (550 HP) and Fire Pump Diesel Engine (596 HP)

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.
- The facility operates units subject to the New Source Performance Standards (NSPS) of Title 40 Part 60 of the Code of Federal Regulations (40 CFR 60).
- The facility operates units subject to the National Emissions Standards of Hazardous Air Pollutants (NESHAP) of 40 CFR 63.

PROPOSED PROJECT

This project will authorize natural gas as the only fuel to be fired in Big Bend Units 1 and 2 (EU 001 and 002) so that the units are no longer subject to 40 CFR 63 Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units, called the Mercury and Air Toxic Standards (MATS). Emissions Units 008, 015, and 016 will be removed because of this project because they are not necessary for natural gas firing operations. Additionally, this project will authorize the relocation of the existing nitrogen oxides (NO_X), carbon dioxide (CO_2), and ammonia (NH_3) monitoring points from the Units 1 and 2 common stack to the common inlet duct of the flue gas desulfurization (FGD) system for Units 1 and 2.

This project will modify the following emissions units.

EU 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
008	Fly Ash Silo No. 1 and Baghouse
015	Unit No. 1 Coal Bunker with Roto-Clone
016	Unit No. 2 Coal Bunker with Roto-Clone

EU 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

PREVIOUSLY ISSUED PERMITS

1. Other Permits: The conditions of this permit supplement all previously issued air construction and air operation permits. Unless otherwise specified, these conditions are in addition to all other applicable permit conditions and regulations. [Rule 62-4.070, F.A.C.]

MONITORING AND COMPLIANCE REQUIREMENTS

2. Fuel Flow Monitors: The permittee shall install, certify, operate, and maintain fuel flow monitors for Big Bend Units 1 and 2 (EU 001 and EU 002) to demonstrate compliance with the 4-unit SO_2 emissions cap (see **Specific Condition 4**, **2** of Section 3). [Rule 62-4.070(3), F.A.C.; and Application No. 0570039-120-AC]

3. NO_X and CO_2 Monitoring Points: The permittee is authorized to monitor NO_X and CO_2 emissions and conduct required ammonia slip stack tests at the common inlet duct to the FGD system for Units 1 and 2. [Rule 62-4.070(3), F.A.C.; and Application No. 0570039-120-AC]

RECORDKEEPING AND REPORTING REQUIREMENTS

4. Fuel Monitoring and SO_2 Emissions: The permittee shall keep a daily log of the quantity of natural gas combusted in Units 1 and 2 and shall record the sulfur content of the natural gas as provided by the fuel supplier. The SO_2 mass emissions calculated by following procedures in Appendix D of 40 CFR 75 shall be averaged on a 30-boiler operating day basis to demonstrate the contribution of Units 1 and 2 to the 4-unit SO_2 cap. [Rule 62-4.070(3), F.A.C.; and Application No. 0570039-120-AC]

The following permit conditions are revised as indicated. ~~Strikethrough~~ is used to denote the deletion of text. Double-underlines are used to denote the addition of text. All changes are emphasized with yellow highlight. Except for the modified conditions noted below, all other previously established permits and conditions remain in effect.

1. Permit Being Modified: Permit No. 0570039-024-AC

Affected EU: EU 001 & EU 002

Specific Condition A.17: This condition is revised as follows:

A.17. As determined by stack test, ~~A~~ammonia slip~~, measured at the stack downstream of all emissions control systems~~, shall not exceed 10 parts per million by volume (ppmv). The stack test shall be conducted on the stack or at the common inlet duct to the FGD system. Annual testing of ammonia slip shall be conducted, and corrective measures taken if measured values exceed 5 ppmv. [~~Applicant request; and~~ Rule 62-4.070(3), F.A.C.; and Application No. 0570039-120-AC]

2. Permit Being Modified: Permit No. 0570039-060-AC

Affected EU: EU 001 – EU 004

Section III, Subsection B, Specific Condition 1: This condition is revised as follows:

1. PM Emissions. As determined by PM CEMS, ~~Particulate matter~~ PM emissions from ~~each unit~~ Unit 3 shall not exceed 0.03 pounds per million Btu heat input on a heat input-weighted 30-day rolling average when combusting solid fuels. [~~Applicant Request; and,~~ Permit No. 0570039-060-AC and Application No. 0570039-120-AC]

Section III, Subsection B, Specific Condition 3: This condition is revised as follows:

3. PM Emissions. As determined by PM CEMS, ~~Particulate matter~~ PM emissions from Unit 4 shall not exceed 0.01 pounds per million Btu heat input on a heat input-weighted 30-day rolling average when ~~burning~~ combusting solid ~~or liquid~~ fuels. This standard applies at all times except during periods of startup, shutdown, or malfunction. [~~Applicant Request; and,~~ Permit No. 0570039-060-AC and Application No. 0570039-120-AC]

3. Permit Being Modified: Permit No. 0570039-082-AC

Affected EU: EU 001 and EU 002

Section 3, Specific Condition 2: This condition is revised as follows:

2. PM CEMS. Tampa Electric Company is authorized to install particulate matter (PM) continuous monitoring systems (CEMS) on Units ~~1 through~~ 3 and 4 at the facility. This will eliminate the need to operate the continuous opacity monitors and will eliminate the compliance assurance monitoring (CAM) plan. The equipment is manufactured by SICK MAIHAK (Germany), with model number FWE200. [~~0970039-082-AC, Application.~~ Permit No. 0570039-082-AC and Application No. 0570039-120-AC]

4. Permit Being Modified: Permit No. 0570039-096-AC

Affected EU: EU 001 and EU 002

Section 3, Subsection B, Specific Conditions 2 and 3: These conditions are revised as follows:

2. SO_2 Emissions Cap. The combined emissions of SO_2 from all four-fossil fuel fired steam generating units (EU 001 – EU 004, combined) shall not exceed ~~3,162 lb/hour~~ 2,156 lb/hour based on a 30-boiler operating day rolling average. Units 1 and 2 shall demonstrate compliance with the cap by monitoring the natural gas fuel flow and following procedures in Appendix D of 40 CFR 75 to determine SO_2 mass emissions. For Units 3 and 4, ~~C~~compliance with this SO_2 emissions cap shall be demonstrated by data collected from the existing SO_2 CEMS. The new emissions cap applies at all times when these units are

operating including periods of startup and shutdown. [Rules 62-4.070(1) and (3), and 62-4.080(1), F.A.C.; ~~and~~ Hillsborough County SO_2 ~~Attainment~~ Maintenance SIP; and Application No. 0570039-120-AC]

3. SO_2 CEMS. The permittee shall use the existing SO_2 CEMS data to demonstrate continuous compliance for Units 3 and 4 with the SO_2 emissions cap specified in Condition **2**. The existing SO_2 CEMS shall continue to meet and follow the quality assurance and quality control requirements outline in the facility's Title V air operation permit. [Rules 62-4.070(1) and (3), and 62-4.080(1), F.A.C.; ~~and~~ SO_2 Attainment SIP; and Application No. 0570039-120-AC]

5. Permit Being Modified: Permit No. 0570039-109-AC

Affected EU: EU 001 – EU 003

Section 3, Subsection A, Specific Conditions 2, and 7: These conditions are modified as follows:

2. FGD and ESP Operating Exemption. Units 1 and 2 are not required to operate the FGD and ESP control devices because natural gas is the only fuel combusted by those units. For Unit 3, ~~T~~the FGD and ESP control devices are not required to operate ~~only~~ while exclusively firing pipeline-quality natural gas. [Application No. 0570039-109-AC]

7. NO_X Emissions.
   a. As determined by CEMS, NO_X emissions from each ~~electrical generating~~ unit shall not exceed 0.12 ~~pounds per million British thermal unit (~~lb/MMBtu~~)~~ of heat input based on a heat input weighted 30-day rolling average. *{Permitting Note: For informational purposes, the NO_X limit equates to: 484.4 lb/hour and 2,121.9 tons/year for Unit 1; 479.5 lb/hour and 2,100.3 tons/year for Unit 2; and 494 lb/hour and 2,163.7 tons/year for Unit 3.}*
   b. As determined by CEMS, NO_X emissions from Unit 3 shall not exceed 0.70 lb/MMBtu based on a heat input weighted 30-day rolling average. *{Permitting Note: Compliance with this emission limit will be demonstrated by complying with the 0.12 lb/MMBtu NO_X limit.}*

   [Rules 62-296.405(1)(d)4., and 62-213.440, F.A.C.; Permit No. 0570039-~~060-AC; and Application No. 0570039-~~109-AC; and Application No. 0570039-120-AC]

Section 3, Subsection A, Specific Condition 8: This condition is replaced as follows:

8. SO_2 Emissions.
   a. As determined by CEMS, SO_2 emissions from Unit 3 shall not exceed ~~0.82~~ 0.25 lb/MMBtu heat input ~~and 10% of the potential combustion concentration (90% reduction)~~ based on a 30-day rolling average when combusting solid fuels. [Application No. 0570039-~~109-AC~~ 120-AC]

6. Permits Being Modified: Permit Nos. 0570039-066-AC & 109-AC

Affected EU: EU 001 – EU 004

Section 3, Subsection A, Specific Condition 3 of Permit No. 0570039-066-AC and 109-AC, respectively: These conditions are replaced with the following condition:

3. Methods of Operation.
   a. *Units 1 and 2.* Big Bend Units 1 and 2 shall fire only natural gas from a federally regulated pipeline. No solid fuels shall be burned in these units.
   b. *Units 3 and 4.*
      (1) *Fuels – Normal Operation*. The fuels that are allowed to be burned in these units are:
         (a) Natural gas from a federally regulated pipeline,
         (b) Solid fuels consist of coal, coal blends or a coal/petroleum coke blend containing a maximum of 20% petroleum coke by weight, or a 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.

(c) ~~Natural gas co-fired with solid fuels.~~ Solid fuels co-fired with natural gas from a federally regulated pipeline.

(d) Petroleum coke content of any fuel blend shall not exceed 20% by weight.

(2) *Fuels – Startup, Shutdown, Flame Stabilization*.

(a) Natural gas~~,~~

~~(b) Natural gas may also be fired during the start of an additional solid fuel mill on an already operating unit.~~

(3) *Other Operation*.

(a) Raw Coal Residual. The total amount of raw coal residual fired at Big Bend Station (Units ~~1~~ –3 & 4, combined) shall be limited to 200 tons/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 EPCHC upon request.

(b) Supplemental Material Injection. For Units 3 and 4, ~~T~~the following materials may be injected as needed for boiler conditioning and energy recovery purposes:]

i. Magnesium Oxide, Limestone and Fluxing Agents may be injected as needed for boiler conditioning.

ii. Fly ash. Reinjection of on-site generated fly ash for energy recovery.

c. *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.

d. *Control Device Operation*. 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, the air pollution control devices cannot 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.

{Permitting Note: "Flame stabilization" is defined as the use of natural gas 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, natural gas 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, natural gas must be used for stabilization to prevent flame "puffing" and ensure safe operation. Combustion of natural gas 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% capacity range, other than startup or shutdown, which exceeds 10% of the unit's rated capacity and which occurs at a rate of 0.5% per minute or more.}

[Rule 62-213.410, F.A.C.; and, ~~Permit Nos. 0570039-066-AC & 0570039-109-AC~~ Application No. 0570039-120-AC]