Title V Air Operation Permit Renewal
Permit No. 0570039-072-AV

## APPLICANT

The applicant for this project is Tampa Electric Company. The applicant's responsible official and mailing address are: Ronald D. Bishop, Director, Tampa Electric Company, Big Bend Station, 702 North Franklin Street, Tampa, Florida 33602.

## FACILITY DESCRIPTION

The applicant operates the existing Big Bend Station, which is located in Hillsborough County at 13031 Wyandotte Road, Apollo Beach, Florida.

This existing facility consists of: four fossil fuel fired steam generators Units 1 through 4; four steam turbines; two simple-cycle combustion turbines (SCCT), Units 4A and 4B; solid fuels; fly ash; limestone; gypsum; slag; bottom ash storage and handling facilities; surface coating operations; and fuel oil storage tanks.

The facility consists of the following regulated emission units (EU).

| EU No. | Brief Description |
|---|---|
| *Fossil Fuel Fired Steam Generator Units* | |
| 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 |
| *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 |
| *Wastewater Treatment Plant* | |
| 022 | Lime Silo for Wastewater Treatment Plant and Baghouse |
| *Flyash 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 Storage Facility |
| 038 | Coal Residual 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 | Emergency Diesel Generator (1,194 HP) |
| 052 | Emergency Diesel Generator (349 HP) |
| 053 | Emergency Diesel Generator (197 HP) |

Also included in the permit are miscellaneous insignificant emission 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. 0570039-071-AC. Further details are included in the Technical Evaluation and Preliminary Determination accompanying the draft air construction permit.

In addition, the requirements of 40 CFR 63, Subpart UUUUU - National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units (MATS) were also added to the Title V permit for Fossil Fuel Fired Steam Generator Unit Nos. 1 to 4. See the specific permit conditions added to the permit as described below.

## PROCESSING SCHEDULE AND RELATED DOCUMENTS

- Application for Air Construction Permit/Title V Air Operation Permit Renewal received on 5/15/2014.
- Request for Additional Information (RAI) issued on 5/30/2014.
- Request for Extension of RAI on 8/26/2014
- Request for Additional Information response received on 9/12/2014, application complete.

## PRIMARY REGULATORY REQUIREMENTS

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

HAP: The facility is 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. The following emission units are subject to acid rain provisions.

| Regulation | EU Nos. |
|---|---|
| 40 CFR 96, Clean Air Interstate Rule | |

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. The following emission units are subject to NSPS requirements.

| Regulation | EU Nos. |
|---|---|
| 40 CFR 60, Subpart A, NSPS General Provisions | 004, 010, 020, 021, 029, 030, 041 – 044, 046 – 048, 052, 053 |
| 40 CFR 60, Subpart Da, NSPS Standards of Performance for Electric Utility Steam Generating Units | 004 |
| 40 CFR 60, Subpart KKKK, NSPS Standards of Performance for Stationary Combustion Turbines | 041, 042 |
| 40 CFR 60, Subpart IIII, NSPS Standards of Performance for Stationary CI ICE | 043, 044, 052, 053 |

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

| Regulation | EU Nos. |
|---|---|
| 40 CFR 63, Subpart A, NESHAP General Provisions | 020, 021 |
| 40 CFR 63, Subpart OOO, NESHAP Nonmetallic Mineral Processing Plants | 020, 021 |
| 40 CFR 63, Subpart UUUUU, NESHAP Coal- and Oil-Fired Electric Utility Steam Generating Units with an effective date of April 16, 2015 | 001 - 004 |

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

| Regulation | EU Nos. |
|---|---|
| 40 CFR 96, Clean Air Interstate Rule | |

Siting: Unit 4 was originally certified pursuant to the power plant siting provisions of Chapter 62-17, F.A.C. (Power Plant Siting Certification PA 79-12).

CAM: Compliance Assurance Monitoring (CAM) applies to emissions units at this facility. CAM applies to Boiler Unit Nos. 1 through 4 (EU 001 – EU 004) for the controlled emissions of particulate matter (PM). Each unit is equipped with an electrostatic precipitator to control PM emissions to meet the emissions limits. The other emissions units at the facility are not subject to CAM for one or more of the following reasons: they do not trigger the pre-air pollution control device major source emission thresholds; they demonstrate continuous compliance with a continuous emission monitoring system (CEMS); or, they are not equipped with air pollution control devices.

GHG: The facility is identified as a major source of greenhouse gas (GHG) pollutants.

## PROJECT REVIEW

The renewal permit includes the following changes.

1. Changes throughout the Title V air operation permit include:
   a. The renewal permit is based on the Department's updated formats for a Title V air operation permit.
   b. Based on the applicant's request, the emission unit's subsections were reorganized to reflect the plants actual process.

### Section I. Facility Information

Subsection A. Facility Description

2. Removed ship surface coating operations from the description since these activities are no longer conducted.

### Section III. Emission Units and Specific Conditions

Subsection A. Fossil Fuel Fired Steam Generator Units 1 – 3 (EU 001 – EU 003)

3. Added the applicable state implementation plan (SIP) nitrogen oxide ($NO_X$) limit of 0.7 pounds per million British thermal units (lb/MMBtu) in **Condition A.9**.

4. Added MATS $SO_2$ emission limits of 0.20 lb/MMBtu or 1.5 pound per megawatt hour (lb/MWh) on a 30-day rolling average; or, hydrogen chloride (HCl) emission limits of 0.002 lb/MMBtu or 0.02 lb/MWh in **Condition A.10.a** with an effective date of April 16, 2015. Also added the following language and permitting note to this condition:
   a. If the permittee complies with the $SO_2$ emissions limit of 0.20 lb/MMBtu or 1.5 lb/MWh limit, compliance with this emission limit will demonstrate compliance with the following emission standards:
      (1) Each unit shall not exceed 0.25 lb/MMBtu based on a 30-day rolling average.
      (2) Each unit shall not exceed 6.5 lb/MMBtu based on a 2-hour average.
      (3) Units 1 – 3, combined, shall not exceed 31.5 tons/hour based on a 3-hour average.
      (4) Units 1 – 3, combined, shall not exceed 25 tons/hour based on a 24-hour block average.
      (5) Units 1 and 2, combined, shall not exceed 16.5 tons/hour based on a 24-hour block average.
      (6) Unit 3 shall not exceed 8.5 tons/hour based on a 24-hour block average.
      *{Permitting Note: For informational purposes, the $SO_2$ limit of 0.20 lb/MMBtu equates to: 807.4 lb/hour for Unit 1; 799.2 lb/hour for Unit 2; and 823 lb/hour for Unit 3. Based on EPA Guidance, these emission standards were converted to an equivalent 30-day rolling average to determine the most stringent emission limits based on different averaging periods.}*

5. Added the applicable SIP PM limit of 0.1 lb/MMBtu in **Condition A.11.a.(2)**.

6. Added MATS PM emission limits of 0.03 lb/MMBtu or 0.3 lb/MWh in **Condition A.11.c** with an effective date of April 16, 2015.

7. Added MATS $SO_2$ emission limits of 0.20 lb/MMBtu or 1.5 pound per megawatt hour (lb/MWh) on a 30-day rolling average; or, hydrogen chloride (HCl) emission limits of 0.002 lb/MMBtu or 0.02 lb/MWh in **Condition A.14** with an effective date of April 16, 2015.

8. Added MATS Mercury (Hg) emissions limits of 1.2 lb/Trillion Btu (TBtu) or 0.013 lb/Gigawatt-hour (GWh) in **Condition A.15** with an effective date of April 16, 2015.

9. Added permit **Condition A.43** stipulating that these emission units are subject to all applicable provisions of NESHAP Subpart UUUUU of 40 CFR 63 for Coal and Oil-Fired Electric Utility Steam Generating Units. The emissions units shall comply with Appendix 40 CFR 63 Subpart UUUUU attached to this permit.

10. Air Construction Permit No. 0570039-071-AC removed ***previous (old)*** **Conditions A.14** (PM Emissions – Unit Nos. 1 – 4) and **A.19** ($SO_2$ Emissions – Unit Nos. 1 – 4) since Polk residual is no longer fired at Big

Bend except during an emergency. In addition, the current emissions limits for PM and sulfur dioxide ($SO_2$) emissions are well below these emission caps for all Units 1 - 4.

11. Air Construction Permit No. 0570039-071-AC revised ***previous (old)*** **Conditions A.20** ($SO_2$ Emissions – Units Nos. 1 – 2) and **A.21** ($SO_2$ Emissions – Unit No. 3) by removing the alternative for the scrubber to remove at least 95% of the $SO_2$ in the flue gas that entered the scrubber and established the $SO_2$ emission standard of 0.25 lb/MMBtu as the most stringent emission limit. This revision reduces multiple applicable $SO_2$ emission limits to a more stringent single streamlined emission limit which is reflected in ***new*** **Condition A.10**.
12. Removed ***previous (old)*** **Condition A.44** (DEP Method 9) since the Department adopted by reference EPA Method 9 of 40 CFR 60, Appendix A.
13. Removed ***previous (old)*** **Condition A.46** (Sulfur Dioxide) testing requirements since these units use a $SO_2$ CEMS.

<u>Subsection B. Fossil Fuel Fired Steam Generator Unit No. 4 (EU 004)</u>

14. Removed ***previous (old)*** **Condition B.7** (Future Actual Emissions Reporting) since TEC has met the requirements to report the combined emissions from Units 3 and 4 on annual basis for a period of 5 years demonstrating the duct improvements did not increase $SO_2$ emissions. The project was completed in December 2007.
15. Added the applicable 40 CFR 60 Subpart Da $NO_X$ limit of 0.6 lb/MMBtu in **Condition B.14.b**.
16. Added MATS $SO_2$ emission limits of 0.20 lb/MMBtu or 1.5 pound per megawatt hour (lb/MWh) on a 30-day rolling average; or, hydrogen chloride (HCl) emission limits of 0.002 lb/MMBtu or 0.02 lb/MWh in **Condition B.15.c** with an effective date of April 16, 2015.
17. Added the applicable 40 CFR 60 Subpart Da PM limit of 0.03 lb/MMBtu in **Condition B.16.b**.
18. Added MATS PM emission limits of 0.03 lb/MMBtu or 0.3 lb/MWh in **Condition B.16.d** with an effective date of April 16, 2015.
19. Added HCl emission limits of 0.002 lb/MMBtu or 0.02 lb/MWh; or, $SO_2$ emission limits of 0.20 lb/MMBtu or 1.5 lb/MWh in **Condition B.19** with an effective date of April 16, 2015.
20. Added MATS Mercury (Hg) emissions limits of 1.2 lb/Trillion Btu (TBtu) or 0.013 lb/Gigawatt-hour (GWh) in **Condition B.20** with an effective date of April 16, 2015.
21. Added permit **Condition B.44** stipulating that these emission units are subject to all applicable provisions of NESHAP Subpart UUUUU of 40 CFR 63 for Coal and Oil-Fired Electric Utility Steam Generating Units. The emissions units shall comply with Appendix 40 CFR 63 Subpart UUUUU attached to this permit.
22. Air Construction Permit No. 0570039-071-AC removed ***previous (old)*** **Conditions B.17** (PM Emissions – Unit Nos. 1 – 4) and **B.20** ($SO_2$ Emissions – Unit Nos. 1 – 4) since Polk residual is no longer fired at Big Bend except during an emergency. In addition, Units 1 – 4 have established emission limits for PM and $SO_2$ that are well below these emission caps.
23. Removed ***previous (old)*** **Condition B.19** ($SO_2$ Emissions) since this condition is duplicated.
24. Removed ***previous (old)*** **Condition B.32** (Use of CO CEMS for Continuous Compliance) since the CO CEMS is an applicable method to demonstrate continuous compliance with CO emissions; therefore, is exempt from CAM requirements.
25. Removed ***previous (old)*** **Conditions B.37** ($NO_X$ Compliance) and **B.38** (CO Compliance by CEMS) since these are duplicate conditions.

26. Revised ***previous (old)*** **Condition B.44** new **Condition 30** (Annual Compliance Test) by removing the annual testing requirement for opacity since Unit 4 is equipped with a continuous opacity monitoring system (COMS). In addition, annual compliance testing for ammonia slip was added and CO CEMS compliance requirements were included in this condition.

27. Removed ***previous (old)*** **Condition B.45** (Compliance Test Prior to Renewal) since the annual compliance test now includes the requirement for annual compliance testing to satisfy the compliance test prior to renewal.

28. Removed ***previous (old)*** **Condition B.47** (CO Stack Test) since the initial testing requirements have been met.

29. Removed ***previous (old)*** **Condition B.48** (Visible Emissions) since Unit 4 is equipped with a COMS.

Subsection C. Simple Cycle Combustion Turbine 4A and 4B (EU 041 and EU 042)

30. These emission units were previously located under Subsection O.

31. Revised the following conditions by removing the demonstration of compliance requirements since these requirements are in duplicate form:

    a. ***Previous (old)*** **Condition O.8** new **Condition C.8** ($NO_X$ Emissions);

    b. ***Previous (old)*** **Condition O.9** new **Condition C.7** (Carbon Monoxide);

    c. ***Previous (old)*** **Condition O.11** new **Condition C.9** (Sulfur Dioxide); and

    d. ***Previous (old)*** **Condition O.27** new **Condition C.24** (CO Compliance).

Subsection D. Fuel Unloading and Handling Operations (EU 010)

32. This emission unit was previously located under Subsection H.

33. Added **Condition D.5.a** (Visible Emissions) since this is an applicable emission standard from NSPS Subpart Y (Standards of Performance for Coal Preparation and Processing Plants) of 40 CFR 60.

34. Added **Conditions D.8** (Test Methods), **D.9** (Common Testing Requirements) and **D.10** (Visible Emissions (VE) Compliance Requirement) since these are applicable compliance requirements for NSPS Subpart Y (Standards of Performance for Coal Preparation and Processing Plants) of 40 CFR 60.

Subsection E. Fuel Blending and Crushing (EU 029 and EU 030)

35. These emission units were previously located under Subsection P.

36. Added the applicable 40 CFR 60 Subpart Y 20% opacity limit in **Condition E.5.b**.

Subsection F. Transloading and Off-site Transfer of Solid Fuels and Slag (EU 046)

37. This emission unit was previously located under Subsection Q.

38. Air Construction Permit No. 0570039-071-AC revised ***previous (old)*** **Condition Q.1** new **Condition F.1** (Permitted Capacity) so the maximum solid fuels/slag transloading rate is based on a daily average and not a 24-hour average.

Subsection G. Railcar Unloading and Conveying System (EU 047)

39. This emission unit was previously located under Subsection R.

40. The fuel yard was modified under Permit No. 0570039-041-AC, which includes a permitting note stating 40 CFR 60, NSPS Subpart Y for Coal Preparation Plants, have been proposed to be amended on April 28, 2008 and would be applicable to all sources addressed in this standard and constructed after that date. Therefore, Air Construction Permit No. 0570039-071-AC revised the following conditions to meet the applicable requirement of NSPS Subpart Y:

a. ***Previous (old)*** **Condition R.7** new **Condition G.6** (Visible Emissions) to meet the applicable 40 CFR 60 Subpart Y 10% opacity limit, excluding equipment used in the loading, unloading, and conveying operations of open storage piles.
b. ***Previous (old)*** **Condition R.12** new **Condition G.11** (Annual Compliance Test Required) to (VE Compliance Requirement) since 40 CFR 60 Subpart Y allows coal processing and conveying equipment (e.g., breakers, crushers, screens, conveying systems), coal storage systems, or coal transfer and loading systems that are enclosed in a building, and emissions from the building do not exceed the 10% opacity limit, then the facility shall be deemed to be in compliance with such standards.

Subsection H. Supplemental Material Handling J3 Conveyor System (EU 048)

41. This emission unit was previously located under Subsection S.

42. Added **Condition H.8.a** (Visible Emissions) since this is an applicable emission standard from NSPS Subpart Y (Standards of Performance for Coal Preparation and Processing Plants) of 40 CFR 60.

43. Added **Conditions H.9** (Test Methods), **H.10** (Common Testing Requirements) and **H.11** (VE Compliance Requirement) since these are applicable compliance requirements for NSPS Subpart Y (Standards of Performance for Coal Preparation and Processing Plants) of 40 CFR 60.

Subsection I. Unit Nos. 1 – 4 Coal Bunker with Roto-Clones (EU 015 – 017, and EU 039)

44. These emission units were previously located under Subsection G.

45. Revised the description for clarity identifying the location of the coal bunkers.

Subsection J. Limestone Silo's A and B with Baghouses (EU 012 and EU 013)

46. These emission unit were previously located under Subsection F and were separated out into their own subsections for clarity.

Subsection K. Limestone Conveyors LB/LC and LD/LE and Baghouses (EU 023 and EU 050)

47. These emission unit were previously located under Subsection F and were separated out into their own subsections for clarity.

Subsection L. Limestone Conveyors LE/LF/LG/Silo C Belt Feeder, Silo C and Baghouses (EU 020 and EU 021)

48. These emission unit were previously located under Subsection F and were separated out into their own subsections for clarity.

Subsection M. Lime Silo for Wastewater Treatment Plane with Baghouse (EU 022)

49. This emission unit was previously located under Subsection L.

Subsection N. Fly Ash Silo Nos. 1 – 3 and Baghouses (EU 008, 009 and 014)

50. These emission units were previously located under Subsections D (EU 008 and EU 009) and E (EU 014). These emission units were combined for clarity and convenience.

Subsection O. Coal Residual Storage and Transfer System (EU 037 and EU 038)

51. These emission units were previously located under Subsection M.

52. Air Construction Permit No. 0570039-071-AC revised **Condition M.4** (Visible Emissions) new **Condition O.4** (VE/Opacity Standards) by adding a permitting note stating that the existing enclosed conveyors, building the unconfined emission from the trucks are subject to the general 20% opacity limit; therefore a visible emissions test is not required.

53. Air Construction Permit No. 0570039-071-AC removed **Conditions M.7** (Test Methods), **M.8** (Annual Compliance Test) and **M.10** (VE Testing Sites) since these emission units are not required to do a VE test.

54. Air Construction Permit No. 0570039-071-AC revised ***previous (old)*** **Conditions M.11** (Records) and **M.12** (Records) new **Condition O.5** (Coal Residual Records) by removing the requirement to record VE test results and combining the two conditions for clarity and convenience.

Subsection P. Surface Coating of Miscellaneous Metal Parts (EU 032)

55. This emission unit was previously located under Subsection I.

Subsection Q. Emergency Diesel Generators (1,495 HP and 1,194 HP) (EU 043 and 044)

56. These emission units were previously located under Subsection N.

57. Replaced the 1999 coal field diesel generator (349 HP) with a 2012 emergency diesel generator (1,194 HP) since this engine no longer is at the facility.

Subsection R. Emergency Diesel Generators (349 HP and 197 HP) (EU 052 and 053)

58. Added two emergency diesel fired generators (349 HP and 197 HP) to the Title V permit.

## CONCLUSION

This project renews Title V Air Operation Permit No. 0570039-039-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.