Golder Associates

June 25, 2013

133-87568

Florida Department of Environmental Protection
ATTN: Mr. Syed Arif, P.E., Administrator
Office of Permitting and Compliance
2600 Blair Stone Road
Tallahassee, FL 32399

RE: FPL Turkey Point Unit 5 – GE Model PG7241 Turbine Upgrade Project
Title V Permit No. 0250003-011-AV
Minor Source Air Construction/Title V Revision

Project Nos.: 0250003-024-AC
0250003-025-AV

Dear Syed:

The attached air construction permit application is being submitted to the Florida Department of Environmental Protection (Department) for the purpose of obtaining approval for authorization from the Department to improve the performance of the General Electric (GE) Model PG7241 gas turbines (7FA.03) associated with Units 5A through 5D at the Florida Power & Light Company (FPL) Turkey Point Fossil Plant. The purpose of the project is to improve the performance of the GE Model PG7241 turbines with 7FA.04 components. The components being replaced are typically those requiring routine replacement due to normal operation. Replacing the 7FA.03 components with 7FA.04 components results in higher efficiency and provides approximately a 4 percent increase in output power per turbine with an approximate two percent decrease in heat rate (heat input/output power) per turbine. Similar projects have been previously authorized by the Department for Martin Unit 8 and Sanford Units 4 and 5.

The Title V permit application for Turkey Point Fossil Plant is currently being reviewed by the Department. This air construction permit application is being submitted for concurrent air construction and Title V renewal processing. The only changes being requested are an increase in heat input and emissions due to increased mass flow. No changes in emission rates or other compliance aspects of the current Title V permit are being requested by this application.

If there are any further questions concerning this request, please contact me or Kevin Washington at (561) 691-2877. The Department's expeditious review of this request is appreciated.

Sincerely,

GOLDER ASSOCIATES INC.

Kennard F. Kosky, P.E.
Principal

cc: Cindy Mulkey, Siting Coordination Office
Kevin Washington, FPL JES
R. Sanchez, FPL Turkey Point Fossil Plant General Manager

Enclosures
KFK/edk

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Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA
Tel: (352) 336-5600 Fax: (352) 336-6603 www.golder.com

ORIGINAL

APPLICATION FOR AIR CONSTRUCTION PERMIT

Florida Power & Light Company
Turkey Point Fossil Plant

Prepared For: Florida Power & Light Company
700 Universe Boulevard
Juno Beach, FL 33408

Submitted By: Golder Associates Inc.
6026 NW 1st Place
Gainesville, FL 32607 USA

Distribution: 4 copies – FDEP
2 copies – FPL
1 copy – Golder Associates Inc.

June 2013

133-87568

Permit Application

A world of capabilities delivered locally

Golder Associates

APPLICATION FOR AIR PERMIT

LONG FORM

Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: **Florida Power & Light Company (FPL)**	
2. Site Name: **Turkey Point Fossil Plant**	
3. Facility Identification Number: **0250003**	
4. Facility Location... Street Address or Other Locator: **9.5 miles east of Florida City on SW 344th Street** **9700 SW 344 Street** City: **Homestead** County: **Miami-Dade** Zip Code: **33035**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Kevin Washington, Project Manager**
2. Application Contact Mailing Address... Organization/Firm: **Florida Power & Light Company – FPL Environmental Services** Street Address: **700 Universe Blvd.** City: **Juno Beach** State: **FL** Zip Code: **33408**
3. Application Contact Telephone Numbers... Telephone: **(561) 691-2877** ext. Fax: **(561) 691-7049**
4. Application Contact E-mail Address:

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 6/26/2013	3. PSD Number (if applicable):
2. Project Number(s):	4. Siting Number (if applicable):

0250003-024-AC 0250003-025-AV

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

☐ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

☐ Air construction permit and Title V permit revision, incorporating the proposed project.

☒ Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

☒ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

Minor source air construction permit application to improve the performance of existing General Electric (GE) Model PG7241(7FA.03) CTs associated with Units 5A, 5B, 5C, and 5D at the Turkey Point Fossil Plant with GE 7FA.04 components.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
009	Unit 5A - 170 MW gas turbine with supplementary-fired HRSG	AC1B	N/A
010	Unit 5B - 170 MW gas turbine with supplementary-fired HRSG	AC1B	N/A
011	Unit 5C - 170 MW gas turbine with supplementary-fired HRSG	AC1B	N/A
012	Unit 5D - 170 MW gas turbine with supplementary-fired HRSG	AC1B	N/A

Application Processing Fee

Check one: ☐ Attached - Amount: _____ ☒ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name :
   Rodolfo Sanchez, Plant General Manager
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Florida Power & Light Company**
   Street Address: **P.O. Box 13118**
   City: **Ft. Lauderdale** State: **FL** Zip Code: **33316**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(305) 242-3822** ext. Fax: ( )
4. Owner/Authorized Representative E-mail Address: **rudy_sanchez@fpl.com**
5. Owner/Authorized Representative Statement:

   I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.

   Signature

   June 21, 2013
   Date

APPLICATION INFORMATION

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name:

2. Application Responsible Official Qualification (Check one or more of the following options, as applicable):

- ☐ For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C.
- ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.
- ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.
- ☐ The designated representative at an Acid Rain source or CAIR source.

3. Application Responsible Official Mailing Address...
Organization/Firm:
Street Address:
City: State: Zip Code:

4. Application Responsible Official Telephone Numbers...
Telephone: ext. Fax:

5. Application Responsible Official E-mail Address:

6. Application Responsible Official Certification:

I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.

Signature Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Kennard F. Kosky**
   Registration Number: **14996**
2. Professional Engineer Mailing Address...
   Organization/Firm: **Golder Associates Inc.****
   Street Address: **6026 NW 1st Place**
   City: **Gainesville** State: **FL** Zip Code: **32607**
3. Professional Engineer Telephone Numbers...
   Telephone: **(352) 336-5600** ext. **21156** Fax: **(352) 336-6603**
4. Professional Engineer E-mail Address: **Ken_Kosky@golder.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here ☐, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here ☐, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature 6/21/13
Date

(seal)

*** Attach any exception to certification statement.**
**** Board of Professional Engineers Certificate of Authorization # 00001670**

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **566.59** North (km) **2813.21**		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **25° 26' 9"** Longitude (DD/MM/SS) **80° 19' 52"**	
3. Governmental Facility Code: **0**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s): **4911**
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: **Gary Andersen, Plant Environmental Leader**
2. Facility Contact Mailing Address... Organization/Firm: **Florida Power & Light Company** Street Address: **9760 SW 344th Street** City: **Homestead** State: **FL** Zip Code: **33035**
3. Facility Contact Telephone Numbers: Telephone: **(350) - 242-3826** ext. Fax: **(305)-242-3813**
4. Facility Contact E-mail Address: **gary_andersen@fpl.com**

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: ( ) - ext. Fax: ( ) -
4. Facility Primary Responsible Official E-mail Address:

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. ☐ Small Business Stationary Source	☐ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☐ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM/PM10	A	N
CO	A	N
VOC	A	N
SO2	A	N
NOx	A	N
HAPS	A	N
Pb	B	N
SAM	A	N

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1.	Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ___ ☒ Previously Submitted, Date: **July 2008**
2.	Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ___ ☒ Previously Submitted, Date: **July 2008** __
3.	Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) ☐ Attached, Document ID: ____ ☒ Previously Submitted, Date: **July 2008**

Additional Requirements for Air Construction Permit Applications

1.	Area Map Showing Facility Location: ☐ Attached, Document ID:_____ ☒ Not Applicable (existing permitted facility)
2.	Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): ☒ Attached, Document ID: **Part II**
3.	Rule Applicability Analysis: ☒ Attached, Document ID: **Part II**
4.	List of Exempt Emissions Units: ☐ Attached, Document ID:_____ ☒ Not Applicable (no exempt units at facility)
5.	Fugitive Emissions Identification: ☐ Attached, Document ID:_____ ☒ Not Applicable
6.	Air Quality Analysis (Rule 62-212.400(7), F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable
7.	Source Impact Analysis (Rule 62-212.400(5), F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable
8.	Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable
9.	Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable
10.	Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): ☐ Attached, Document ID:_____ ☒ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications -- NA

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications-- NA

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought)
   ☐ Attached, Document ID:_____
   ☐ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☐ Attached, Document ID:_____
   Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☐ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID:_____ ☐ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: **May 2013**
   ☐ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date: **May 2013**
   ☐ Not Applicable (not a CAIR source)

Additional Requirements Comment

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an "unregulated emissions unit" does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [1]
Units 5A, 5B, 5C, and 5D Gas Turbines

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

   ☒ The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

   ☐ The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

   ☒ This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

   ☐ This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section:
Units 5A – 5D: Four identical gas turbines with heat recovery steam generators

3. Emissions Unit Identification Number:
EU 009 (Unit 5A), EU 010 (Unit 5B), EU 011 (Unit 5C), EU 012 (Unit 5D)

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A			**49**

8. Federal Program Applicability: (Check all that apply)

   ☒ Acid Rain Unit ☒ CAIR Unit

9. Package Unit:
   Manufacturer: **General Electric** Model Number: **PG7241, 7FA.04**

10. Generator Nameplate Rating:

11. Emissions Unit Comment:
4-on-1 combined cycle system consists of four nominal 170 MW GE 7FA.04 gas turbine-electrical generator sets and one nominal 470 MW steam turbine-electrical generator with a total nominal capacity of 1,150 MW.
Initial startup dates: 19-Dec-06 (Unit 5A), 27-Dec-06 (Unit 5B), 12-Dec-06 (Unit 5C), and 04-Dec-06 (Units 5D).

EMISSIONS UNIT INFORMATION
Section [1]
Units 5A, 5B, 5C, and 5D Gas Turbines

Emissions Unit Control Equipment/Method: Control **1** of **3**

1. Control Equipment/Method Description: **Low NOx Burners - Dry low-NOx combustors for firing natural gas**
2. Control Device or Method Code: **205**

Emissions Unit Control Equipment/Method: Control **2** of **3**

1. Control Equipment/Method Description: **Steam or Water Injection - Steam injection for oil firing**
2. Control Device or Method Code: **28**

Emissions Unit Control Equipment/Method: Control **3** of **3**

1. Control Equipment/Method Description: **SCR (Selective Catalytic Reduction) - SCR system to reduce NOx emissions when firing gas or oil**
2. Control Device or Method Code: **139**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate:	
2. Maximum Production Rate: **Gross power output for the combined-cycle unit – 1,150 MW**	
3. Maximum Heat Input Rate: **6,432 MMBtu/hr (LHV) (NG), 7,320 MMBtu/hr (LHV) (oil)**	
4. Maximum Incineration Rate: pounds/hr tons/day	
5. Requested Maximum Operating Schedule:	
24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

6. Operating Capacity/Schedule Comment:

Maximum heat input and power outputs are for each turbine at based on 59 °F ambient temperature.
Oil firing limited to 500 hr/yr/turbine.
Gross power outputs for each turbine – 170 MW (NG firing), 180 MW (Oil firing)
Maximum heat input rate for each turbine: NG firing – 1,608 MMBtu/hr/LHV)
Distillate oil firing – 1,830 MMBtu/hr (LHV)

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **5A-5D HRSG STACK**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **131** feet	7. Exit Diameter: **19** feet
8. Exit Temperature: **202**°F	9. Actual Volumetric Flow Rate: **1,004,150** acfm	10. Water Vapor: **8.4 %**
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **Stack parameters based on Title V permit renewal application dated May 2013.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **2**

1. Segment Description (Process/Fuel Type): **Internal Combustion Engines; Electric Generation; Natural Gas Turbine**		
2. Source Classification Code (SCC): **2-01-002-01**	3. SCC Units: **Million cubic feet burned**	
4. Maximum Hourly Rate: **7.14**	5. Maximum Annual Rate: **62,542**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **1,000 (HHV)**
10. Segment Comment: **Hourly rate = 1,608 MMBtu/hr x 1.11 (HHV/LHV) / 1000 MMBtu/ $MMft^3$ x 4 turbines = 7.14 $MMft^3$/hr** **Annual rate = 7.37 x 10^6 ft^3/hr x 8,760 hrs/yr = 62,542 $MMft^3$/yr**		

Segment Description and Rate: Segment **2** of **2**

1. Segment Description (Process/Fuel Type): **Internal Combustion Engine; Electric Generation; Distillate Oil (Diesel) Turbine**		
2. Source Classification Code (SCC): **2-01-001-01**	3. SCC Units: **Thousand gallons Distillate Oil (Diesel) burned**	
4. Maximum Hourly Rate: **56.2**	5. Maximum Annual Rate: **28,113**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **0.0015**	8. Maximum % Ash: **0**	9. Million Btu per SCC Unit: **138 (HHV)**
10. Segment Comment: **Hourly rate = 1,830 MMBtu/hr x 1.06 (HHV/LHV) / 138 MMBtu/10^3 gal x 4 turbines = 56.2 x 10^3 gal/hr** **Annual rate = 56.2 x 10^3 gal/hr x 500 hrs/yr = 28,113 x 10^3 gal/yr** **Fuel sulfur content limited to 0.0015%**		

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
NOx	**205, 28, 139**		**EL**
CO			**EL**
PM/PM_{10}			**WP**
VOC			**EL**
SO_2			**WP**
NH_3			**EL**

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **NOx**	2. Total Percent Efficiency of Control:
3. Potential Emissions lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): **183.15** tons/year	8.b. Baseline 24-month Period: From: **1/1/2008** To: **12/31/2009**
9.a. Projected Actual Emissions (if required): **188.13** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years
10. Calculation of Emissions: **See Table 9 of Part II.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 3

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **8 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **62.5** lb/hour tons/year
5. Method of Compliance: **CEMS (24-hr Block Average)** or **Stack test (3-run average) using EPA Method 7E or 20**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on oil-firing combined-cycle operation at 100% load and 59 F. Equivalent emissions rates are based on post turbine improvement (GE data) and for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV.**	

Allowable Emissions Allowable Emissions 2 of 3

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **19.2** lb/hour tons/year
5. Method of Compliance: **CEMS (24-hr Block Average) or Stack test (3-run average) using EPA Method 7E or 20**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on natural gas-firing combined-cycle operation with duct firing at 100% load and 59°F. Equivalent emissions rates are for each turbine. Duct burner emission rate = (18.8-13.0) lb/hr (Permit No. 0250003-011-AV) = 5.8 lb/hr Rate after turbine improvement = 13.4 lb/hr (GE data) + 5.8 lb/hr = 19.2 lb/hr CT and DB at peaking and power augmentation mode limited to 2 ppmvd @ 15% O_2 Based on PSD-FL-338 and Permit No. 0250003-011-AV.**	

Allowable Emissions Allowable Emissions 3 of 3

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **13.4** lb/hour tons/year
5. Method of Compliance: **Stack test (3-run average) using EPA Method 7E or 20**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on natural gas-firing combined-cycle operation at 100% load and 59°F. Equivalent emissions rates are based on post turbine improvement = 13.4 lb/hr (GE data) and for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV.**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): **30.44** tons/year	8.b. Baseline 24-month Period: From: **1/1/2011** To: **12/31/2012**
9.a. Projected Actual Emissions (if required): **31.42** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years
10. Calculation of Emissions: **See Table 9 of Part II.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 4

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **8.0 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **37.8** lb/hour tons/year
5. Method of Compliance: **CEMS (24-hr Block Average) or Stack test (3-hr average) using EPA Method 10**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on oil-firing combined-cycle operation at 100% load and 59 °F. Equivalent emissions rates are for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

Allowable Emissions Allowable Emissions 2 of 4

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **4.1 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **16.3** lb/hour tons/year
5. Method of Compliance: **Stack test (3-hr average) using EPA Method 10**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on natural Gas-firing combined-cycle operation without duct firing at 100% load and 59 °F. Equivalent emissions rates are for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

Allowable Emissions Allowable Emissions 3 of 4

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **7.6 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **38.3** lb/hour tons/year
5. Method of Compliance: **Stack test (3-hr average) using EPA Method 10**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on natural Gas-firing combined-cycle operation with duct firing at 100% load and 59 °F. Equivalent emissions rates are for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **4** of **4**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **14 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **CEMS (24-hr Block Average)**	
6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation with duct firing at Power Augmentation Mode. Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): **14.13** tons/year	8.b. Baseline 24-month Period: From: **1/1/2008** To: **12/31/2009**
9.a. Projected Actual Emissions (if required): **14.49** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years
10. Calculation of Emissions: **See Table 9 of Part II.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **3**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **2.8 ppmvd @ 15% O_2**	4. Equivalent Allowable Emissions: **7.5** lb/hour tons/year
5. Method of Compliance: **Stack test using EPA Methods 25A or 18**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on oil-firing combined-cycle operation with duct firing. Equivalent emissions rates are for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

Allowable Emissions Allowable Emissions **2** of **3**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.3 ppmvd @ 15% O2**	4. Equivalent Allowable Emissions: **2.9** lb/hour tons/year
5. Method of Compliance: **Stack test using EPA Methods 25A or 18**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on natural Gas-firing combined-cycle operation. Equivalent emissions rates are for each turbine. Based on Permit No.0250003-011-AV and PSD-FL-338A**	

Allowable Emissions Allowable Emissions **3** of **3**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **1.9 ppmvd @ 15% O2**	4. Equivalent Allowable Emissions: **5** lb/hour tons/year
5. Method of Compliance: **Stack test using EPA Methods 25A or 18**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on natural gas-firing combined-cycle operation with duct firing Equivalent emissions rates are for each turbine. Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **PM/PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): **0.94** tons/year	8.b. Baseline 24-month Period: From: **1/1/2011** To: **12/31/2012**
9.a. Projected Actual Emissions (if required): **0.97** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years
10. Calculation of Emissions: **See Table 9 of Part II.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **≤ 10% Opacity**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **EPA Method 9**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on Natural gas or Oil-firing combined-cycle operation with or without duct firing at Peak or Power Augmentation Mode on a 6-minute block average.** **Emissions rates are for each turbine.** **Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **SO2**	2. Total Percent Efficiency of Control:
3. Potential Emissions lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): **13.91** tons/year	8.b. Baseline 24-month Period: From: **1/1/2009** To: **12/31/2010**
9.a. Projected Actual Emissions (if required): **14.27** tons/year	9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years
10. Calculation of Emissions: **See Table 9 of Part II.**	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **Oil: 0.0015% S fuel oil, NG: 2 gr S/100 scf**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **Fuel Analysis**	
6. Allowable Emissions Comment (Description of Operating Method): **Based on PSD-FL-338 and Permit No. 0250003-011-AV**	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION – POTENTIAL/ESTIMATED FUGITIVE EMISSIONS

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive and Baseline & Projected Actual Emissions

1. Pollutant Emitted: **Ammonia - NH3**	2. Total Percent Efficiency of Control:
3. Potential Emissions lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☐ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: ☐ 5 years ☐ 10 years
10. Calculation of Emissions:	
11. Potential, Fugitive, and Actual Emissions Comment:	

F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION - ALLOWABLE EMISSIONS

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: **5 ppmvd @ 15% O2**	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **Stack test using EPA Method CTC-027**	
6. Allowable Emissions Comment (Description of Operating Method): **Natural gas- or oil-firing**	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions _ of _

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: **10 %** Exceptional Conditions: **20** % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Method 9**	
5. Visible Emissions Comment: **During startup, shutdown, and malfunction, visible emissions in excess of 10% are authorized for up to ten, 6-minute averaging periods per 24 hr period. Also used as a surrogate standard for minimizing PM/PM10 emissions.**	

Visible Emissions Limitation: Visible Emissions Limitation _ of _

1. Visible Emissions Subtype: **VE99**	2. Basis for Allowable Opacity: ☐ Rule ☒ Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100%** Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **None**	
5. Visible Emissions Comment: **Per 62-210.700(1), excess emissions during startup, shutdown, or malfunction limited to 2 hours per 24 hour period.**	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **1** of **6**

1. Parameter Code: **O2 - Oxygen**	2. Pollutant(s):
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... Manufacturer: **SERVOMEX** Model Number: **1440D** Serial Number: **5A:01440D1V/3776, 5B:01440D1V/3777, 5C:01440D1V/3778, 5D:01440D1V/3780**	
5. Installation Date: **5A-5D: 01-APR-07**	6. Performance Specification Test Date: **5A-5D: 07-APR-07**
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR 75.**	

Continuous Monitoring System: Continuous Monitor **2** of **6**

1. Parameter Code: **EM - EMISSION**	2. Pollutant(s): **CO**
3. CMS Requirement:	[X] Rule [ ] Other
4. Monitor Information... Manufacturer: **THERMO FISHER** Model Number: **48** Serial Number: **5A: 0609715824/ 5B:0609715825/ 5C:0609715826/ 5D: 0609715827**	
5. Installation Date: **5A: 22-MAY-05/ 5B: 26-MAY-05/ 5C: 23-MAY-05/ 5D: 27-MAY-05**	6. Performance Specification Test Date: **5A: 22-MAY-05/ 5B: 26-MAY-05/ 5C: 23-MAY-05/ 5D: 27-MAY-05**
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR 75.**	

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **3** of **6**

1. Parameter Code: **EM - EMISSION**	2. Pollutant(s): **NOX**
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **TECO** Model Number: **42I-LS** Serial Number: **5A: 0609715829/5B: 0609715832/ 5C: 0609715830/ 5D: 0609715835**	
5. Installation Date: **5A-5D: 01-APR-07**	6. Performance Specification Test Date: **5A-5D: 07-APR-07**
7. Continuous Monitor Comment: **CEM required pursuant to 40 CFR 75 and NSPS requirements.**	

Continuous Monitoring System: Continuous Monitor **4** of **6**

1. Parameter Code: **FLOW - Volumetric flow rate**	2. Pollutant(s):
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **ROSEMONT** Model Number: **3095** Serial Number: **5A:0143268/ 5B: 0143266/ 5C: 0143267/ 5D: 0143269**	
5. Installation Date: **5A-5D: 01-APR-07**	6. Performance Specification Test Date: **5A-5D: 07-APR-07**
7. Continuous Monitor Comment: **Natural Gas Fuel Flow Unit 5A-CT through Unit 5D-CT**	

EMISSIONS UNIT INFORMATION
Section [1]
Units 5A, 5B, 5C, and 5D Gas Turbines

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor **5** of **6**

1. Parameter Code: **FLOW - Volumetric flow rate**	2. Pollutant(s):
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **ROSEMONT** Model Number: **3095** Serial Number: **5A: 0161319/5B:0161320/ 5C: 0161321/ 5D: 0373913**	
5. Installation Date: **5A-5D: 01-APR-07**	6. Performance Specification Test Date: **5A-5D: 07-APR-07**
7. Continuous Monitor Comment: **Natural Gas Flow Unit 5A-DB through Unit 5D-DB**	

Continuous Monitoring System: Continuous Monitor **6** of **6**

1. Parameter Code: **FLOW - Volumetric flow rate**	2. Pollutant(s):
3. CMS Requirement:	[x] Rule [ ] Other
4. Monitor Information... Manufacturer: **MICROMOTION** Model Number: **CMF300M** Serial Number: **5A: 3056567/256585; 5B:3056551/256587;5C:3056631/256509 5D: 3056635/256555**	
5. Installation Date: **5A-5D: 01-APR-07**	6. Performance Specification Test Date: **:5A-5D: 07-APR-07**
7. Continuous Monitor Comment: **Distillate Oil Flow Unit 5A-CT through Unit 5D-CT**	

EMISSIONS UNIT INFORMATION
Section [1]
Units 5A, 5B, 5C, and 5D Gas Turbines

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID: _____ ☒ Previously Submitted, Date **July, 2008**

2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID: _____ ☒ Previously Submitted, Date **July, 2008**

3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID:__ ☒ Previously Submitted, Date **July, 2008**

4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID:__ ☐ Previously Submitted, Date _____
☒ Not Applicable (construction application)

5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought)
☐ Attached, Document ID: ___ ☐ Previously Submitted, Date _____
☒ Not Applicable

6. Compliance Demonstration Reports/Records:
☐ Attached, Document ID: _____
Test Date(s)/Pollutant(s) Tested: _____
☐ Previously Submitted, Date: _____
Test Date(s)/Pollutant(s) Tested: _____
☐ To be Submitted, Date (if known):_____
Test Date(s)/Pollutant(s) Tested: _____
☒ Not Applicable
Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.

7. Other Information Required by Rule or Statute:
☐ Attached, Document ID: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1.	Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2.	Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3.	Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications – N/A

1.	Identification of Applicable Requirements: ☐ Attached, Document ID: _____ ☒ Not Applicable
2.	Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3.	Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4.	Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

PART II

PART II

APPLICATION FOR MINOR SOURCE AIR CONSTRUCTION PERMIT FOR IMPROVING TURKEY POINT UNITS 5A, 5B, 5C, AND 5D (EU IDS 009, 010, 011, AND 012)

EXECUTIVE SUMMARY

Florida Power & Light Company (FPL) is seeking authorization from the Florida Department of Environmental Protection (FDEP) to improve the performance of the General Electric (GE) Model PG7241 gas turbines (7FA.03) associated with Units 5A through 5D (EU IDs 009, 010, 011, and 012) at the FPL Turkey Point Fossil Plant. The purpose of the project is to improve the performance of the GE Model PG7241 turbines with 7FA.04 components. The components being replaced are typically those requiring routine replacement due to normal operation. However, replacing the 7FA.03 components with 7FA.04 components results in higher efficiency and provides approximately a four percent increase in output power per turbine with an approximate two percent decrease in heat rate (heat input/output power) per turbine.

The 7FA.04 components have a projected design heat input capacity approximately two percent higher than the 7FA.03. As a result, there will be an expected increase in the design fuel flow for the units compared to same turbine inlet temperature based on manufacturer information. In addition, hourly emissions of air pollutants regulated under FDEP and the federal Prevention of Significant Deterioration (PSD) program that are directly related to fuel, such as sulfur dioxide (SO_2), sulfuric acid mist (SAM), and particulate matter (PM), including PM with aerodynamic diameter equal to or less than 10 or 2.5 microns ($PM_{10}/PM_{2.5}$), will also potentially increase. Based on GE data for the 7FA.04 components, there will be no increase in hourly mass emissions of carbon monoxide (CO) or volatile organic compounds (VOCs), and a small increase in the hourly mass emission rate of nitrogen oxides (NO_x), which will be controlled by the downstream selective catalytic reducer (SCR). Based on the current actual-to-projected annual emissions test, the turbine improvement project will not result in a net increase of any regulated pollutant, nor of greenhouse gases (GHGs) regulated under the Tailoring Rule, above the PSD significant emission rates.

INTRODUCTION

The Turkey Point Plant is located 9.5 miles east of Florida City on SW 344th Street in Miami-Dade County, Florida. The facility is currently operating under Title V Permit No. 0250003-011-AV.

Golder Associates Inc. (Golder) was contracted to prepare and submit an air permit application seeking authorization for the turbine energy improvements and assist with any FDEP questions and additional information requests. This air permit application consists of the appropriate application form [Part I; DEP

Form 62-210.900(1)], a technical description of the project, rule applicability for the project, and emissions calculations demonstrating that the proposed project will not result in a significant net emissions increase.

Turkey Point Unit 5's four gas turbines are permitted to fire natural gas and distillate fuel oil. The current design heat input rates for the turbines are 1,552 and 1,804 million British thermal units per hour (MMBtu/hr) for natural gas and distillate fuel oil, respectively [75 degrees Fahrenheit (°F) ambient temperature; PSD permit application dated November 2003]. There will be no change in the type of permitted fuels as a result of the project. The design heat input rates for natural gas-firing and fuel oil-firing will increase by 32 MMBtu/hr (two percent) and 35 MMBtu/hr (two percent) respectively, based on GE data on 7FA.04 turbines at 75°F ambient temperature. Data from the National Climatic Data Center (NCDC) indicates the 30-year (1983 to 2012) average temperature for Miami is 77°F (median 77.2°F). As a result, GE data for an ambient temperature of 75°F represent annual operating conditions and were used in the calculation.

The current permitted emissions limits for the Unit 5 gas turbines are listed in Condition No. C.10 of Title V Permit No. 0250003-011-AV. The improved 7FA.04 model turbines will guarantee the same concentration-base emissions limits for NO_x, CO, and VOC. There will also be no increase in hourly mass emission rates for CO and VOC. However, the potential hourly mass emission rate of NO_x will increase by about 0.3 pound per hour (lb/hr) (at 75°F) for both natural gas- and oil-firing.

There are currently no mass-based emissions limits for SO_2, SAM, or $PM/PM_{10}/PM_{2.5}$. Since emissions of these pollutants are directly proportional to fuel flow and the proposed project will increase the design fuel flow capacity of the turbines, the potential hourly mass emission rates of these pollutants will also increase. Due to the improved efficiency and higher output of the energy improvements, potential emissions of all pollutants will decrease on a per megawatt-hour (MW-hr) basis.

There are currently no post-combustion control technologies for emissions of CO, VOC, SO_2, SAM, or $PM/PM_{10}/PM_{2.5}$. Emissions of NO_x are controlled by Dry Low-NO_x (DLN) combustion technology, water injection for oil-firing, and a SCR system. The proposed energy improvements will rely on the same existing control technologies.

PROJECT DESCRIPTION

Turkey Point Unit 5 consists of four gas turbine electrical generator sets, which include GE Model PG7241 turbines/generators, heat recovery steam generators, and a steam electric generator. The proposed project will replace component parts normally associated with maintenance outages for the GE PG7241, 7FA.03 turbine with 7FA.04 components, which offer greater output and greater efficiency without sacrificing reliability, availability, or operational flexibility. The 7FA.04 components will increase

the output power by approximately four percent (baseload with natural gas-firing at 75°F). As a result of the greater output, mass emission rates of all criteria pollutants will decrease on a per MW-hr basis.

The project will include installation of new hot gas path components, new combustion liners and flow sleeves, and new control software to increase firing temperature. The advanced gas path of 7FA.04 uses less air for cooling the parts. As a result, more air is available for combustion and power generation. The turbines will remain equipped with the DLN 2.6 combustion system, which is GE's latest evolution of Dry Low-NO_x combustion technology. Water injection will continue to be used for the control of NO_x emissions during oil-firing.

The current schedule for the project has the installation for Units 5A-5D to be completed by summer of 2014.

RULE APPLICABILITY

PSD/New Source Review (NSR)

Under federal and State of Florida PSD review requirements, all major new or modified sources of air pollutants regulated under the Clean Air Act (CAA) must be reviewed and a pre-construction permit issued. The U.S. Environmental Protection Agency (EPA) has approved Florida's State Implementation Plan (SIP), which contains PSD regulations. The applicable PSD rules in Florida are found in Rule 62-212.400, Florida Administrative Code (F.A.C.).

A "major facility" is defined as any one of 28 named source categories that have the potential to emit 100 tons per year (TPY) or more, or any other stationary facility that has the potential to emit 250 TPY or more, of any pollutant regulated under the CAA. "Potential to emit" means the capability, at maximum design capacity, to emit a pollutant after the application of control equipment. Once a new source is determined to be a "major facility" for a particular pollutant, any pollutant emitted in amounts greater than the PSD significant emission rates is subject to PSD review.

The Turkey Point Fossil Plant is an existing major facility under PSD rules. For an existing major facility for which a project is proposed, the project is subject to PSD review if the net increase in emissions due to the project is greater than the PSD significant emission rates for any applicable pollutant. A "modification" is defined in FDEP Rule 62-210.200(205), F.A.C., as "any physical change in, change in the method of operation of, or addition to a facility which would result in an increase in the actual emissions of any pollutant subject to regulation under the [Clean Air] Act, including any not previously emitted, from any emission unit or facility." Because there is a physical change and the hourly mass emission rates will potentially increase, the project is a potential modification as defined in Rules 62-210.200 and 62-212.400 (PSD), F.A.C.

To demonstrate that the proposed project is not a major modification under the Department's PSD rules, an emissions comparison between baseline actual emissions and projected actual emissions was conducted pursuant to FDEP Rule 62-212.400(2)(1), F.A.C., for Turkey Point Unit 5 (Units 5A, 5B, 5C, and 5D). The baseline, or current, actual emissions are the emissions over a consecutive 24-month period within the five years immediately preceding the date that a complete application is submitted. The use of different consecutive 24-month periods for each pollutant is allowed. Projected actual emissions are the maximum annual rate, in TPY, at which the existing emission unit is projected to emit a PSD pollutant in any of the five years following the date the unit resumes regular operation.

Table 1 presents the actual annual heat inputs from different fuels reported in the Annual Operating Reports (AORs) for the period 2008 through 2012. This table also presents the total actual heat input from all fuels for Units 5A through 5D, as well as the actual operating hours for each unit.

Table 2 summarizes the annual emissions reported in the AORs for each calendar year in the period 2008 through 2012. The carbon dioxide (CO_2) emission rates in Table 2 were obtained from EPA's Acid Rain database.

Since emissions of nitrous oxide (N_2O) and methane (CH_4) were not reported in the AORs, they were calculated based on the actual annual heat input and emission factors from Title 40, Part 98 of the Code of Federal Regulations (40 CFR 98), Subpart C. These emissions are summarized in Table 3, which also shows the CO_2 equivalent (CO_2e) rates for these pollutants.

Table 4 presents the average emissions for each consecutive two-year period based on the calendar year emissions in Tables 2 and 3. The annual average emissions for each consecutive two-year period are consistent with the definition of baseline actual emissions for fossil fuel-fired steam electric generating units.

The actual hourly emission rates were calculated based on the reported annual emission rates and operating hours in the AORs, which are summarized in Table 5.

The actual emission factors in pounds per million British thermal units heat input (lb/MMBtu) were calculated in Table 6 for each calendar year in the period 2008 through 2012. The factors are calculated by dividing the total annual emissions by the total annual heat input, which includes both natural gas- and fuel oil-firing.

The projected increases in annual emissions for each turbine are presented in Table 7. The emission increases are calculated based on the maximum actual emission factors (lb/MMBtu) for each pollutant shown in Table 6 and the maximum annual increase in design heat input rate. The maximum annual increase in design heat input rate was calculated using the hourly increase in design heat input rate for

each fuel at 75°F ambient temperature and projected operating hours for each fuel. The calculation considers the projected annual operating hours of 7,894 hours per year (hr/yr) for natural gas, which is based on maximum actual operation on natural gas for any of the four turbines in the period 2008 to 2012 (see Table 1). Projected annual operating hours on oil-firing was also assumed to be equal to the highest actual oil-firing hours for any turbine that occurred during the period 2008 to 2012.

Table 8 presents the projected annual emissions, which were calculated by adding the projected annual increase in emissions from Table 7 to the baseline emissions. The baseline emissions are based on maximum two-year average emissions from Table 4.

Table 9 compares baseline actual emissions and projected actual emissions for Units 5A, 5B, 5C, and 5D. The baseline two-year average emissions from Table 4 and the projected actual emissions from Table 8 are used to calculate the increase in emissions as a result of the project. These increases are the same as the increases calculated in Table 8. The projected annual emissions increases were based on an operation of 7,894 hr/yr on natural gas and 62 hr/yr on distillate oil, which are based on the maximum operating hours for any combustion turbine (CT) for Unit 5 during the baseline period. The energy improvements resulted in a slight increase in the energy output while improving the heat rate. Any difference between the hours of operation associated with the baseline actual emissions and hours associated with projected actual emissions are a result of the growth in projected demand. Pursuant to Rule 62-210.200(249)(c), F.A.C., any emissions associated with the demand growth are excluded from the definition of projected actual emissions.

The projected increase in GHG emissions as total CO_2e is also shown in Table 9. As shown, the projected increase in all regulated pollutants including GHGs is less than the PSD significant emission rates in the EPA Tailoring Rule. As a result, the proposed project is not subject to PSD review and a minor source air construction permit application is appropriate for the project.

While there is a slight increase in GHG emissions, there is an overall reduction in heat rate [btu per kilowatt hour (Btu/kWh)] that reduces the amount of emissions for each megawatt-hour (MWh) generated. For example, there is an approximate one percent decrease in heat rate as a result of the project. As shown in Table 9, the baseline actual CO_2e emissions are approximately 2.8 million tons/year. With a one percent reduction in heat rate for the project, the CO_2e emissions for the same amount of generation as 2008-2009 would be approximately 28,000 tons lower. Since the proposed project will increase power output, on a lb CO_2e/MWh basis, Turkey Point Unit 5 will have less CO_2e emissions than it currently does. The output-based emissions for other air emissions will also decrease on a lb/MWh basis.

NSPS

Turkey Point Units 5A through 5D are currently subject to 40 CFR 60 Subpart GG, Standard of Performance for Stationary Gas Turbines. For the purpose of New Source Performance Standards (NSPS) applicability, 40 CFR 60.14 defines modification as any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies. 40 CFR 60.14 also states that the emission rate shall be expressed as kilograms per hour (kg/hr). NO_x and SO_2 are regulated under NSPS for Stationary Gas Turbines. Since the hourly emission rates for these pollutants may potentially increase, the proposed project is a potential modification according to the rules for NSPS. As a result, the improved Unit 5 turbines may be subject to 40 CFR 60 Subpart KKKK, the revised Standard of Performance for Stationary Combustion Turbines, which applies to stationary combustion turbines with a heat input at peak load equal to greater than 10 MMBtu/hr that commence construction, modification, or reconstruction after February 18, 2005.

Moreover, Turkey Point Unit 5 was approved with several operating modes that could produce higher or equivalent emissions as the 7FA.04 project. In addition, after the energy improvement, the turbines will comply with the same concentration-based NO_x emissions standards they are currently subject to, which are two parts per million, dry volume basis at 15-percent oxygen (ppmvd @ 15% O_2) for natural gas-firing and 8 ppmvd @ 15% O_2 for fuel oil-firing during combined-cycle operation.

NSPS Subpart KKKK limits NO_x emissions to 15 ppmvd @ 15% O_2 for natural gas-firing and 42 ppmvd @ 15% O_2 for fuel oil-firing for turbines with heat input rate greater than 850 MMBtu/hr (high heating value). NSPS Subpart KKKK also limits NO_x emissions to 0.43 pound per megawatt-hour (lb/MWh) for natural gas-firing and 1.3 lb/MWh for fuel oil-firing. The current NO_x emission limits for Turkey Point Unit 5 are well below the Subpart KKKK NO_x limits. For example, based on the current design gross power output of the CT of 176.2 megawatts (MW) and 188.5 MW at 59°F ambient temperature for natural gas and fuel oil-firing, respectively, output-based current emissions limits are 0.074 lb/MWh for natural gas-firing and 0.33 lb/MWh for fuel oil-firing (using 13.0 lb/hr for natural gas-firing and 62.1 lb/hr for fuel oil-firing). After the improvement, these emission rates will be 0.072 lb/MWh for natural gas-firing and 0.32 lb/MWh for fuel oil-firing (based on 184.6 MW for gas-firing at 59°F and 196.9 MW for oil-firing at 59°F).

For these reasons, it is believed no increase in kg/hr NO_x emissions will occur from the project. It is proposed that the continuous emissions monitors (CEMs) data be reviewed after the upgrades to determine if an increase has occurred. In any event, the 7FA.04 project will comply with, and be much less than, the emission limiting standards of Subpart KKKK for NO_x.

NSPS Subpart KKKK limits SO_2 emissions by limiting the sulfur in the fuel (0.06 lb/MMBtu) or based on the output (0.9 lb/MWh). Based on AOR data for the period 2008-2012, the current actual maximum SO_2 emission rate is 0.00062 lb/MMBtu. The potential heat input rate for the turbines will increase by

approximately two percent. SO_2 emissions are directly proportional to heat input for the same sulfur content of fuel and the lb/MMBtu rate is expected to remain the same. Since natural gas is the primary fuel, the amount of sulfur will vary slightly. As a result, the projected minor increase in heat input may not increase emissions based on the normal variability of sulfur in natural gas. Indeed, Section 60.14(2) of 40 CFR 60 recognizes the potential for statistical variability in determining an increase in kg/hr (i.e., Appendix C of 40 CFR 60). For this reason, future sulfur content data after the upgrades will be reviewed to determine if an increase in kg/hr SO_2 emissions has occurred. In any event, the 7FA.04 project will comply with the emission limiting standards of Subpart KKKK for SO_2.

PROPOSED CHANGES TO EXISTING PERMIT CONDITIONS

The Turkey Point Plant is currently operating under Title V air operating permit No. 0250003-011-AV. Condition No. C.10 of Title V permit lists the emissions limitations and standards for Units 5A through 5D. NO_x, CO, and VOC are the three pollutants with concentration-based and mass emissions limits, which are based on GE performance data for baseload operation at 59°F ambient temperature. Based on GE data, the improved turbines will achieve the same concentration-based emissions and same mass emission rates for CO and VOC. Therefore, FPL is requesting no change to the existing emissions limits for CO and VOC, and the same concentration-based limits for NO_x. Based on GE data, the mass emission rate potential for NO_x will slightly increase. The proposed mass emissions limits for NO_x at a turbine inlet temperature of 59°F are presented below:

Fuel	Method of Operation	Current	Proposed
Natural gas-firing	Combined-cycle	13.0 lb/hr	13.4 lb/hr
	Combined-cycle with duct firing	18.8 lb/hr	19.2 lb/hr
Oil-firing	Combined-cycle	62.1 lb/hr	62.5 lb/hr

The proposed rates are based on GE performance data for 7FA.04 improvement at 59°F ambient temperature. It should be noted that the mass emissions are used only for comparison with annual emissions tests. Compliance is based on 2.0 ppmvd and 8 ppmvd corrected to 15 percent oxygen for natural gas and oil, respectively.

FPL also requests that the gas turbine heat input rates in Permit No. 0250003-011-AV be revised from 1,608 MMBtu/hr (LHV) to 1,659 MMBtu/hr (LHV) for gas-firing and from 1,830 MMBtu/hr (LHV) to 1,908 MMBtu/hr (LHV) for oil-firing at the compressor inlet air temperature of 59°F.

TABLES

Table 1. Turkey Point Unit 5 Annual Heat Inputs and Operating Hours, 2008 - 2012

UNIT 5

Year	Heat Input from Distillate Oil (Diesel) (MMBtu/yr)					Heat Input from Natural Gas (MMBtu/yr)					Total Actual Heat Input (MMBtu/yr)				
	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total
2012	21,542	18,346	19,938	19,938	79,764	11,400,000	11,566,000	11,233,000	11,317,000	45,516,000	11,421,542	11,584,346	11,252,938	11,336,938	45,595,764
2011	19,312	3,964	10,384	11,887	45,547	9,005,000	10,623,000	10,364,000	10,969,000	40,961,000	9,024,312	10,626,964	10,374,384	10,980,887	41,006,547
2010	11,104	7,597	1,754	8,768	29,223	10,764,000	9,952,000	10,857,000	10,019,000	41,592,000	10,775,104	9,959,597	10,858,754	10,027,768	41,621,223
2009	443	1,328	1,771	885	4,427	12,523,000	12,265,000	11,914,000	11,921,000	48,623,000	12,523,443	12,266,328	11,915,771	11,921,885	48,627,427
2008	3,446	6,749	0	4,164	14,360	11,161,000	10,945,000	10,847,000	11,134,000	44,087,000	11,164,446	10,951,749	10,847,000	11,138,164	44,101,360

UNIT 5

Year	Distillate Oil Operating Hours (hr/yr)					Natural Gas Operating Hours (hr/yr)					Total Actual Operating Hours (hr/yr)				
	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total
2012	62	51	56	55	224	7,169	7,305	7,300	7,227	29,001	7,231	7,356	7,356	7,282	29,225
2011	39	8	21	24	92	5,688	6,634	6,409	6,886	25,617	5,727	6,642	6,430	6,910	25,709
2010	29	20	5	23	77	6,876	6,368	6,960	6,456	26,660	6,905	6,388	6,965	6,479	26,737
2009	1	3	4	2	10	7,894	7,762	7,516	7,546	30,718	7,895	7,765	7,520	7,548	30,728
2008	4	8	0	5	17	7,006	6,884	6,853	7,002	27,745	7,010	6,892	6,853	7,007	27,762

Note: All values are based on annual operating reports for the period 2008 - 2012.

Table 2. Annual Emissions Reported in 2008-2012 Annual Operating Reports and Acid Rain Database for Unit 5

Year	Pollutant	Unit 5A (tons)	Unit 5B (tons)	Unit 5C (tons)	Unit 5D (tons)	Total (tons)
2012	NO_x	49.6	45.8	47.6	43.5	186.4
	CO	6.4	6.5	6.4	5.8	25.1
	SO_2	3.6	3.6	3.5	3.5	14.2
	VOC	1.19	2.03	8.42	2.44	14.1
	PM	0.5	0.3	0.3	0.2	1.3
	PM_{10}	0.5	0.3	0.3	0.2	1.3
	SAM [a]	--	--	--	--	2.2
	CO_2	689,148.6	698,915.5	679,362.9	684,113.5	2,751,540.5
2011	NO_x	41.5	48.4	40.1	50.0	179.9
	CO	4.7	7.0	6.4	6.6	24.7
	SO_2	2.7	3.2	3.0	3.2	12.1
	VOC	0.94	1.83	7.58	2.30	12.6
	PM [b]	0.30	0.08	0.13	0.11	0.6
	PM_{10} [b]	0.30	0.08	0.13	0.11	0.6
	SAM [a]	--	--	--	--	1.9
	CO_2	536,571.2	631,543.4	616,677.9	652,691.4	2,437,483.9
2010	NO_x	41.4	40.4	39.5	46.7	168.0
	CO	4.9	5.4	5.3	6.7	22.3
	SO_2	3.3	3.1	3.4	3.0	12.8
	VOC	1.14	1.76	8.22	2.15	13.3
	PM	0.2	0.1	0.1	0.1	0.5
	PM_{10}	0.2	0.1	0.1	0.1	0.5
	SAM [a]	--	--	--	--	2.0
	CO_2	636,630.0	588,124.5	645,178.3	591,840.6	2,461,773.3
2009	NO_x	46.2	53.6	46.3	44.5	190.6
	CO	5.2	6.4	6.2	5.3	23.1
	SO_2	3.8	3.7	3.6	3.5	14.6
	VOC	1.30	2.14	8.87	2.49	14.8
	PM [b]	0.05	0.06	0.06	0.05	0.2
	PM_{10} [b]	0.05	0.06	0.06	0.05	0.2
	SAM [a]	--	--	--	--	2.2
	CO_2	747,400.5	727,713.9	711,280.5	704,872.6	2,891,267.5
2008	NO_x	46.0	42.6	42.8	37.3	168.7
	CO	12.6	9.6	11.3	4.2	37.8
	SO_2	3.3	3.3	3.3	3.3	13.2
	VOC	1.16	1.90	8.09	2.32	13.5
	PM	0.1	0.1	0.0	0.1	0.2
	PM_{10}	0.1	0.1	0.0	0.1	0.2
	SAM [a]	--	--	--	--	2.0
	CO_2	669,640.5	652,556.9	649,944.5	658,155.3	2,630,297.1

[a] Not reported in AORs - based on assuming 10% of SO_2 converts to SO_3, all of which converts to SAM.

[b] Emissions rates reported in the AORs were multiplied by 1000 to correct error in the emission factor used in the AORs for 2007 and 2009.

Source: Annual Operating Report (AOR) for Turkey Point Power Plant, 2008 - 2012; EPA's Acid Rain database.

Table 3. Actual Annual Emissions of N_2O and CH_4 for the Period 2008 - 2012
Units 5 CT Improvement Project

Unit	Actual Annual Heat Input [a] (MMBtu/yr)	N_2O Emissions				CH_4 Emissions			
		Emission Factor [b] (lb/MMBtu)	Annual Emissions (lb/yr)	Annual Emissions (TPY)	CO_2e [c] Rate (TPY)	Emission Factor [b] (lb/MMBtu)	Annual Emissions (lb/yr)	Annual Emissions (TPY)	CO_2e [c] Rate (TPY)
Unit 5 - Distillate Oil-Firing									
2012	79,764	1.32E-03	105.5	0.053	16.35	6.6E-03	527.4	0.264	5.54
2011	45,547	1.32E-03	60.2	0.030	9.34	6.6E-03	301.2	0.151	3.16
2010	29,223	1.32E-03	38.6	0.019	5.99	6.6E-03	193.2	0.097	2.03
2009	4,427	1.32E-03	5.9	0.003	0.91	6.6E-03	29.3	0.015	0.31
2008	14,360	1.32E-03	19.0	0.009	2.94	6.6E-03	94.9	0.047	1.00
Unit 5 - Natural Gas-Firing									
2012	45,516,000	2.20E-04	10,031.7	5.0	1,554.9	2.2E-03	100,317.3	50.2	1,053.3
2011	40,961,000	2.20E-04	9,027.8	4.5	1,399.3	2.2E-03	90,278.0	45.1	947.9
2010	41,592,000	2.20E-04	9,166.9	4.6	1,420.9	2.2E-03	91,668.8	45.8	962.5
2009	48,623,000	2.20E-04	10,716.5	5.4	1,661.1	2.2E-03	107,165.1	53.6	1,125.2
2008	44,087,000	2.20E-04	9,716.8	4.9	1,506.1	2.2E-03	97,167.7	48.6	1,020.3
Total									
2012	--	--	--	5.1	1,571.3	--	--	50.4	1,058.9
2011	--	--	--	4.5	1,408.6	--	--	45.3	951.1
2010	--	--	--	4.6	1,426.9	--	--	45.9	964.6
2009	--	--	--	5.4	1,662.0	--	--	53.6	1,125.5
2008	--	--	--	4.9	1,509.0	--	--	48.6	1,021.3

[a] Based on AOR data - see Table 1.

[b] Table C-2, Subpart C, 40 CFR 98. Emission factors in kg/MMBtu were converted to lb/MMBtu by multiplying by 2.204.

[c] N_2O and CH_4 are multiplied by a factor of 310 and 21, respectively, to determine CO_2 equivalence.

Table 4. Annual Average Emissions for Turkey Point Unit 5 for Each Consecutive Two-Year Period, 2008-2012

Pollutant	Annual Emissions for Unit 5					Two-Year Average Emissions			
	2012	2011	2010	2009	2008	2012-2011 (tons)	2011-2010 (tons)	2010-2009 (tons)	2009-2008 (tons)
NO_x	186.4	179.9	168.0	190.6	168.7	183.2	174.0	179.3	179.6
CO	25.1	24.7	22.3	23.1	37.8	24.9	23.5	22.7	30.4
SO_2	14.2	12.1	12.8	14.6	13.2	13.1	12.4	13.7	13.9
VOC	14.1	12.6	13.3	14.8	13.5	13.4	13.0	14.0	14.1
PM	1.3	0.6	0.5	0.2	0.2	0.9	0.6	0.4	0.2
PM_{10}	1.3	0.6	0.5	0.2	0.2	0.9	0.6	0.4	0.2
$PM_{2.5}$ [a]	1.3	0.6	0.5	0.2	0.2	0.9	0.6	0.4	0.2
SAM [b]	2.2	1.9	2.0	2.2	2.0	2.0	1.9	2.1	2.1
CO_2	2,751,540.5	2,437,483.9	2,461,773.3	2,891,267.5	2,630,297.1	2,594,512.2	2,449,628.6	2,676,520.4	2,760,782.3
N_2O [c] (CO_2e)	1,571.3	1,408.6	1,426.9	1,662.0	1,509.0	1,490.0	1,417.8	1,544.4	1,585.5
CH_4 [c] (CO_2e)	1,058.9	951.1	964.6	1,125.5	1,021.3	1,005.0	957.8	1,045.0	1,073.4

[a] Assuming equal to PM_{10} emissions.

[b] Not reported in AORs - based on assuming 10% of SO_2 converts to SO_3, all of which converts to SAM.

[c] Calculated based on actual annual heat input - see Table 3.

Source: Annual Operating Report (AOR) for Turkey Point Power Plant, 2008 - 2012; EPA's Acid Rain database.

Table 5. Actual Hourly Emission Rates, FPL Turkey Point Units 5A, 5B, 5C, and 5D

Pollutant	Year	Annual Emissions [a] (tons)				Operating Hours [a]				Hourly Emission Rates (lb/hr)				Maximum Rate (lb//hr)
		Unit 5A	Unit 5B	Unit 5C	Unit 5D	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Unit 5A	Unit 5B	Unit 5C	Unit 5D	
NO_x	2012	49.6	45.8	6.4	43.5	7,231	7,356	7,356	7,282	13.7	12.4	1.7	11.9	
	2011	41.5	48.4	40.1	50.0	5,727	6,642	6,430	6,910	14.5	14.6	12.5	14.5	
	2010	41.4	40.4	39.5	46.7	6,905	6,388	6,965	6,479	12.0	12.6	11.3	14.4	
	2009	46.2	53.6	46.3	44.5	7,895	7,765	7,520	7,548	11.7	13.8	12.3	11.8	
	2008	46.0	42.6	42.8	37.3	7,010	6,892	6,853	7,007	13.1	12.3	12.5	10.6	
									Maximum =	14.5	14.6	12.5	14.5	14.56
CO	2012	6.4	6.5	47.6	5.8	7,231	7,356	7,356	7,282	1.78	1.77	12.93	1.60	
	2011	4.7	7.0	6.4	6.6	5,727	6,642	6,430	6,910	1.64	2.11	1.98	1.91	
	2010	4.9	5.4	5.3	6.7	6,905	6,388	6,965	6,479	1.43	1.68	1.52	2.07	
	2009	5.2	6.4	6.2	5.3	7,895	7,765	7,520	7,548	1.32	1.64	1.66	1.40	
	2008	12.6	9.6	11.3	4.2	7,010	6,892	6,853	7,007	3.60	2.80	3.30	1.20	
									Maximum =	3.60	2.80	12.93	2.07	12.93
VOC	2012	1.193	2.025	8.423	2.441	7,231	7,356	7,356	7,282	0.33	0.55	2.29	0.67	
	2011	0.945	1.827	7.582	2.297	5,727	6,642	6,430	6,910	0.33	0.55	2.36	0.66	
	2010	1.139	1.758	8.217	2.154	6,905	6,388	6,965	6,479	0.33	0.55	2.36	0.66	
	2009	1.303	2.136	8.873	2.492	7,895	7,765	7,520	7,548	0.33	0.55	2.36	0.66	
	2008	1.157	1.896	8.087	2.316	7,010	6,892	6,853	7,007	0.33	0.55	2.36	0.66	
									Maximum =	0.33	0.55	2.36	0.67	2.36
SO_2	2012	3.6	3.6	3.5	3.5	7,231	7,356	7,356	7,282	0.98	0.98	0.95	0.97	
	2011	2.7	3.2	3.0	3.2	5,727	6,642	6,430	6,910	0.94	0.96	0.93	0.93	
	2010	3.3	3.1	3.4	3.0	6,905	6,388	6,965	6,479	0.96	0.97	0.98	0.93	
	2009	3.8	3.7	3.6	3.5	7,895	7,765	7,520	7,548	0.96	0.95	0.96	0.93	
	2008	3.3	3.3	3.3	3.3	7,010	6,892	6,853	7,007	0.96	0.95	0.95	0.95	
									Maximum =	0.98	0.98	0.98	0.97	0.98
$PM/PM_{10}/PM_{2.5}$	2012	0.5	0.3	0.3	0.2	7,231	7,356	7,356	7,282	0.13	0.08	0.08	0.06	
	2011	0.30	0.08	0.13	0.11	5,727	6,642	6,430	6,910	0.10	0.02	0.04	0.03	
	2010	0.2	0.1	0.1	0.1	6,905	6,388	6,965	6,479	0.07	0.04	0.02	0.03	
	2009	0.05	0.06	0.06	0.05	7,895	7,765	7,520	7,548	0.01	0.01	0.02	0.01	
	2008	0.1	0.1	0.0	0.1	7,010	6,892	6,853	7,007	0.02	0.02	0.01	0.02	
									Maximum =	0.13	0.08	0.08	0.06	0.13

[a] Reported in AORs for the period 2008 - 2012.

Table 6. Turkey Point Unit 5 Actual Emissions as a Function of Heat Input, 2008 - 2012

Year	Actual Annual Heat Input (MMBtu/yr)[a]					Units 5A, 5B, 5C, & 5D Total Actual Emissions (TPY)[b]							Emissions per Unit Heat Input[c] (lb/MMBtu)						
	Unit 5A	Unit 5B	Unit 5C	Unit 5D	Total	NO_x	CO	VOC	SO_2	PM/PM_{10}	SAM	CO_2	NO_x	CO	VOC	SO_2	PM/PM_{10}	SAM	CO_2
2012	11,421,542	11,584,346	11,252,938	11,336,938	45,518,000	186.4	25.1	14.1	14.2	1.3	2.2	2,751,540.5	0.0082	0.0011	0.0006	0.00062	0.000055	0.0001	120.9
2011	9,024,312	10,626,964	10,374,384	10,980,887	40,961,000	179.9	24.7	12.6	12.1	0.6	1.9	2,437,483.9	0.0088	0.0012	0.0006	0.00059	0.000030	0.0001	119.0
2010	10,775,104	9,959,597	10,858,754	10,027,768	41,592,000	168.0	22.3	13.3	12.8	0.5	2.0	2,461,773.3	0.0081	0.0011	0.0006	0.00062	0.000026	0.0001	118.4
2009	12,523,443	12,266,328	11,915,771	11,921,885	48,623,000	190.6	23.1	14.8	14.6	0.2	2.2	2,891,267.5	0.0078	0.0010	0.0006	0.00060	0.0000085	0.0001	118.9
2008	11,164,446	10,951,749	10,847,000	11,138,164	44,087,000	168.7	37.8	13.5	13.2	0.2	2.0	2,630,297.1	0.0077	0.0017	0.0006	0.00060	0.000010	0.0001	119.3
				Maximum =	48,623,000							**Maximum =**	0.0088	0.0017	0.00064	0.00062	0.000055	0.000095	120.9

[a] Based on AOR data, see Table 1.

[b] Based on AOR data, see Table 2.

[c] Total actual emissions divided by total heat input.

Table 7. Projected Increase in Annual Emissions for Each CT, FPL Turkey Point Units 5A, 5B, 5C, and 5D (EU IDs 009, 010, 011, and 012)

Pollutant	Emission Factor [a] (lb/MMBtu)	Current Design Heat Input [b] (MMMBtu/hr, HHV)		Future Design Heat Input [c] (MMMBtu/hr, HHV)		Max Increase in Design Heat Input (MMBtu/hr, HHV)		Projected Operating [d] Hours (hr/yr)		Annual Increase in Design Heat Input (MMMBtu/yr)	Increase in Annual Emissions (TPY)
		NG-Firing	Oil-Firing	NG-Firing	Oil-Firing	NG-Firing	Oil-Firing	NG-Firing	Oil-Firing		
NO_x	0.0088	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	1.24
CO	0.0017	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.243
SO_2	0.00062	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.088
VOC	0.0006	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.090
PM	0.000055	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.008
PM_{10}	0.000055	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.008
$PM_{2.5}$	0.000055	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.008
SAM	0.000095	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.014
GHGs											
CO_2	120.9	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	17,134.6
N_2O	2.20E-04	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.031
CH_4	2.20E-03	1,722.7	1,912.2	1,758.4	1,947.2	35.6	35.0	7,894	62.0	283,439.9	0.31

[a] Maximum actual emission factor for the period 2008-2012 - see Table 6.

[b] Based on GE data for 7FA.03 turbines at 75 F for NG firing. Heat input rate at HHV = Heat input rate (LHV) x 1.11 (for natural gas) or 1.06 (for fuel oil).

[c] Based on GE data for improved 7FA.04 turbines, at 75°F.

[d] Highest fuel usage for all four CTs during baseline actual period.See Table 1.

Table 8. Projected Annual Emissions for Turkey Point Unit 5
GE 7FA.04 Improvements

Pollutant	Baseline (Maximum 2-Year Average Actual) Emissions [a] (TPY)	Projected Increase for One CT [b] (TPY)	Projected Increase for Four CTs [b] (TPY)	Projected Annual Emissions (TPY)
NO_x	183.15	1.24	4.98	188.13
CO	30.44	0.24	0.97	31.42
SO_2	13.91	0.09	0.35	14.27
VOC	14.13	0.09	0.36	14.49
PM	0.94	0.01	0.031	0.97
PM_{10}	0.94	0.01	0.031	0.97
$PM_{2.5}$	0.94	0.01	0.031	0.97
SAM	2.13	0.014	0.054	2.18
CO_2	2,760,782.32	17,134.55	68,538.2	2,829,320.5
N_2O (CO_2e)	1,585.50	9.68	38.7	1,624.2
CH_4 (CO_2e)	1,073.40	6.56	26.2	1,099.6

[a] Maximum 2-Year average emissions - see Table 4.

[b] Projected increase in emissions due to the project - see Table 7.

Table 9. PSD Applicability - Turkey Point Unit 5
GE 7FA.04 Improvements

Pollutant	Baseline (Maximum 2-Year Average Actual) Emissions[a] (TPY)	Projected Actual Emissions [b] (TPY)	Increase/Decrease in Annual Emissions [c] (TPY)	PSD Significant Emission Rates (TPY)
NO_x	183.15	188.13	4.98	40
CO	30.44	31.42	0.97	100
SO_2	13.91	14.27	0.35	40
VOC	14.13	14.49	0.36	40
PM	0.94	0.97	0.031	25
PM_{10}	0.94	0.97	0.031	15
$PM_{2.5}$	0.94	0.97	0.031	10
SAM	2.13	2.18	0.054	7
GHGs				
CO_2	2,760,782.32	2,829,320.53	68,538.2 [d]	
N_2O (CO_2e)	1,585.50	1,624.24	38.7 [d]	
CH_4 (CO_2e)	1,073.40	1,099.64	26.2 [d]	
Total GHGs (CO_2e)	2,763,441.2	2,832,044.4	68,603.2	75,000

[a] Maximum 2-Year average emissions - see Tables 4.
[b] Projected actual annual emissions for Turkey Point Unit 5 - see Table 8.
[c] Projected actual emissions minus baseline actual emissions.
[d] Does not take into account heat rate.

APPENDIX A

Appendix A
Turkey Point Power Plant
Summary of AOR Data for Unit 5 (EU IDs 009, 010, 011, 012)

Emission Unit 009

Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)

2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.06	49.56	**49.62**	**7231**
CO	0.06758	6.36659	**6.43**	
SO2	0.08	3.47	**3.55**	
VOC	0.00961	1.18289	**1.19**	
PM	0.42873	0.03762	**0.47**	
PM10	0.42873	0.03762	**0.47**	

Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)

2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.089769	41.4102	**41.50**	**5727**
CO	0.04251	4.66416	**4.71**	
SO2	2.69838	0.001616	**2.70**	
VOC	0.006045	0.93852	**0.94**	
PM	0.269685	0.029717	**0.30**	
PM10	0.269685	0.029717	**0.30**	

Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)

2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.0449	41.3551	**41.40**	**6905**
CO	0.03161	4.91634	**4.95**	
SO2	3.29802	0.001978	**3.30**	
VOC	0.004495	1.13454	**1.14**	
PM	0.200535	0.035521	**0.24**	
PM10	0.200535	0.035521	**0.24**	

Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)

2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.000403	46.1996	**46.20**	**7895**
CO	0.00109	5.21004	**5.21**	
SO2	3.79772	0.00228	**3.80**	
VOC	0.000155	1.30251	**1.30**	
PM	0.006915	0.041326	**0.05**	
PM10	0.006915	0.041326	**0.05**	

Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)

2008	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.12362	45.8893	**46.01**	**7010**
CO	0.00436	12.6108	**12.62**	
SO2	0.000583	3.3483	**3.35**	
VOC	0.00062	1.15599	**1.16**	
PM	0.02766	0.036831	**0.06**	
PM10	0.02766	0.036831	**0.06**	

Emission Unit 010

Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)

2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.05	45.71	**45.76**	**7356**
CO	0.06783	6.45916	**6.53**	
SO2	0.08	3.52	**3.60**	
VOC	0.01632	2.00888	**2.03**	
PM	0.26418	0.038168	**0.30**	
PM10	0.26418	0.038168	**0.30**	

Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)

2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.017798	48.3347	**48.35**	**6642**
CO	0.01064	6.99887	**7.01**	
SO2	3.19808	0.001919	**3.20**	
VOC	0.00256	1.82435	**1.83**	
PM	0.04144	0.035056	**0.08**	
PM10	0.04144	0.035056	**0.08**	

Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)

2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.030716	40.3693	**40.40**	**6388**
CO	0.0266	5.34912	**5.38**	
SO2	3.09814	0.001859	**3.10**	
VOC	0.0064	1.7512	**1.76**	
PM	0.1036	0.032842	**0.14**	
PM10	0.1036	0.032842	**0.14**	

Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)

2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.00152	53.5985	**53.60**	7765
CO	0.00399	6.36484	**6.37**	
SO2	3.69778	0.00222	**3.70**	
VOC	0.00096	2.13455	**2.14**	
PM	0.01554	0.040475	**0.06**	
PM10	0.01554	0.040475	**0.06**	

Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)

2008	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.21792	42.3366	**42.55**	**6892**
CO	0.01064	9.6376	**9.65**	
SO2	0.001141	3.2835	**3.28**	
VOC	0.00256	1.8931	**1.90**	
PM	0.04144	0.036119	**0.08**	
PM10	0.04144	0.036119	**0.08**	

Appendix A
Turkey Point Power Plant
Summary of AOR Data for Unit 5 (EU IDs 009, 010, 011, 012)

Emission Unit 011

Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)

2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.07	47.49	**47.56**	**7356**
CO	0.0896	6.27409	**6.36**	
SO2	0.09	3.42	**3.51**	
VOC	0.05068	8.3721	**8.42**	
PM	0.2436	0.037069	**0.28**	
PM10	0.2436	0.037069	**0.28**	

Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)

2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.040573	40.0594	**40.10**	**6430**
CO	0.0336	6.34491	**6.38**	
SO2	2.9982	0.001798	**3.00**	
VOC	0.019005	7.56262	**7.58**	
PM	0.09135	0.034201	**0.13**	
PM10	0.09135	0.034201	**0.13**	

Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)

2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.006206	39.4938	**39.50**	**6965**
CO	0.008	5.2896	**5.30**	
SO2	3.39796	0.00204	**3.40**	
VOC	0.004525	8.2128	**8.22**	
PM	0.02175	0.035828	**0.06**	
PM10	0.02175	0.035828	**0.06**	

Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)

2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.001756	46.2982	**46.30**	**7520**
CO	0.0064	6.23828	**6.24**	
SO2	3.59784	0.00216	**3.60**	
VOC	0.00362	8.86888	**8.87**	
PM	0.0174	0.039316	**0.06**	
PM10	0.0174	0.039316	**0.06**	

Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)

2008	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0	42.8313	**42.83**	**6853**
CO	0	11.3075	**11.31**	
SO2	0	3.2541	**3.25**	
VOC	0	8.08654	**8.09**	
PM	0	0.035795	**0.04**	
PM10	0	0.035795	**0.04**	

Emission Unit 012

Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)

2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.05	43.41	**43.46**	**7282**
CO	0.064075	5.74624	**5.81**	
SO2	0.07	3.45	**3.52**	
VOC	0.055825	2.38491	**2.44**	
PM	0.176275	0.037346	**0.21**	
PM10	0.176275	0.037346	**0.21**	

Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)

2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.045303	49.909	**49.95**	**6910**
CO	0.02796	6.57613	**6.60**	
SO2	3.19808	0.001918	**3.20**	
VOC	0.02436	2.27238	**2.30**	
PM	0.07692	0.036198	**0.11**	
PM10	0.07692	0.036198	**0.11**	

Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)

2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.039884	46.6601	**46.70**	**6479**
CO	0.026795	6.68196	**6.71**	
SO2	2.9982	0.001798	**3.00**	
VOC	0.023345	2.13048	**2.15**	
PM	0.073715	0.033063	**0.11**	
PM10	0.073715	0.033063	**0.11**	

Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)

2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.000767	44.4992	**44.50**	**7548**
CO	0.00233	5.2822	**5.28**	
SO2	3.4979	0.0021	**3.50**	
VOC	0.00203	2.49018	**2.49**	
PM	0.00641	0.039339	**0.05**	
PM10	0.00641	0.039339	**0.05**	

Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)

2008	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx	0.141825	37.1106	**37.25**	**7007**
CO	0.005825	4.2012	**4.21**	
SO2	0.000704	3.3402	**3.34**	
VOC	0.005075	2.31066	**2.32**	
PM	0.016025	0.036742	**0.05**	
PM10	0.016025	0.036742	**0.05**	

Appendix A
Turkey Point Power Plant
Summary of AOR Data for Unit 5 (EU IDs 009, 010, 011, 012)

	Fuel Usage		Fuel Heat Content		Heat Input per Year		
	Diesel	Natural Gas	Diesel	Natural Gas	Diesel	Natural Gas	Total
	1000 gal/yr	MMft3/yr	MMBtu/1000 gal	MMBtu/MMft3	MMBtu/yr	MMBtu/yr	MMBtu/yr
Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)			Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)		Unit 5A - Gas turbine with supplementary-fired HRSG (170 MW)		
2012	158.4	11400	136	1000	21542.4	11400000	11421542.4
2011	142.002	9005	136	1000	19312.272	9005000	9024312.27
2010	81.648	10764	136	1000	11104.128	10764000	10775104.1
2009	3.255	12523	136	1000	442.68	12523000	12523442.7
2008	25.341	11161	136	1000	3446.376	11161000	11164446.4
Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)			Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)		Unit 5B - Gas turbine with supplementary-fired HRSG (170 MW)		
2012	134.9	11566	136	1000	18346.4	11566000	11584346.4
2011	29.148	10623	136	1000	3964.128	10623000	10626964.1
2010	55.86	9952	136	1000	7596.96	9952000	9959596.96
2009	9.765	12265	136	1000	1328.04	12265000	12266328
2008	49.626	10945	136	1000	6749.136	10945000	10951749.1
Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)			Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)		Unit 5C - Gas turbine with supplementary-fired HRSG (170 MW)		
2012	146.6	11233	136	1000	19937.6	11233000	11252937.6
2011	76.356	10364	136	1000	10384.416	10364000	10374384.4
2010	12.894	10857	136	1000	1753.584	10857000	10858753.6
2009	13.02	11914	136	1000	1770.72	11914000	11915770.7
2008	0	10847	136	1000	0	10847000	10847000
Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)			Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)		Unit 5D - Gas turbine with supplementary-fired HRSG (170 MW)		
2012	146.6	11317	136	1000	19937.6	11317000	11336937.6
2011	87.402	10969	136	1000	11886.672	10969000	10980886.7
2010	64.47	10019	136	1000	8767.92	10019000	10027767.9
2009	6.51	11921	136	1000	885.36	11921000	11921885.4
2008	30.621	11134	136	1000	4164.456	11134000	11138164.5

APPENDIX B

Appendix B
CEM Reports from Acid Rain Database
Annual Reports

STATE	FACILITY_NAME	ORISPL_CODE	UNITID	OP_YEAR	ASSOC_STACKS	PRG_CODE	SUM_OPTIME	NUM_MONTHS_REPORTED	GLOAD	SO2_MASS	NOX_RATE	NOX_MASS	CO2_MASS	HEAT_INPUT	UNIT_TYPE_INFO	PRIMARY_FUEL_INFO	SECONDARY_FUEL_INFO	CAPACITY_INPUT
FL	Turkey Point	621	TPCT5A	2008		ARP	6967.2	12	1572652.3	3.391	0.0093	42.16	669640.487	11267267.02	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5B	2008		ARP	6832.9	12	1584271.9	3.319	0.0104	42.66	652556.868	10978520.82	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5C	2008		ARP	6778.6	12	1573110.8	3.281	0.0115	46.67	649944.457	10936583.8	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5D	2008		ARP	6946.4	12	1606772.2	3.337	0.0098	41.05	658155.325	11073534.18	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
							27525.1		6336807.2			172.54						
FL	Turkey Point	621	TPCT5A	2009		ARP	7835.2	12	1828203.0	3.773	0.0095	46.25	747400.5	12576377.06	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5B	2009		ARP	7677.8	12	1785188.0	3.678	0.012	53.58	727713.9	12244785.24	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5C	2009		ARP	7442.7	12	1737908.0	3.598	0.0106	46.29	711280.5	11967880.48	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5D	2009		ARP	7463.1	12	1732550.0	3.561	0.0102	44.45	704872.6	11860494.44	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
							30418.9		7083849.0			190.56						
FL	Turkey Point	621	TPCT5A	2010		ARP	6828.3	12	1545711.2	3.293	0.0108	41.44	636629.981	10706295.41	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5B	2010		ARP	6309.0	12	1433425.1	3.009	0.0117	40.36	588124.505	9893082.22	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5C	2010		ARP	6899.3	12	1569393.0	3.259	0.0096	39.45	645178.269	10856158.30	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5D	2010		ARP	6367.6	12	1442064.5	3.025	0.0147	46.75	591840.553	9955848.49	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
							26404.1		5990593.9			168.00						
FL	Turkey Point	621	TPCT5A	2011		ARP	5627.9	12	1300843.3	2.757	0.0135	41.60	536571.155	9024994.60	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5B	2011		ARP	6542.4	12	1545575.5	3.193	0.0127	47.13	631543.446	10626604.29	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5C	2011		ARP	6346.2	12	1506317.9	3.138	0.0109	40.07	616677.892	10374731.70	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5D	2011		ARP	6839.5	12	1592658.5	3.322	0.0103	41.54	652691.4	10980670.41	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
							25356.0		5945395.2			170.34						
FL	Turkey Point	621	TPCT5A	2012		ARP	7128.0	12	1697890.3	3.548	0.0117	49.62	689148.561	11590714.81	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5B	2012		ARP	7264.2	12	1728870.6	3.584	0.0107	45.76	698915.533	11756165.37	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5C	2012		ARP	7066.1	12	1664557.4	3.51	0.0107	47.57	679362.903	11425121.26	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
FL	Turkey Point	621	TPCT5D	2012		ARP	7190.6	12	1679468.4	3.517	0.0101	43.46	684113.478	11506437.64	Combined cycle	Pipeline Natural Gas	Diesel Oil	1910
							28648.8		6770786.7			186.42						

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