original

PERMIT APPLICATION

# APPLICATION FOR AIR CONSTRUCTION PERMIT

## To Improve Performance of Sanford Plant Units 4 and 5

**Prepared For:** Florida Power & Light Company
700 Universe Blvd.
Juno Beach, FL 33408

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

**Distribution:** 4 copies –Florida Department of Environmental Protection
2 copies – Florida Power & Light Company
1 copy – Golder Associates Inc.

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Golder Associates

# APPLICATION FOR AIR PERMIT

## LONG FORM

# Department of Environmental Protection

RECEIVED
AUG 29 2011
DIVISION OF AIR RESOURCE MANAGEMENT

## 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: **Sanford Power Plant** | |
| 3. Facility Identification Number: **1270009** | |
| 4. Facility Location...<br>Street Address or Other Locator: **950 South Highway 17-92**<br>City: **DeBary** County: **Volusia** Zip Code: **32713** | |
| 5. Relocatable Facility?<br>☐ Yes ☒ No | 6. Existing Title V Permitted Facility?<br>☒ Yes ☐ No |

**Application Contact**

| |
|---|
| 1. Application Contact Name: **Kevin Washington, Project Manager** |
| 2. Application Contact Mailing Address...<br>Organization/Firm: **Florida Power & Light Company – FPL Environmental Services**<br>Street Address: **700 Universe Blvd.**<br>City: **Juno Beach** State: **FL** Zip Code: **33408** |
| 3. Application Contact Telephone Numbers...<br>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: 8-29-11 | 3. PSD Number (if applicable): |
| 2. Project Number(s): 1270009-022-AC | 4. Siting Number (if applicable): |

## 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 the existing General Electric (GE) Model MS7241FA(7FA.03) combustion turbines associated with Units 4A,4B,4C,4D,5A,5B,5C and 5D 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 |
|---|---|---|---|
| 005 | Combined-Cycle Combustion Turbine (CT) 4A | AC1B | NA |
| 006 | Combined-Cycle Combustion Turbine (CT) 4B | AC1B | NA |
| 007 | Combined-Cycle Combustion Turbine (CT) 4C | AC1B | NA |
| 008 | Combined-Cycle Combustion Turbine (CT) 4D | AC1B | NA |
| 009 | Combined-Cycle Combustion Turbine (CT) 5A | AC1B | NA |
| 010 | Combined-Cycle Combustion Turbine (CT) 5B | AC1B | NA |
| 011 | Combined-Cycle Combustion Turbine (CT) 5C | AC1B | NA |
| 012 | Combined-Cycle Combustion Turbine (CT) 5D | AC1B | NA |
| | | | |
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| | | | |

### 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 :
   **Jeff Smith, Plant General Manager**
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Sanford Plant**
   Street Address: **950 South Highway 17-92**
   City: **DeBary** State: **FL** Zip Code: **32713**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(386) 575-5100** Fax: **(386) 575-5299**
4. Owner/Authorized Representative E-mail Address: **jeff_smith@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

   8/24/11
   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 8/26/11
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...<br>Zone **17** East (km) **468.1**<br>North (km) **3190.86** | | 2. Facility Latitude/Longitude...<br>Latitude (DD/MM/SS) **28° 50' 42" N**<br>Longitude (DD/MM/SS) **81° 19' 37" W** | |
| 3. Governmental Facility Code:<br>**0** | 4. Facility Status Code:<br>**A** | 5. Facility Major Group SIC Code:<br>**49** | 6. Facility SIC(s):<br>**4911** |
| 7. Facility Comment :<br>**Fossil-fuel electric power plant consisting of electric utility steam generating unit (EU001), two 4-on-1 combined-cycle combustion turbine systems, each consisting of four combustion turbines (EU005-008 and EU009-012) and other miscellaneous diesel-fired and propane-fired engines (EU004).** | | | |

**Facility Contact**

| |
|---|
| 1. Facility Contact Name:<br>**Jeff Smith, Plant General Manager** |
| 2. Facility Contact Mailing Address...<br>Organization/Firm: **FPL-Sanford Power Plant**<br>Street Address: **950 South Highway 17-92**<br>City: **DeBary** State: **FL** Zip Code: **32713** |
| 3. Facility Contact Telephone Numbers:<br>Telephone: **(386) 575-5100** Fax: **(386) 575-5299** |
| 4. Facility Contact E-mail Address: **jeff_smith@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...<br>Organization/Firm:<br>Street Address:<br>City: State: Zip Code: |
| 3. Facility Primary Responsible Official Telephone Numbers...<br>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 | Y |
| CO | A | N |
| VOC | A | N |
| SO2 | A | Y |
| NOx | A | Y |
| HAPS | A | N |
| SAM | A | N |
| | | |
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## 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 |
|---|---|---|---|---|---|
| **PM/PM10** | **Y** | | | **500** | **OTHER** |
| **SO2** | **Y** | | | **4,000** | **OTHER** |
| **NOx** | **Y** | | | **4,500** | **OTHER** |
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7. Facility-Wide or Multi-Unit Emissions Cap Comment:
**Facility-wide emissions caps requested by FPL, Permit No. 1270009-018-AV.**

## 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)<br>☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **May, 2009** |
| 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)<br>☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **May, 2009** |
| 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)<br>☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: **May, 2009** |

**Additional Requirements for Air Construction Permit Applications**

| | |
|---|---|
| 1. | Area Map Showing Facility Location:<br>☐ Attached, Document ID: _____ ☒ Not Applicable (existing permitted facility) |
| 2. | Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL):<br>☒ Attached, Document ID: **Part II** |
| 3. | Rule Applicability Analysis:<br>☒ Attached, Document ID: **Part II** |
| 4. | List of Exempt Emissions Units:<br>☐ Attached, Document ID: _____ ☒ Not Applicable (no exempt units at facility) |
| 5. | Fugitive Emissions Identification:<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 6. | Air Quality Analysis (Rule 62-212.400(7), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 7. | Source Impact Analysis (Rule 62-212.400(5), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 8. | Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 9. | Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 10. | Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.):<br>☐ 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: **June, 2008**
   ☐ 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: **June, 2008**
   ☐ 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.

## 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 4A – 4D: Four identical combustion turbines with unfired heat recovery steam generators**

3. Emissions Unit Identification Number:
**EU 005 (Unit 4A), EU 006 (Unit 4B), EU 007 (Unit 4C), EU 008 (Unit 4D)**

| 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: **MS7241, 7FA.04**

10. Generator Nameplate Rating:

11. Emissions Unit Comment:
**4-on-1 combined-cycle system will consist of four nominal 170 megawatt (MW) General Electric (GE) 7FA.04 combustion turbines, four heat recovery steam generators, and a nominal 320-MW steam electrical generator set rated for a total nominal capacity of 1,000 MW.**

**Initial startup dates: December 6, 2002 (Unit 4A); December 4, 2002 (Unit 4B); December 16, 2002 (Unit 4C); and January 3, 2003 (Unit 4D)**

**Emissions Unit Control Equipment/Method:** Control 1 of 2

| |
|---|
| 1. Control Equipment/Method Description:<br><br>**Low nitrogen oxides ($NO_X$) burners - Dry low-$NO_x$ (DLN) combustors for firing natural gas** |
| 2. Control Device or Method Code: **205** |

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

| |
|---|
| 1. Control Equipment/Method Description:<br><br>**Miscellaneous Control Devices - Use of Natural gas** |
| 2. Control Device or Method Code: **99** |

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

| |
|---|
| 1. Control Equipment/Method Description: |
| 2. Control Device or Method Code: |

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

| |
|---|
| 1. Control Equipment/Method Description: |
| 2. Control Device or Method Code: |

## 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:<br>**170 MW (nominal) per turbine** | |
| 3. Maximum Heat Input Rate: **1,776 MMBtu/hr (HHV) (NG)** | |
| 4. Maximum Incineration Rate: pounds/hr<br>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 for each turbine are at 59 °F ambient temperature and based on 100-percent load.**

**Maximum heat input rate for each turbine at HTPM = 1,838 MMBtu/hr (HHV) (NG)**

## 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: **4A-4D 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: **125** feet | 7. Exit Diameter: **19** feet |
| 8. Exit Temperature: **220**°F | 9. Actual Volumetric Flow Rate: **1,053,410** acfm | 10. Water Vapor: **%** |
| 11. Maximum Dry Standard Flow Rate: dscfm | 12. Nonstack Emission Point Height: feet | |
| 13. Emission Point UTM Coordinates... Zone: **17** East (km): **468.1** North (km): **3190.86** | 14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **28/50/42 N** Longitude (DD/MM/SS) **81/19/37 W** | |

15. Emission Point Comment:

**For each turbine:**

**Flow rate (NG-firing, 59 °F, base load) = 3,614,000 lb/hr (GE data) /28.39 (mol wt) x 1545.6 (gas constant) x (460+220) (temperature) /2116.8 lb/ft$^2$ (pressure) x hr/60 min = 1,053,410 acfm**

## D. SEGMENT (PROCESS/FUEL) INFORMATION

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

| | | |
|---|---|---|
| 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: **7.1** | 5. Maximum Annual Rate: **62,196** | 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 = 1,776 MMBtu/hr / 1,000 MMBtu/$10^6$ $ft^3$ x 4 turbines = 7.1 x $10^6$ $ft^3$/hr Annual rate = 7.1 x $10^6$ $ft^3$/hr x 8,760 hrs/yr = 62,196 x $10^6$ $ft^3$/yr** | | |

**Segment Description and Rate:** Segment _ of _

| | | |
|---|---|---|
| 1. Segment Description (Process/Fuel Type): | | |
| 2. Source Classification Code (SCC): | 3. SCC Units: | |
| 4. Maximum Hourly Rate: | 5. Maximum Annual Rate: | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: | 8. Maximum % Ash: | 9. Million Btu per SCC Unit: |
| 10. Segment Comment: | | |

## 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 |
|---|---|---|---|
| $NO_x$ | 205 | | EL |
| CO | | | EL |
| $PM/PM_{10}$ | | | WP |
| VOC | | | EL |
| $SO_2$ | 99 | | WP |
| | | | |
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| | | | |

## 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): **1,328.0** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **1,359.8** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline projected and actual emissions include 4 & 5 only.** | |

## 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 5

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **65 lb/hr** | 4. Equivalent Allowable Emissions: **65** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 7E or 20.Initial Compliance test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions 2 of 5

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **9 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **CEMS data** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Based on 30-day rolling average. Equivalent allowable emissions based on GE data for GE7FA.04 at base load and 59°F.** | |

**Allowable Emissions** Allowable Emissions 3 of 5

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **102 lb/hr** | 4. Equivalent Allowable Emissions: **102** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 7E or 20. Initial Compliance test only.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at High temperature Peaking mode. In this mode each turbine operation limited to 400 hr/yr.** | |

## 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 5

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **15 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **CEM data** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **24-Hour block average standard during NG-firing combined-cycle operation at high temperature peaking mode. In this mode each turbine operation limited to 400 hr/yr.** | |

**Allowable Emissions** Allowable Emissions 5 of 5

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **75 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **CEM data** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Based on 4-hour rolling average. 40 CFR 60 Subpart GG limit.** | |

**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: **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): **159.9** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **167.5** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline projected and actual emissions include 4 & 5 only.** | |

## 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: **12 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**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: **43 lb/hr** | 4. Equivalent Allowable Emissions: **43** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**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: **9 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at High temperature Peaking Mode. In this mode each turbine operation limited to 400 hr/yr.** | |

## 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: **29 lb/hr** | 4. Equivalent Allowable Emissions: **29** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine operation limited to 400 hr/yr.** | |

**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): **0.15** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **0.16** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline projected and actual emissions include 4 & 5 only.** | |

## 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: **1.4 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, initial test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine. Equivalent allowable emissions based on GE data for GE7FA.04 at base load and 59$^0$ F.** | |

**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: **2.9 lb/hr** | 4. Equivalent Allowable Emissions: **2.9** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Methods 25A or 18, initial test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**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: **1.4 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Methods 25A or 18, initial test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine operation limited to 400 hr/yr.** | |

## 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:<br>**OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units:<br>**3 lb/hr** | 4. Equivalent Allowable Emissions:<br>**3** lb/hour tons/year |
| 5. Method of Compliance:<br>**Stack test using EPA Methods 25A or 18, initial test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method):<br>**Natural gas-firing combined-cycle operation.**<br>**Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine shall operate 400 hr/yr.** | |

## 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): **287.2** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **287.2** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline projected and actual emissions include 4 & 5 only.** | |

## 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): **Opacity used as surrogate standard for $PM/PM_{10}$. Permit No. 1270009-018-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): **26.5** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **27.2** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline projected and actual emissions include 4 & 5 only.** | |

## 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: **Use of natural gas** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Fuel specifications** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas used as primary fuel. Permit No. 1270009-018-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): | |

## 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 2

| | |
|---|---|
| 1. Visible Emissions Subtype: **VE10** | 2. Basis for Allowable Opacity: ☐ Rule ☒ Other |
| 3. Allowable Opacity: Normal Conditions: **10 %** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour | |
| 4. Method of Compliance: **EPA Method 9** | |
| 5. Visible Emissions Comment: **Visible emission (VE) standard used as surrogate standard for minimizing PM/$PM_{10}$ emissions.** | |

**Visible Emissions Limitation:** Visible Emissions Limitation 2 of 2

| | |
|---|---|
| 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), F.A.C., 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 2

| | |
|---|---|
| 1. Parameter Code: **EM** | 2. Pollutant(s): **NOx** |
| 3. CMS Requirement: | [x] Rule [ ] Other |
| 4. Monitor Information... Manufacturer: **TEI** Model Number: **42CLS** Serial Number: **4A:76011-381, 4B:76009-381, 4C:76010-381, 4D:76008-381** | |
| 5. Installation Date: **4A:12/5/02 4B:12/7/02,4C:12/1/02,4D:12/1/02** | 6. Performance Specification Test Date: **4A: 5/3/03, 4B:4/24/03, 4C:4/25/03, 4D:4/25/03** |
| 7. Continuous Monitor Comment: **40 CFR Part 75 Requirement** | |

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

| | |
|---|---|
| 1. Parameter Code: **O2** | 2. Pollutant(s): |
| 3. CMS Requirement: | [X] Rule [ ] Other |
| 4. Monitor Information... Manufacturer: SERVOMEX Model Number: 1440C:02D Serial Number: **4A:01420C/2557:14, 4B:01420C/2558:14, 4C:01420C/2561:14, 4D:01420C/2563:14** | |
| 5. Installation Date: **4A: 12/05/02 4B: 12/7/02 4C: 12/1/02 4D: 12/1/02** | 6. Performance Specification Test Date: **4A: 5/3/03 4B: 4/24/03 4C: 4/25/03 4D: 4/25/03** |
| 7. Continuous Monitor Comment: **40 CFR Part 75 Requirement** | |

## 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 **May,2009**

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 **May,2009**

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 _____

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 **May,2009**
   ☐ 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)):<br>☐ 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.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. | Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

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

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

### 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.

## 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 combustion turbines with unfired 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: **MS7241, 7FA.04**

10. Generator Nameplate Rating:

11. Emissions Unit Comment:
**4-on-1 combined-cycle system will consist of four nominal 170 MW GE 7FA.04 combustion turbines, four heat recovery steam generators and a nominal 320 MW steam electrical generator sets for a total nominal capacity of 1000 MW.**

**Initial startup dates: 21-Feb-02 (Units 5A), 25-Feb-02 (Unit 5B), 04-March-02 (Unit 5C), and 11-March-02 (Units 5D).**

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

| |
|---|
| 1. Control Equipment/Method Description:<br><br>**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:<br><br>**Steam or Water Injection –Use of Water 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:<br><br>**Miscellaneous Control Devices- : Use of natural gas and low sulfur distillate oil** |
| 2. Control Device or Method Code: **99** |

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

| |
|---|
| 1. Control Equipment/Method Description: |
| 2. Control Device or Method Code: |

## 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:<br>**170 MW (nominal) per turbine** | |
| 3. Maximum Heat Input Rate: **1,776 MMBtu/hr (HHV) (NG), 1,930 MMBtu/hr (HHV) (oil)** | |
| 4. Maximum Incineration Rate: pounds/hr<br>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 for each turbine are at 59 F ambient temperature and based on 100 % load. Oil firing limited to 28,600,000 gallons per year for four turbines combined.**

**Maximum heat input rate for each turbine at HTPM = 1,838 MMBtu/hr (HHV) (NG)**

## 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: **125** feet | 7. Exit Diameter: **19** feet |
| 8. Exit Temperature: **220**°F | 9. Actual Volumetric Flow Rate: **1,053,410** acfm | 10. Water Vapor: **%** |
| 11. Maximum Dry Standard Flow Rate: dscfm | 12. Nonstack Emission Point Height: feet | |
| 13. Emission Point UTM Coordinates... Zone: **17** East (km): **468.1** North (km): **3190.86** | 14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) **28/50/42 N** Longitude (DD/MM/SS) **81/19/37 W** | |

15. Emission Point Comment:

**For each turbine:**

**Flow rate (NG-firing, 59 F, base load) = 3,614,000 lb/hr (GE data) /28.39 (mol wt) x 1545.6 (gas constant) x (460+220) (temperature) /2116.8 lb/ft$^2$ (pressure) x hr/60 min = 1,053,410 acfm**

**Flow rate (oil-firing, 59 F, baseload) = 3,737,000 lb/hr (GE data) /28.27 (mol wt) x 1545.6 (gas constant) x (460+220) (temperature) /2116.8 lb/ft$^2$ (pressure) x hr/60 min = 1,093,886 acfm**

## 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: **7.1** | 5. Maximum Annual Rate: **62,196** | 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 = 1,776 MMBtu/hr / 1,000 MMBtu/$10^6$ $ft^3$ x 4 turbines = 7.1 x $10^6$ $ft^3$/hr Annual rate = 7.1 x $10^6$ $ft^3$/hr x 8,760 hrs/yr = 62,196 x $10^6$ $ft^3$/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: 56.76 | 5. Maximum Annual Rate: **28,600** | 6. Estimated Annual Activity Factor: |
| 7. Maximum % Sulfur: **0.05** | 8. Maximum % Ash: **0** | 9. Million Btu per SCC Unit: **136 (HHV)** |
| 10. Segment Comment: **Hourly rate = 1,930 MMBtu/hr / 136 MMBtu/$10^3$ gal x 4 turbines = 56.76 x $10^3$ gal/hr**<br><br>**Annual rate limited to 28,600,000 gal/yr.** | | |

## 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 | | EL |
| CO | | | EL |
| $PM/PM_{10}$ | | | WP |
| VOC | | | EL |
| $SO_2$ | 99 | | WP |
| | | | |
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## 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): **1328.0** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **1359.8** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline and projected actual emissions include Units 4 and 5 only.** | |

## 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 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **65 lb/hr** | 4. Equivalent Allowable Emissions: **65** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 7E or 20. Initial Compliance test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions 2 of 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **9 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: **60.2** lb/hour tons/year |
| 5. Method of Compliance: **CEMS data** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Based on 30 day rolling average. Equivalent allowable emissions based on GE data for GE 7FA.04 at base load and 59° F** | |

**Allowable Emissions** Allowable Emissions 3 of 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **102 lb/hr** | 4. Equivalent Allowable Emissions: **102** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 7E or 20. Initial Compliance test only.** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode operation is limited to 400 hr/yr.** | |

## 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 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code:<br>**OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units:<br>**15 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions:<br>lb/hour tons/year |
| 5. Method of Compliance:<br>**CEM data** | |
| 6. Allowable Emissions Comment (Description of Operating Method):<br>**24-Hour block average standard during NG-firing combined-cycle operation at high temperature peaking mode. In this mode operation is limited to 400 hr/yr.** | |

**Allowable Emissions** Allowable Emissions 5 of 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code:<br>**OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units:<br>**75 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions:<br>lb/hour tons/year |
| 5. Method of Compliance:<br>**CEM data** | |
| 6. Allowable Emissions Comment (Description of Operating Method):<br>**Based on 4 hour rolling average.**<br>**40 CFR 60 Subpart GG limit for NG firing.** | |

**Allowable Emissions** Allowable Emissions 6 of 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code:<br>**OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units:<br>**355 lb/hr** | 4. Equivalent Allowable Emissions:<br>**355** lb/hour tons/year |
| 5. Method of Compliance:<br>**Stack test using EPA Method 7E or 20. Initial Compliance test only** | |
| 6. Allowable Emissions Comment (Description of Operating Method):<br>**Oil-firing combined-cycle operation. Emissions rates are for each turbine.** | |

## 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 7 of 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **42 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **CEMS data** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Based on 24 hour Block Average for Oil firing.** | |

**Allowable Emissions** Allowable Emissions 8 of 8

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **110 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **CEMS data** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Based on 4 hour rolling for Oil firing. 40 CFR 60 Subpart GG limit for 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): | |

## 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): **159.9** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **167.5** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline and projected actual emissions include Units 4 and 5 only.** | |

## 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 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **12 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions 2 of 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **43 lb/hr** | 4. Equivalent Allowable Emissions: **43** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions 3 of 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **9 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine operation is limited to 400 hr/yr.** | |

## 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 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **29 lb/hr** | 4. Equivalent Allowable Emissions: **29** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine operation limited to 400 hr/yr.** | |

**Allowable Emissions** Allowable Emissions 5 of 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **20 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Annual Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Oil-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions 6 of 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **71.6 lb/hr** | 4. Equivalent Allowable Emissions: **71.6** lb/hour tons/year |
| 5. Method of Compliance: **Annual Stack test using EPA Method 10** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Oil-firing combined-cycle operation. Emissions rates are for each turbine.** | |

## 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): **0.15** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **0.16** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline and projected actual emissions include Units 4 and 5 only.** | |

## 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 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **1.4 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): **NG-firing combined-cycle operation with duct burner. Emissions rates are for each turbine. Equivalent allowable emissions based on GE data for GE7FA.04 at base load and 59$^0$ F** | |

**Allowable Emissions** Allowable Emissions 2 of 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **2.9 lb/hr** | 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): **NG-firing combined-cycle operation. Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions 3 of 6

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **1.4 ppmvd @ 15% O2** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Methods 25A or 18** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine shall operate 400 hr/yr.** | |

## 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 **6**

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **3 lb/hr** | 4. Equivalent Allowable Emissions: **3** lb/hour tons/year |
| 5. Method of Compliance: **Stack test using EPA Methods 25A or 18** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas-firing combined-cycle operation. Emissions rates are for each turbine at high temperature peaking mode. In this mode each turbine shall operate 400 hr/yr.** | |

**Allowable Emissions** Allowable Emissions **5** of **6**

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **7 ppmw** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Annual Stack test using EPA Methods 25A or 18** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Oil-firing combined-cycle operation Emissions rates are for each turbine.** | |

**Allowable Emissions** Allowable Emissions **6** of **6**

| | |
|---|---|
| 1. Basis for Allowable Emissions Code: **OTHER** | 2. Future Effective Date of Allowable Emissions: |
| 3. Allowable Emissions and Units: **16.1 lb/hr** | 4. Equivalent Allowable Emissions: **16.1** lb/hour tons/year |
| 5. Method of Compliance: **Annual Stack test using EPA Methods 25A or 18** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Oil-firing combined-cycle operation. Emissions rates are for each turbine.** | |

## 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): **287.2** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **287.2** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline and projected actual emissions include Units 4 and 5 only.** | |

## 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): **Opacity used as surrogate standard for $PM/PM_{10}$. Permit No. 1270009-018-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): **26.5** tons/year | 8.b. Baseline 24-month Period: From: **1/1/2006** To: **12/31/2007** |
| 9.a. Projected Actual Emissions (if required): **27.2** tons/year | 9.b. Projected Monitoring Period: ☒ 5 years ☐ 10 years |
| 10. Calculation of Emissions: **See Table 7 of Part II.** | |
| 11. Potential, Fugitive, and Actual Emissions Comment: **Baseline and projected actual emissions include Units 4 and 5 only.** | |

## 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: **Use of natural gas and distillate oil** | 4. Equivalent Allowable Emissions: lb/hour tons/year |
| 5. Method of Compliance: **Fuel specifications** | |
| 6. Allowable Emissions Comment (Description of Operating Method): **Natural gas used as primary fuel. Use of 0.05% S distillate oil limited to 28,600,000 gal/yr for all 4 turbines combined. Permit No. 1270009-018-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): | |

## 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 **2**

| 1. Visible Emissions Subtype: **VE10** | 2. Basis for Allowable Opacity: [X] Rule [ ] Other |
|---|---|
| 3. Allowable Opacity: Normal Conditions: **10 %** Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour | |
| 4. Method of Compliance: **EPA Method 9** | |
| 5. Visible Emissions Comment: **Visible emission standard used as a surrogate standard for minimizing $PM/PM_{10}$ emissions** | |

**Visible Emissions Limitation:** Visible Emissions Limitation **2** of **2**

| 1. Visible Emissions Subtype: **VE99** | 2. Basis for Allowable Opacity: [X] 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), F.A.C., excess emissions during startup, shutdown or malfunction limited to 2 hours per 24 hour period.** | |

**EMISSIONS UNIT INFORMATION**
**Section [2]**
**Combustion Turbines 5A, 5B, 5C and 5D**

## 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 2

| | |
|---|---|
| 1. Parameter Code: **EM** | 2. Pollutant(s): **NOx** |
| 3. CMS Requirement: | ☐ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **TEI** Model Number: **42CLS** Serial Number: **5A:77996-387, 5B:77997-387, 5C:77998-387, 5D:77999-387** | |
| 5. Installation Date: **4/18/2003** | 6. Performance Specification Test Date: **5A&5B:4/25/03, 5C:4/29/03, 5D:5/14/03** |
| 7. Continuous Monitor Comment: | |

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

| | |
|---|---|
| 1. Parameter Code: **O2** | 2. Pollutant(s): |
| 3. CMS Requirement: | ☒ Rule ☐ Other |
| 4. Monitor Information... Manufacturer: **SERVOMEX** Model Number: **1440C:02D** Serial Number: **5A:01420C/1831:14, 5B:01420C/1832:14, 5C:01420C/1833:14, 5D:01420C/1834:14** | |
| 5. Installation Date: **5A: 2/21/02 5B: 2/25/02 5C: 3/14/02 5D: 3/11/02** | 6. Performance Specification Test Date: **5A: 2/21/02 5B: 4/30/02 5C: 5/4/02 5D: 5/10/02** |
| 7. Continuous Monitor Comment: | |

**EMISSIONS UNIT INFORMATION**
**Section [2]**
**Combustion Turbines 5A, 5B, 5C and 5D**

## 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 **May,2009**

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 **May,2009**

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 _____

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 **May,2009**
   ☐ 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)):<br>☐ 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.):<br>☐ Attached, Document ID: _____ ☒ Not Applicable |
| 3. | Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only)<br>☐ Attached, Document ID: _____ ☒ Not Applicable |

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

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

### Additional Requirements Comment

PART II

# PART II

# APPLICATION FOR AIR CONSTRUCTION PERMIT FOR IMPROVING SANFORD UNIT 4 (EU IDS 005, 006, 007, AND 008) AND UNIT 5 (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 4A through 4D (EU IDs 005, 006, 007, and 008) and Units 5A through 5D (EU IDs 009, 010, 011, and 012) at the FPL Sanford 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 5-percent increase in output power per turbine (3 percent for combined-cycle operation of Unit 8) with an approximate 2-percent decrease in heat rate (heat input/output power) per turbine (1-percent for combined-cycle operation).

The project will not result in a significant net increase for any regulated new source review (NSR) pollutants including greenhouse gas (GHGs) emissions regulated under EPA's Tailoring Rule, Title 40, Part 52.21 of the Code of Federal Regulations (40 CFR 52.21), and as a result, is not subject to Prevention of Significant Deterioration (PSD) review for GHGs. FPL submitted an air construction permit application for a similar combustion turbine (CT) improvement project at the FPL Martin facility in July 2011.

The 7FA.04 components have a projected design heat input capacity approximately 2-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 the same turbine inlet temperature based on manufacturer information. In addition, hourly emissions of air pollutants regulated under FDEP and the federal 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 potential hourly mass emission rate of nitrogen oxides ($NO_x$); however, the increased rate will be below the currently permitted mass emission rate, and the heat input is expected to be within the current operating range. Based on the current actual-to-projected actual annual emissions test, the turbine improvement project will not result in a net increase of any regulated pollutant, nor of GHGs regulated under the Tailoring Rule, above the PSD significant emission rates.

## INTRODUCTION

The Sanford Plant is located on the St. Johns River near the west side of Lake Monroe in Volusia County near the county line with Seminole County. The facility is currently operating under Title V Permit No. 1270009-018-AV.

Golder Associates Inc. (Golder) was contracted to prepare and submit the necessary 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 for all regulated NSR pollutants including GHGs.

Natural gas is the primary fuel for the eight gas turbines of Sanford Units 4 and 5 (four for each). The current design heat input rates for the turbines are 1,553.0 million British thermal units per hour (MMBtu/hr) [at low heat value (LHV)] (based on GE data for 7FA.03). Sanford Unit 5 is also permitted to fire distillate fuel oil as an alternative fuel when natural gas is unavailable. Sanford Unit 5 has not used distillate during the last 5 years. 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 theoretically increase by 32 MMBtu/hr (2 percent) and 35 MMBtu/hr (2 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 (1971 to 2000) average temperature for Orlando is 72.8°F. As a result, GE data for an ambient temperature of 75°F reasonably represents annual operating conditions and were used in the calculation.

The current permitted emissions limits for the Units 4 and 5 gas turbines are listed in Condition Nos. B.8 and B.9 of Title V Permit No. 1270009-018-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. Based on GE performance data for the 7FA.03 and 7FA.04, the potential hourly mass emission rate of $NO_x$ will theoretically increase from 58.6 to 60.2 pound per hour (lb/hr) (at 59°F) for natural gas-firing in Units 4 and 5 and from 326.8 to 330.3 lb/hr for oil-firing in Unit 5. On a heat input basis, the GE data indicates that only emissions of $NO_x$ will increase (maximum of 0.27 percent) while there are no increase of the other regulated pollutants. However, the increased rates are less than the current permitted emissions rates of 65 lb/hr and 355 lb/hr for natural gas (Units 4 and 5) and fuel oil-firing (Unit 5), respectively.

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 theoretically increase under the identical operating conditions (i.e., turbine inlet temperature, ambient

pressure, and unit operating load). 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 $NO_X$, 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 during natural gas-firing and by water injection during fuel oil-firing (Unit 5 only). The proposed energy improvements will rely on the same existing control technologies.

## PROJECT DESCRIPTION

Sanford Units 4 and 5 consist of four gas turbine electrical generator sets each, which include GE Model MS7241FA 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 MS7241, 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 5 percent (baseload with natural gas-firing at 59°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 DLN combustion technology.

## RULE APPLICABILITY

### PSD/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 1 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 Sanford 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 FDEP'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 Sanford Unit 4 (Units 4A, 4B, 4C, and 4D) and 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 5 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 maximum annual rate, in TPY, at which the existing emission unit is projected to emit a PSD pollutant in any of the 5 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 2006 through 2010. This table also presents the total actual heat input from all fuels for Units 4A through 4D and 5A through 5D, as well as the actual operating hours for each unit. Unit 5 did not use any fuel oil during the 5-year period.

Tables 2A and 2B summarize the annual emissions reported in the AORs for each calendar year in the period 2006 through 2010. The carbon dioxide ($CO_2$) emission rates in Tables 2A and 2B were obtained from EPA's acid rain database. Data from the acid rain database is presented in Appendix C.

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 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 2-year period based on the calendar year emissions in Tables 2A, 2B, and 3. The annual average emissions for each consecutive 2-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 Tables 5A and 5B for Unit 4 and Unit 5, respectively.

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 2006 through 2010. 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 combined maximum actual emission factor for Units 4 & 5 is used in Table 7 to calculate the projected actual emission rates.

The PSD applicability analysis is presented in Table 7. The baseline emissions are obtained from Table 4, which are maximum 2-year average emissions for each pollutant. The projected annual heat input rates are obtained from Table 6, which are maximum 2-year average actual heat input rates. The actual emission factors were obtained from Table 6. The projected annual emissions are based on the projected annual heat input rates based on the highest two-year average form 2006 - 2010 multiplied by the maximum actual emission factors for Units 4 and 5 from 2006 - 2010. The emission factor for $NO_X$ includes a 0.27-percent increase in heat input emissions (i.e., lb/MMBtu) based on GE data for 7FA.04 relative to the 7FA.03. For the other regulated pollutants, there is no increase in emissions based on heat input based on GE data. The difference between the projected actual emissions and the baseline emissions were compared to the PSD significant emission rates. As shown, all emissions increases are less than the PSD significant emission rates.

The projected increase in GHG emissions as total $CO_2e$ is also shown in Table 7. 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. A minor source air construction permit application is applicable to the project.

While there is a slight project increase in GHG emissions, there is an overall reduction in heat rate British thermal units/kilowatt-hour (Btu/kWh) that reduces the amount of emissions for each megawatt-hour (MWh) generated. For example, there is an approximate 1-percent decrease in heat rate as a result of the project. As shown in Table 8, the baseline actual $CO_2e$ emissions are approximately 5.3 million TPY. With a 1-percent reduction in heat rate for the project, the $CO_2e$ emissions for the same amount of generation as 2008–2009 would be approximately 53,000 tons lower. Since the proposed project will increase power output, on a lb $CO_2e$/MWh basis, Sanford Units 4 & 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

Sanford Units 4 & 5 (Units 4A through 4D and 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 Units 4 & 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.

After the energy improvement, the turbines will comply with the same concentration-based $NO_x$ emissions standards they are currently subject to, which are 9 parts per million, dry volume basis, at 15-percent oxygen (ppmvd @ 15% $O_2$) for natural gas-firing, and 42 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 improved combined-cycle units will comply with these emissions standards.

The 7FA.04 improvement decreases the exhaust mass flow of the combustion turbine slightly. As a result, it is expected that the increase in $NO_x$ emissions on a heat input basis will be offset by the slight decrease in mass flow.

For these reasons, it is believed no increase in kg/hr $NO_x$ emissions will occur from the project. It is proposed that the first quarter of continuous emissions monitoring systems (CEMS) data be reviewed 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 2006 – 2010, the current actual maximum $SO_2$ emission rate is 0.0006 lb/MMBtu. The potential heat input rate for the turbines will increase by approximately 2 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, the first quarter of sulfur content data 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 Sanford Plant is currently operating under Title V Air Operating Permit No. 1270009-018-AV. Condition No. B.8 of Title V permit lists the natural gas-firing emissions limitations and standards, and Table B.9 lists the fuel oil-firing emissions limitations and standards. $NO_x$, 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 $NO_x$ could theoretically slightly increase. However, the slightly increased $NO_X$ hourly emissions rates are well within the current maximum hourly emission rates and will be less than the currently permitted hourly mass emissions rates. Therefore, FPL is requesting no change to the existing $NO_X$ emissions limits.

The GE data sheets for the 7FA.03 and 7FA.04 are presented in Appendix C. It should be noted that the $NO_x$ mass emissions in the data sheets are used only for comparison with annual emissions tests (baseline-to-projected actual). The hourly mass emission rates also vary significantly with compressor inlet temperature, unit load, etc. while the concentration-based rates remain the same. As shown in the CEM data for 2010 in Appendix D, the actual mass emission rates varied significantly for same heat input rates. As a result, although the design mass emission rates in the GE data sheet for 7FA.04 are slightly higher than the rates in the data sheet for 7FA.03, actual hourly emissions (lb/hr or kg/hr) are not expected to increase. It should also be noted that the hourly mass emission limits are for initial compliance only. Continuous compliance is based on concentration-based limits of 9 ppmvd and 42 ppmvd corrected to 15% $O_2$ for natural gas and oil, respectively while operating in baseload conditions.

FPL also requests no change to the turbine heat input rates in permit No. 1270001-021-AV. Although the GE data sheet for 7FA.04 theoretically shows a slightly higher heat input rate than the rates in the data sheet for 7FA.03, the small increase is within the normal operating heat input range for the CTs.

# TABLES

**Table 1. Sanford Units 4 and 5 Annual Heat Inputs and Operating Hours, 2006 - 2010**

**UNIT 4**

| Year | Heat Input from Distillate Oil (Diesel) (MMBtu/yr) | | | | | Heat Input from Natural Gas (MMBtu/yr) | | | | | Total Actual Heat Input (MMBtu/yr) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total |
| 2010 | NA | NA | NA | NA | NA | 10,278,000 | 10,401,000 | 9,867,000 | 9,586,000 | 40,132,000 | 10,278,000 | 10,401,000 | 9,867,000 | 9,586,000 | 40,132,000 |
| 2009 | NA | NA | NA | NA | NA | 9,203,000 | 9,920,000 | 10,135,000 | 10,061,000 | 39,319,000 | 9,203,000 | 9,920,000 | 10,135,000 | 10,061,000 | 39,319,000 |
| 2008 | NA | NA | NA | NA | NA | 10,123,000 | 11,163,000 | 9,788,000 | 9,834,000 | 40,908,000 | 10,123,000 | 11,163,000 | 9,788,000 | 9,834,000 | 40,908,000 |
| 2007 | NA | NA | NA | NA | NA | 10,966,000 | 10,798,000 | 11,095,000 | 10,801,000 | 43,660,000 | 10,966,000 | 10,798,000 | 11,095,000 | 10,801,000 | 43,660,000 |
| 2006 | NA | NA | NA | NA | NA | 11,596,000 | 10,251,000 | 11,949,000 | 11,610,000 | 45,406,000 | 11,596,000 | 10,251,000 | 11,949,000 | 11,610,000 | 45,406,000 |

Note: Unit 4 is not authorized to use distillate oil.

**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 |
| 2010 | 0 | 0 | 0 | 0 | 0 | 10,708,000 | 9,747,000 | 10,377,000 | 8,122,000 | 38,954,000 | 10,708,000 | 9,747,000 | 10,377,000 | 8,122,000 | 38,954,000 |
| 2009 | 0 | 0 | 0 | 0 | 0 | 11,493,000 | 10,081,000 | 9,822,000 | 10,072,000 | 41,468,000 | 11,493,000 | 10,081,000 | 9,822,000 | 10,072,000 | 41,468,000 |
| 2008 | 0 | 0 | 0 | 0 | 0 | 8,403,000 | 10,520,000 | 8,951,000 | 9,977,000 | 37,851,000 | 8,403,000 | 10,520,000 | 8,951,000 | 9,977,000 | 37,851,000 |
| 2007 | 0 | 0 | 0 | 0 | 0 | 11,058,000 | 11,292,000 | 11,552,000 | 9,722,000 | 43,624,000 | 11,058,000 | 11,292,000 | 11,552,000 | 9,722,000 | 43,624,000 |
| 2006 | 0 | 0 | 0 | 0 | 0 | 11,769,000 | 8,937,000 | 9,490,000 | 11,146,000 | 41,342,000 | 11,769,000 | 8,937,000 | 9,490,000 | 11,146,000 | 41,342,000 |

**UNIT 4**

| Year | Distillate Oil Operating Hours (hr/yr) | | | | | Natural Gas Operating Hours (hr/yr) | | | | | Total Actual Operating Hours (hr/yr) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total |
| 2010 | NA | NA | NA | NA | NA | 7,257 | 7,344 | 7,007 | 6,854 | 28,462 | 7,257 | 7,344 | 7,007 | 6,854 | 28,462 |
| 2009 | NA | NA | NA | NA | NA | 6,473 | 6,982 | 7,101 | 7,036 | 27,592 | 6,473 | 6,982 | 7,101 | 7,036 | 27,592 |
| 2008 | NA | NA | NA | NA | NA | 7,174 | 7,829 | 6,897 | 6,937 | 28,837 | 7,174 | 7,829 | 6,897 | 6,937 | 28,837 |
| 2007 | NA | NA | NA | NA | NA | 7,575 | 7,455 | 7,674 | 7,448 | 30,152 | 7,575 | 7,455 | 7,674 | 7,448 | 30,152 |
| 2006 | NA | NA | NA | NA | NA | 7,797 | 6,899 | 8,035 | 7,783 | 30,514 | 7,797 | 6,899 | 8,035 | 7,783 | 30,514 |

Note: Unit 4 is not authorized to use distillate oil.

**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 |
| 2010 | 0 | 0 | 0 | 0 | 0 | 7,535 | 6,933 | 7,348 | 5,830 | 27,646 | 7,535 | 6,933 | 7,348 | 5,830 | 27,646 |
| 2009 | 0 | 0 | 0 | 0 | 0 | 8,004 | 7,129 | 6,924 | 7,116 | 29,173 | 8,004 | 7,129 | 6,924 | 7,116 | 29,173 |
| 2008 | 0 | 0 | 0 | 0 | 0 | 6,002 | 7,494 | 6,424 | 7,135 | 27,055 | 6,002 | 7,494 | 6,424 | 7,135 | 27,055 |
| 2007 | 0 | 0 | 0 | 0 | 0 | 7,559 | 7,703 | 7,883 | 6,640 | 29,785 | 7,559 | 7,703 | 7,883 | 6,640 | 29,785 |
| 2006 | 0 | 0 | 0 | 0 | 0 | 7,956 | 6,050 | 6,438 | 7,525 | 27,969 | 7,956 | 6,050 | 6,438 | 7,525 | 27,969 |

Note: All values are based on annual operating reports for the period 2006 - 2010.

**Table 2A. Annual Emissions Reported in 2006-2010 Annual Operating Reports and Acid Rain Database for Unit 4**

| Year | Pollutant | Unit 4A (tons) | Unit 4B (tons) | Unit 4C (tons) | Unit 4D (tons) | Total (tons) |
|---|---|---|---|---|---|---|
| 2010 | $NO_x$ | 150.3 | 153.9 | 150.9 | 151.7 | 606.8 |
| | CO | 10.1 | 6.8 | 5.2 | 7.4 | 29.4 |
| | $SO_2$ | 3.1 | 3.1 | 3.0 | 2.9 | 12.1 |
| | VOC | 0.02 | 0.03 | 0.01 | 0.02 | 0.1 |
| | PM | 33.9 | 34.3 | 32.6 | 31.6 | 132.4 |
| | $PM_{10}$ | 33.9 | 34.3 | 32.6 | 31.6 | 132.4 |
| | SAM [a] | -- | -- | -- | -- | 1.9 |
| | $CO_2$ | 613,261.6 | 620,409.5 | 590,324.7 | 571,873.6 | 2,395,869.4 |
| 2009 | $NO_x$ | 135.5 | 150.3 | 150.6 | 151.9 | 588.3 |
| | CO | 11.2 | 12.1 | 11.6 | 10.0 | 44.9 |
| | $SO_2$ | 2.7 | 3.0 | 3.1 | 3.1 | 11.9 |
| | VOC | 0.02 | 0.02 | 0.01 | 0.02 | 0.1 |
| | PM [b] | 30.37 | 32.74 | 33.45 | 33.20 | 129.8 |
| | $PM_{10}$ [b] | 30.37 | 32.74 | 33.45 | 33.20 | 129.8 |
| | SAM [a] | -- | -- | -- | -- | 1.8 |
| | $CO_2$ | 551,117.2 | 593,423.4 | 604,529.6 | 596,984.6 | 2,346,054.9 |
| 2008 | $NO_x$ | 143.1 | 173.9 | 145.9 | 147.7 | 610.6 |
| | CO | 4.6 | 5.8 | 5.1 | 5.0 | 20.6 |
| | $SO_2$ | 3.1 | 3.4 | 3.0 | 3.6 | 13.1 |
| | VOC | 0.02 | 0.03 | 0.01 | 0.02 | 0.1 |
| | PM | 33.4 | 36.8 | 32.3 | 32.5 | 135.0 |
| | $PM_{10}$ | 33.4 | 36.8 | 32.3 | 32.5 | 135.0 |
| | SAM [a] | -- | -- | -- | -- | 2.0 |
| | $CO_2$ | 611,095.3 | 677,165.5 | 580,004.2 | 581,998.8 | 2,450,263.9 |
| 2007 | $NO_x$ | 159.0 | 172.8 | 149.8 | 178.2 | 659.8 |
| | CO | 21.2 | 19.0 | 21.5 | 20.7 | 82.4 |
| | $SO_2$ | 3.2 | 3.3 | 3.3 | 3.3 | 13.1 |
| | VOC | 0.02 | 0.03 | 0.02 | 0.02 | 0.1 |
| | PM [b] | 36.19 | 35.63 | 36.61 | 35.64 | 144.1 |
| | $PM_{10}$ [b] | 36.19 | 35.63 | 36.61 | 35.64 | 144.1 |
| | SAM [a] | -- | -- | -- | -- | 2.0 |
| | $CO_2$ | 651,051.8 | 648,224.6 | 656,150.8 | 636,649.7 | 2,592,076.9 |
| 2006 | $NO_x$ | 191.3 | 158.9 | 179.2 | 185.8 | 715.2 |
| | CO | 19.6 | 16.2 | 20.7 | 19.2 | 75.7 |
| | $SO_2$ | 3.6 | 3.2 | 3.6 | 3.5 | 13.9 |
| | VOC | 0.02 | 0.02 | 0.02 | 0.02 | 0.1 |
| | PM | 38.3 | 33.8 | 39.4 | 38.3 | 149.8 |
| | $PM_{10}$ | 38.3 | 33.8 | 39.4 | 38.3 | 149.8 |
| | SAM [a] | -- | -- | -- | -- | 2.1 |
| | $CO_2$ | 707,205.6 | 620,923.8 | 720,455.0 | 694,044.5 | 2,742,628.8 |

[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 Sanford Power Plant, 2006 - 2010; EPA's Acid Rain database.

**Table 2B. Annual Emissions Reported in 2006-2010 Annual Operating Reports and Acid Rain Database for Unit 5**

| Year | Pollutant | Unit 4A (tons) | Unit 4B (tons) | Unit 4C (tons) | Unit 4D (tons) | Total (tons) |
|---|---|---|---|---|---|---|
| 2010 | $NO_x$ | 159.4 | 151.0 | 159.4 | 130.2 | 600.0 |
| | CO | 8.9 | 7.5 | 7.2 | 5.8 | 29.4 |
| | $SO_2$ | 3.2 | 3.0 | 3.2 | 2.5 | 11.9 |
| | VOC | 0.02 | 0.02 | 0.01 | 0.01 | 0.1 |
| | PM | 35.3 | 32.2 | 34.2 | 26.8 | 128.5 |
| | $PM_{10}$ | 35.3 | 32.2 | 34.2 | 26.8 | 128.5 |
| | SAM [a] | -- | -- | -- | -- | 1.8 |
| | $CO_2$ | 648,390.1 | 594,791.6 | 623,134.4 | 485,777.2 | 2,352,093.3 |
| 2009 | $NO_x$ | 176.2 | 158.2 | 156.1 | 153.0 | 643.5 |
| | CO | 8.0 | 6.5 | 7.7 | 6.4 | 28.6 |
| | $SO_2$ | 3.5 | 3.1 | 3.0 | 3.1 | 12.7 |
| | VOC | 0.02 | 0.02 | 0.01 | 0.01 | 0.1 |
| | PM [b] | 37.93 | 33.27 | 32.41 | 33.24 | 136.8 |
| | $PM_{10}$ [b] | 37.93 | 33.27 | 32.41 | 33.24 | 136.8 |
| | SAM [a] | -- | -- | -- | -- | 1.9 |
| | $CO_2$ | 685,666.7 | 599,196.9 | 589,903.1 | 602,803.1 | 2,477,569.8 |
| 2008 | $NO_x$ | 128.9 | 162.8 | 144.9 | 155.4 | 592.0 |
| | CO | 3.7 | 6.3 | 6.0 | 3.4 | 19.4 |
| | $SO_2$ | 2.6 | 3.2 | 2.7 | 3.0 | 11.5 |
| | VOC | 0.01 | 0.02 | 0.01 | 0.01 | 0.1 |
| | PM | 27.7 | 34.7 | 29.5 | 32.9 | 124.9 |
| | $PM_{10}$ | 27.7 | 34.7 | 29.5 | 32.9 | 124.9 |
| | SAM [a] | -- | -- | -- | -- | 1.8 |
| | $CO_2$ | 505,467.4 | 627,111.5 | 543,117.9 | 597,176.8 | 2,272,873.6 |
| 2007 | $NO_x$ | 171.4 | 169.4 | 167.5 | 136.1 | 644.4 |
| | CO | 20.8 | 22.6 | 22.7 | 19.5 | 85.6 |
| | $SO_2$ | 3.3 | 3.4 | 3.5 | 3.1 | 13.3 |
| | VOC | 0.02 | 0.02 | 0.02 | 0.01 | 0.1 |
| | PM [b] | 36.49 | 37.26 | 38.12 | 32.08 | 144.0 |
| | $PM_{10}$ [b] | 36.49 | 37.26 | 38.12 | 32.08 | 144.0 |
| | SAM [a] | -- | -- | -- | -- | 2.0 |
| | $CO_2$ | 652,435.3 | 663,979.4 | 696,238.3 | 591,622.9 | 2,604,275.9 |
| 2006 | $NO_x$ | 194.2 | 138.5 | 142.4 | 161.6 | 636.7 |
| | CO | 21.5 | 17.7 | 17.1 | 19.9 | 76.2 |
| | $SO_2$ | 3.6 | 2.7 | 2.9 | 3.4 | 12.6 |
| | VOC | 0.02 | 0.02 | 0.01 | 0.02 | 0.1 |
| | PM | 38.8 | 29.5 | 31.3 | 36.8 | 136.4 |
| | $PM_{10}$ | 38.8 | 29.5 | 31.3 | 36.8 | 136.4 |
| | SAM [a] | -- | -- | -- | -- | 1.9 |
| | $CO_2$ | 721,820.1 | 530,281.0 | 571,682.9 | 665,715.6 | 2,489,499.6 |

[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 Sanford Power Plant, 2006 - 2010; EPA's Acid Rain database.

**Table 3. Actual Annual Emissions of $N_2O$ and $CH_4$ for the Period 2006 - 2010**
**Units 4 & 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 4 - Natural Gas-Firing*** | | | | | | | | | |
| 2010 | 40,132,000 | 2.20E-04 | 8,845.1 | 4.4 | 1,371.0 | 2.2E-03 | 88,450.9 | 44.2 | 928.7 |
| 2009 | 39,319,000 | 2.20E-04 | 8,665.9 | 4.3 | 1,343.2 | 2.2E-03 | 86,659.1 | 43.3 | 909.9 |
| 2008 | 40,908,000 | 2.20E-04 | 9,016.1 | 4.5 | 1,397.5 | 2.2E-03 | 90,161.2 | 45.1 | 946.7 |
| 2007 | 43,660,000 | 2.20E-04 | 9,622.7 | 4.8 | 1,491.5 | 2.2E-03 | 96,226.6 | 48.1 | 1,010.4 |
| 2006 | 45,406,000 | 2.20E-04 | 10,007.5 | 5.0 | 1,551.2 | 2.2E-03 | 100,074.8 | 50.0 | 1,050.8 |
| ***Unit 5 - Natural Gas-Firing*** | | | | | | | | | |
| 2010 | 38,954,000 | 2.20E-04 | 8,585.5 | 4.3 | 1,330.7 | 2.2E-03 | 85,854.6 | 42.9 | 901.5 |
| 2009 | 41,468,000 | 2.20E-04 | 9,139.5 | 4.6 | 1,416.6 | 2.2E-03 | 91,395.5 | 45.7 | 959.7 |
| 2008 | 37,851,000 | 2.20E-04 | 8,342.4 | 4.2 | 1,293.1 | 2.2E-03 | 83,423.6 | 41.7 | 875.9 |
| 2007 | 43,624,000 | 2.20E-04 | 9,614.7 | 4.8 | 1,490.3 | 2.2E-03 | 96,147.3 | 48.1 | 1,009.5 |
| 2006 | 41,342,000 | 2.20E-04 | 9,111.8 | 4.6 | 1,412.3 | 2.2E-03 | 91,117.8 | 45.6 | 956.7 |
| ***Total*** | | | | | | | | | |
| 2010 | -- | -- | -- | 8.7 | 2,701.7 | -- | -- | 87.2 | 1,830.2 |
| 2009 | -- | -- | -- | 8.9 | 2,759.8 | -- | -- | 89.0 | 1,869.6 |
| 2008 | -- | -- | -- | 8.7 | 2,690.6 | -- | -- | 86.8 | 1,822.6 |
| 2007 | -- | -- | -- | 9.6 | 2,981.8 | -- | -- | 96.2 | 2,019.9 |
| 2006 | -- | -- | -- | 9.6 | 2,963.5 | -- | -- | 95.6 | 2,007.5 |

[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 Sanford Units 4 & 5 for Each Consecutive Two-Year Period, 2006-2010**

| Pollutant | Annual Emissions for Units 4 & 5 | | | | | Two-Year Average Emissions | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2010 | 2009 | 2008 | 2007 | 2007 | 2010-2009 (tons) | 2009-2008 (tons) | 2008-2007 (tons) | 2007-2006 (tons) |
| $NO_x$ | 1,206.8 | 1,231.8 | 1,202.6 | 1,304.2 | 1,351.9 | 1,219.3 | 1,217.2 | 1,253.4 | 1,328.0 |
| CO | 58.8 | 73.5 | 40.0 | 168.0 | 151.9 | 66.2 | 56.8 | 104.0 | 159.9 |
| $SO_2$ | 24.0 | 24.6 | 24.6 | 26.4 | 26.5 | 24.3 | 24.6 | 25.5 | 26.5 |
| VOC | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| PM | 261.0 | 266.6 | 259.9 | 288.0 | 286.3 | 263.8 | 263.3 | 274.0 | 287.2 |
| $PM_{10}$ | 261.0 | 266.6 | 259.9 | 288.0 | 286.3 | 263.8 | 263.3 | 274.0 | 287.2 |
| $PM_{2.5}$ [a] | 261.0 | 266.6 | 259.9 | 288.0 | 286.3 | 263.8 | 263.3 | 274.0 | 287.2 |
| SAM [b] | 3.7 | 3.8 | 3.8 | 4.0 | 4.1 | 3.7 | 3.8 | 3.9 | 4.1 |
| $CO_2$ | 4,747,962.7 | 4,823,624.7 | 4,723,137.5 | 5,196,352.8 | 5,232,128.4 | 4,785,793.7 | 4,773,381.1 | 4,959,745.1 | 5,214,240.6 |
| $N_2O$ [c] ($CO_2e$) | 2,701.7 | 2,759.8 | 2,690.6 | 2,981.8 | 2,963.5 | 2,730.8 | 2,725.2 | 2,836.2 | 2,972.6 |
| $CH_4$ [c] ($CO_2e$) | 1,830.2 | 1,869.6 | 1,822.6 | 2,019.9 | 2,007.5 | 1,849.9 | 1,846.1 | 1,921.3 | 2,013.7 |

[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 Sanford Power Plant, 2006 - 2010; EPA's Acid Rain database.

**Table 5A. Actual Hourly Emission Rates, FPL Sanford Units 4A, 4B, 4C, and 4D**

| Pollutant | Year | Annual Emissions [a] (tons) | | | | Operating Hours [a] | | | | Hourly Emission Rates (lb/hr) | | | | Maximum Rate (lb//hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Unit 4A | Unit 4B | Unit 4C | Unit 4D | |
| $NO_x$ | 2010 | 150.3 | 153.9 | 150.9 | 151.7 | 7,257 | 7,344 | 7,007 | 6,854 | 41.4 | 41.9 | 43.1 | 44.3 | |
| | 2009 | 135.5 | 150.3 | 150.6 | 151.9 | 6,473 | 6,982 | 7,101 | 7,036 | 41.9 | 43.1 | 42.4 | 43.2 | |
| | 2008 | 143.1 | 173.9 | 145.9 | 147.7 | 7,174 | 7,829 | 6,897 | 6,937 | 39.9 | 44.4 | 42.3 | 42.6 | |
| | 2007 | 159.0 | 172.8 | 149.8 | 178.2 | 7,575 | 7,455 | 7,674 | 7,448 | 42.0 | 46.3 | 39.0 | 47.9 | |
| | 2006 | 191.3 | 158.9 | 179.2 | 185.8 | 7,797 | 6,899 | 8,035 | 7,783 | 49.1 | 46.1 | 44.6 | 47.7 | |
| | | | | | | | | | **Maximum =** | 49.1 | 46.3 | 44.6 | 47.9 | 49.1 |
| CO | 2010 | 10.1 | 6.8 | 5.2 | 7.4 | 7,257 | 7,344 | 7,007 | 6,854 | 2.8 | 1.8 | 1.5 | 2.2 | |
| | 2009 | 11.2 | 12.1 | 11.6 | 10.0 | 6,473 | 6,982 | 7,101 | 7,036 | 3.5 | 3.5 | 3.3 | 2.8 | |
| | 2008 | 4.6 | 5.8 | 5.1 | 5.0 | 7,174 | 7,829 | 6,897 | 6,937 | 1.3 | 1.5 | 1.5 | 1.5 | |
| | 2007 | 21.2 | 19.0 | 21.5 | 20.7 | 7,575 | 7,455 | 7,674 | 7,448 | 5.6 | 5.1 | 5.6 | 5.6 | |
| | 2006 | 19.6 | 16.2 | 20.7 | 19.2 | 7,797 | 6,899 | 8,035 | 7,783 | 5.0 | 4.7 | 5.1 | 4.9 | |
| | | | | | | | | | **Maximum =** | 5.6 | 5.1 | 5.6 | 5.6 | 5.6 |
| VOC | 2010 | 0.022 | 0.026 | 0.014 | 0.021 | 7,257 | 7,344 | 7,007 | 6,854 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2009 | 0.019 | 0.024 | 0.014 | 0.021 | 6,473 | 6,982 | 7,101 | 7,036 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2008 | 0.022 | 0.027 | 0.014 | 0.021 | 7,174 | 7,829 | 6,897 | 6,937 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2007 | 0.023 | 0.026 | 0.015 | 0.022 | 7,575 | 7,455 | 7,674 | 7,448 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2006 | 0.023 | 0.024 | 0.016 | 0.023 | 7,797 | 6,899 | 8,035 | 7,783 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | | | | | | | | | **Maximum =** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| $SO_2$ | 2010 | 3.1 | 3.1 | 3.0 | 2.9 | 7,257 | 7,344 | 7,007 | 6,854 | 0.9 | 0.8 | 0.9 | 0.8 | |
| | 2009 | 2.7 | 3.0 | 3.1 | 3.1 | 6,473 | 6,982 | 7,101 | 7,036 | 0.8 | 0.9 | 0.9 | 0.9 | |
| | 2008 | 3.1 | 3.4 | 3.0 | 3.6 | 7,174 | 7,829 | 6,897 | 6,937 | 0.9 | 0.9 | 0.9 | 1.0 | |
| | 2007 | 3.2 | 3.3 | 3.3 | 3.3 | 7,575 | 7,455 | 7,674 | 7,448 | 0.8 | 0.9 | 0.9 | 0.9 | |
| | 2006 | 3.6 | 3.2 | 3.6 | 3.5 | 7,797 | 6,899 | 8,035 | 7,783 | 0.9 | 0.9 | 0.9 | 0.9 | |
| | | | | | | | | | **Maximum =** | 0.9 | 0.9 | 0.9 | 1.0 | 1.0 |
| $PM/PM_{10}/PM_{2.5}$ | 2010 | 33.9 | 34.3 | 32.6 | 31.6 | 7,257 | 7,344 | 7,007 | 6,854 | 9.3 | 9.3 | 9.3 | 9.2 | |
| | 2009 | 30.37 | 32.74 | 33.45 | 33.20 | 6,473 | 6,982 | 7,101 | 7,036 | 9.4 | 9.4 | 9.4 | 9.4 | |
| | 2008 | 33.4 | 36.8 | 32.3 | 32.5 | 7,174 | 7,829 | 6,897 | 6,937 | 9.3 | 9.4 | 9.4 | 9.4 | |
| | 2007 | 36.19 | 35.63 | 36.61 | 35.64 | 7,575 | 7,455 | 7,674 | 7,448 | 9.6 | 9.6 | 9.5 | 9.6 | |
| | 2006 | 38.3 | 33.8 | 39.4 | 38.3 | 7,797 | 6,899 | 8,035 | 7,783 | 9.8 | 9.8 | 9.8 | 9.8 | |
| | | | | | | | | | **Maximum =** | 9.8 | 9.8 | 9.8 | 9.8 | 9.8 |

[a] Reported in AORs for the period 2006 - 2010.

**Table 5B. Actual Hourly Emission Rates, FPL Sanford 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 4A | Unit 4B | Unit 4C | Unit 4D | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Unit 4A | Unit 4B | Unit 4C | Unit 4D | |
| $NO_x$ | 2010 | 159.4 | 151.0 | 159.4 | 130.2 | 7,535 | 6,933 | 7,348 | 5,830 | 42.3 | 43.6 | 43.4 | 44.7 | |
| | 2009 | 176.2 | 158.2 | 156.1 | 153.0 | 8,004 | 7,129 | 6,924 | 7,116 | 44.0 | 44.4 | 45.1 | 43.0 | |
| | 2008 | 128.9 | 162.8 | 144.9 | 155.4 | 6,002 | 7,494 | 6,424 | 7,135 | 43.0 | 43.4 | 45.1 | 43.6 | |
| | 2007 | 171.4 | 169.4 | 167.5 | 136.1 | 7,559 | 7,703 | 7,883 | 6,640 | 45.3 | 44.0 | 42.5 | 41.0 | |
| | 2006 | 194.2 | 138.5 | 142.4 | 161.6 | 7,956 | 6,050 | 6,438 | 7,525 | 48.8 | 45.8 | 44.2 | 43.0 | |
| | | | | | | | | | **Maximum =** | 48.8 | 45.8 | 45.1 | 44.7 | 48.8 |
| CO | 2010 | 8.9 | 7.5 | 7.2 | 5.8 | 7,535 | 6,933 | 7,348 | 5,830 | 2.4 | 2.2 | 2.0 | 2.0 | |
| | 2009 | 8.0 | 6.5 | 7.7 | 6.4 | 8,004 | 7,129 | 6,924 | 7,116 | 2.0 | 1.8 | 2.2 | 1.8 | |
| | 2008 | 3.7 | 6.3 | 6.0 | 3.4 | 6,002 | 7,494 | 6,424 | 7,135 | 1.2 | 1.7 | 1.9 | 1.0 | |
| | 2007 | 20.8 | 22.6 | 22.7 | 19.5 | 7,559 | 7,703 | 7,883 | 6,640 | 5.5 | 5.9 | 5.8 | 5.9 | |
| | 2006 | 21.5 | 17.7 | 17.1 | 19.9 | 7,956 | 6,050 | 6,438 | 7,525 | 5.4 | 5.9 | 5.3 | 5.3 | |
| | | | | | | | | | **Maximum =** | 5.5 | 5.9 | 5.8 | 5.9 | 5.9 |
| VOC | 2010 | 0.015 | 0.017 | 0.015 | 0.012 | 7,535 | 6,933 | 7,348 | 5,830 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2009 | 0.016 | 0.018 | 0.014 | 0.014 | 8,004 | 7,129 | 6,924 | 7,116 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2008 | 0.012 | 0.019 | 0.013 | 0.014 | 6,002 | 7,494 | 6,424 | 7,135 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2007 | 0.015 | 0.019 | 0.016 | 0.013 | 7,559 | 7,703 | 7,883 | 6,640 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 2006 | 0.016 | 0.015 | 0.013 | 0.015 | 7,956 | 6,050 | 6,438 | 7,525 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | | | | | | | | | **Maximum =** | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| $SO_2$ | 2010 | 3.2 | 3.0 | 3.2 | 2.5 | 7,535 | 6,933 | 7,348 | 5,830 | 0.8 | 0.9 | 0.9 | 0.9 | |
| | 2009 | 3.5 | 3.1 | 3.0 | 3.1 | 8,004 | 7,129 | 6,924 | 7,116 | 0.9 | 0.9 | 0.9 | 0.9 | |
| | 2008 | 2.6 | 3.2 | 2.7 | 3.0 | 6,002 | 7,494 | 6,424 | 7,135 | 0.9 | 0.9 | 0.8 | 0.8 | |
| | 2007 | 3.3 | 3.4 | 3.5 | 3.1 | 7,559 | 7,703 | 7,883 | 6,640 | 0.9 | 0.9 | 0.9 | 0.9 | |
| | 2006 | 3.6 | 2.7 | 2.9 | 3.4 | 7,956 | 6,050 | 6,438 | 7,525 | 0.9 | 0.9 | 0.9 | 0.9 | |
| | | | | | | | | | **Maximum =** | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| $PM/PM_{10}/PM_{2.5}$ | 2010 | 35.3 | 32.2 | 34.2 | 26.8 | 7,535 | 6,933 | 7,348 | 5,830 | 9.4 | 9.3 | 9.3 | 9.2 | |
| | 2009 | 37.93 | 33.27 | 32.41 | 33.24 | 8,004 | 7,129 | 6,924 | 7,116 | 9.5 | 9.3 | 9.4 | 9.3 | |
| | 2008 | 27.7 | 34.7 | 29.5 | 32.9 | 6,002 | 7,494 | 6,424 | 7,135 | 9.2 | 9.3 | 9.2 | 9.2 | |
| | 2007 | 36.49 | 37.26 | 38.12 | 32.08 | 7,559 | 7,703 | 7,883 | 6,640 | 9.7 | 9.7 | 9.7 | 9.7 | |
| | 2006 | 38.8 | 29.5 | 31.3 | 36.8 | 7,956 | 6,050 | 6,438 | 7,525 | 9.8 | 9.7 | 9.7 | 9.8 | |
| | | | | | | | | | **Maximum =** | 9.8 | 9.7 | 9.7 | 9.8 | 9.8 |

[a] Reported in AORs for the period 2006 - 2010.

**Table 6. Sanford Units 4 and 5 Actual Emissions as a Function of Heat Input, 2006 - 2010**

**UNIT 4**

| Year | Actual Annual Heat Input (MMBtu/yr) [a] | | | | | Units 4A, 4B, 4C, & 4D Total Actual Emissions (TPY) [b] | | | | | | | Emissions per Unit Heat Input [c] (lb/MMBtu) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Unit 4A | Unit 4B | Unit 4C | Unit 4D | Total | $NO_X$ | CO | VOC | $SO_2$ | $PM/PM_{10}$ | SAM | $CO_2$ | $NO_X$ | CO | VOC | $SO_2$ | $PM/PM_{10}$ | SAM | $CO_2$ |
| **2010** | 10,278,000 | 10,401,000 | 9,867,000 | 9,586,000 | 40,132,000 | 606.8 | 29.4 | 0.1 | 12.1 | 132.4 | 1.9 | 2,395,869.4 | 0.0302 | 0.0015 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.4 |
| **2009** | 9,203,000 | 9,920,000 | 10,135,000 | 10,061,000 | 39,319,000 | 588.3 | 44.9 | 0.1 | 11.9 | 129.8 | 1.8 | 2,346,054.9 | 0.0299 | 0.0023 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.3 |
| **2008** | 10,123,000 | 11,163,000 | 9,788,000 | 9,834,000 | 40,908,000 | 610.6 | 20.6 | 0.1 | 13.1 | 135.0 | 2.0 | 2,450,263.9 | 0.0299 | 0.0010 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.8 |
| **2007** | 10,966,000 | 10,798,000 | 11,095,000 | 10,801,000 | 43,660,000 | 659.8 | 82.4 | 0.1 | 13.1 | 144.1 | 2.0 | 2,592,076.9 | 0.0302 | 0.0038 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 118.7 |
| **2006** | 11,596,000 | 10,251,000 | 11,949,000 | 11,610,000 | 45,406,000 | 715.2 | 75.7 | 0.1 | 13.9 | 149.8 | 2.1 | 2,742,628.8 | 0.0315 | 0.0033 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.8 |
| | | | | | | | | | | | | **Maximum =** | 0.0315 | 0.0038 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.8 |

**UNIT 5**

| Year | Actual Annual Heat Input (MMBtu/yr) [a] | | | | | Units 5A, 5B, 5C, & 5DTotal 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 | $CO_2$ |
| **2010** | 10,708,000 | 9,747,000 | 10,377,000 | 8,122,000 | 38,954,000 | 600.0 | 29.4 | 0.1 | 11.9 | 128.5 | 1.8 | 2,352,093.3 | 0.0308 | 0.0015 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.8 |
| **2009** | 11,493,000 | 10,081,000 | 9,822,000 | 10,072,000 | 41,468,000 | 643.5 | 28.6 | 0.1 | 12.7 | 136.8 | 1.9 | 2,477,569.8 | 0.0310 | 0.0014 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.5 |
| **2008** | 8,403,000 | 10,520,000 | 8,951,000 | 9,977,000 | 37,851,000 | 592.0 | 19.4 | 0.1 | 11.5 | 124.9 | 1.8 | 2,272,873.6 | 0.0313 | 0.0010 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.1 |
| **2007** | 11,058,000 | 11,292,000 | 11,552,000 | 9,722,000 | 43,624,000 | 644.4 | 85.6 | 0.1 | 13.3 | 144.0 | 2.0 | 2,604,275.9 | 0.0295 | 0.0039 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.4 |
| **2006** | 11,769,000 | 8,937,000 | 9,490,000 | 11,146,000 | 41,342,000 | 636.7 | 76.2 | 0.1 | 12.6 | 136.4 | 1.9 | 2,489,499.6 | 0.0308 | 0.0037 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.4 |
| | | | | | | | | | | | | **Maximum =** | 0.0313 | 0.0039 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.8 |

**Units 4 & 5**

| Year | Units 4 & 5 Total Actual Annual Heat Input (MMBtu/yr) [a] | | | | | Units 4 & 5 Total Actual Emissions (TPY) [b] | | | | | | | Emissions per Unit Heat Input [c] (lb/MMBtu) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | $NO_X$ | CO | VOC | $SO_2$ | $PM/PM_{10}$ | SAM | $CO_2$ | $NO_X$ | CO | VOC | $SO_2$ | $PM/PM_{10}$ | SAM | $CO_2$ |
| **2010** | -- | -- | -- | -- | 79,086,000 | 1,206.8 | 58.8 | 0.1 | 24.0 | 261.0 | 3.7 | 4,747,963 | 0.0305 | 0.0015 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.1 |
| **2009** | -- | -- | -- | -- | 80,787,000 | 1,231.8 | 73.5 | 0.1 | 24.6 | 266.6 | 3.8 | 4,823,625 | 0.0305 | 0.0018 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.4 |
| **2008** | -- | -- | -- | -- | 78,759,000 | 1,202.6 | 40.0 | 0.1 | 24.6 | 259.9 | 3.8 | 4,723,137 | 0.0305 | 0.0010 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.9 |
| **2007** | -- | -- | -- | -- | 87,284,000 | 1,304.2 | 168.0 | 0.1 | 26.4 | 288.0 | 4.0 | 5,196,353 | 0.0299 | 0.0038 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 119.1 |
| **2006** | -- | -- | -- | -- | 86,748,000 | 1,351.9 | 151.9 | 0.1 | 26.5 | 286.3 | 4.1 | 5,232,128 | 0.0312 | 0.0035 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.6 |
| | | | | | | | | | | | | **Maximum =** | 0.0312 | 0.0038 | 0.0000 | 0.0006 | 0.0066 | 0.0001 | 120.6 |

[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. PSD Applicability - Sanford Units 4 and 5**
**GE 7FA.04 Improvements**

| Pollutant | Baseline Actual Emissions[a] (TPY) | Actual Emission Factor [b] (lb/MMBtu) | Projected Actual Heat Input [c] (MMBtu) | Projected Actual Emissions [d] (TPY) | Increase/Decrease in Annual Emissions [e] (TPY) | PSD Significant Emission Rates (TPY) |
|---|---|---|---|---|---|---|
| $NO_x$ | 1,328.05 | 0.0313 | 87,016,000 | 1,359.8 | 31.8 | 40 |
| CO | 159.94 | 0.0038 | 87,016,000 | 167.5 | 7.5 | 100 |
| $SO_2$ | 26.45 | 0.0006 | 87,016,000 | 27.2 | 0.7 | 40 |
| VOC | 0.15 | 3.59E-06 | 87,016,000 | 0.16 | 0.01 | 40 |
| PM | 287.15 | 0.0066 | 87,016,000 | 287.2 | 0.001 | 25 |
| $PM_{10}$ | 287.15 | 0.0066 | 87,016,000 | 287.2 | 0.001 | 15 |
| $PM_{2.5}$ | 287.15 | 0.0066 | 87,016,000 | 287.2 | 0.001 | 10 |
| SAM | 4.05 | 0.0001 | 87,016,000 | 4.2 | 0.11 | 7 |
| GHGs | | | | | | |
| $CO_2$ | 5,214,240.6 | 120.6 | 87,016,000 | 5,248,292.6 | 34,052.0 | |
| $N_2O$ ($CO_2e$) | 2,972.6 | 9.04E-02 | 87,016,000 | 3,931.6 | 958.9 | |
| $CH_4$ ($CO_2e$) | 2,013.7 | 4.63E-02 | 87,016,000 | 2,013.7 | 0.0 | |
| Total GHGs ($CO_2e$) | 5,219,227.0 | | | 5,254,237.9 | 35,010.9 | 75,000 |

[a] Maximum 2-Year average emissions - see Tables 4.
[b] Maximum actual emission factor for the period 2006-2010 for Units 4 & 5 total - see Table 6. Emission factor for $NO_X$ includes a 0.27-percent increase based on GE data for 7FA.04 CTs.
[c] Maximum 2-year average heat input for 2006-2010 for Units 4 & 5 - see Table 6.
[d] Projected actual emissions = Emission factor x Projected actual heat input x (1 ton/2000 lb)
[e] Projected actual emissions minus baseline actual emissions.

# APPENDIX A

**Appendix A**
**Sanford Power Plant**
**Summary of AOR Data for Unit 4 (EU IDs 005, 006, 007, 008)**

Emission Unit 005
Unit 4A - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 150.3 | **150.30** | **7257** |
| CO | | 10.0872 | **10.09** | |
| SO2 | | 3.1 | **3.10** | |
| VOC | | 0.021771 | **0.02** | |
| PM | | 33.9174 | **33.92** | |
| PM10 | | 33.9174 | **33.92** | |

Unit 4A - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 135.5 | **135.5** | **6473** |
| CO | | 11.2307 | **11.2307** | |
| SO2 | | 2.7 | **2.7** | |
| VOC | | 0.019419 | **0.019419** | |
| PM | | 30.37 | **30.37** | |
| PM10 | | 30.37 | **30.37** | |

Unit 4A - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 143.1 | **143.1** | **7174** |
| CO | | 4.59136 | **4.59136** | |
| SO2 | | 3.1 | **3.1** | |
| VOC | | 0.021522 | **0.021522** | |
| PM | | 33.4059 | **33.4059** | |
| PM10 | | 33.4059 | **33.4059** | |

Unit 4A - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 159.012 | **159.012** | **7575** |
| CO | | 21.21 | **21.21** | |
| SO2 | | 3.2 | **3.2** | |
| VOC | | 0.022725 | **0.022725** | |
| PM | | 36.188 | **36.188** | |
| PM10 | | 36.188 | **36.188** | |

Unit 4A - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 191.34 | **191.34** | **7797** |
| CO | | 19.6484 | **19.6484** | |
| SO2 | | 3.6 | **3.6** | |
| VOC | | 0.023391 | **0.023391** | |
| PM | | 38.2668 | **38.2668** | |
| PM10 | | 38.2668 | **38.2668** | |

Emission Unit 006
Unit 4B - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 153.9 | **153.9** | **7344** |
| CO | | 6.75648 | **6.75648** | |
| SO2 | | 3.1 | **3.1** | |
| VOC | | 0.025704 | **0.025704** | |
| PM | | 34.3233 | **34.3233** | |
| PM10 | | 34.3233 | **34.3233** | |

Unit 4B - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 150.3 | **150.3** | **6982** |
| CO | | 12.0789 | **12.0789** | |
| SO2 | | 3 | **3** | |
| VOC | | 0.024437 | **0.024437** | |
| PM | | 32.736 | **32.736** | |
| PM10 | | 32.736 | **32.736** | |

Unit 4B - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 173.9 | **173.9** | **7829** |
| CO | | 5.83261 | **5.83261** | |
| SO2 | | 3.4 | **3.4** | |
| VOC | | 0.027402 | **0.027402** | |
| PM | | 36.8379 | **36.8379** | |
| PM10 | | 36.8379 | **36.8379** | |

Unit 4B - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 172.762 | **172.762** | **7455** |
| CO | | 18.973 | **18.973** | |
| SO2 | | 3.3 | **3.3** | |
| VOC | | 0.026093 | **0.026093** | |
| PM | | 35.633 | **35.633** | |
| PM10 | | 35.633 | **35.633** | |

Unit 4B - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 158.888 | **158.888** | **6899** |
| CO | | 16.1782 | **16.1782** | |
| SO2 | | 3.2 | **3.2** | |
| VOC | | 0.024147 | **0.024147** | |
| PM | | 33.8283 | **33.8283** | |
| PM10 | | 33.8283 | **33.8283** | |

**Appendix A**
**Sanford Power Plant**
**Summary of AOR Data for Unit 4 (EU IDs 005, 006, 007, 008)**

Emission Unit 007

Unit 4C - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 150.9 | **150.9** | **7007** |
| CO | | 5.18518 | **5.18518** | |
| SO2 | | 3 | **3** | |
| VOC | | 0.014014 | **0.014014** | |
| PM | | 32.5611 | **32.5611** | |
| PM10 | | 32.5611 | **32.5611** | |

Unit 4C - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 150.6 | **160.6** | **7101** |
| CO | | 11.6101 | **11.6101** | |
| SO2 | | 3.1 | **3.1** | |
| VOC | | 0.014202 | **0.014202** | |
| PM | | 33.446 | **33.446** | |
| PM10 | | 33.446 | **33.446** | |

Unit 4C - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 145.9 | **145.9** | **6897** |
| CO | | 5.10378 | **5.10378** | |
| SO2 | | 3 | **3** | |
| VOC | | 0.013794 | **0.013794** | |
| PM | | 32.3004 | **32.3004** | |
| PM10 | | 32.3004 | **32.3004** | |

Unit 4C - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 149.777 | **149.777** | **7674** |
| CO | | 21.4872 | **21.4872** | |
| SO2 | | 3.3 | **3.3** | |
| VOC | | 0.015348 | **0.015348** | |
| PM | | 36.614 | **36.614** | |
| PM10 | | 36.614 | **36.614** | |

Unit 4C - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 179.241 | **179.241** | **8035** |
| CO | | 20.6901 | **20.6901** | |
| SO2 | | 3.6 | **3.6** | |
| VOC | | 0.01607 | **0.01607** | |
| PM | | 39.4317 | **39.4317** | |
| PM10 | | 39.4317 | **39.4317** | |

Emission Unit 008

Unit 4D - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 151.7 | **151.7** | **6864** |
| CO | | 7.36805 | **7.36805** | |
| SO2 | | 2.9 | **2.9** | |
| VOC | | 0.020562 | **0.020562** | |
| PM | | 31.6338 | **31.6338** | |
| PM10 | | 31.6338 | **31.6338** | |

Unit 4D - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 151.9 | **151.9** | **7036** |
| CO | | 9.99112 | **9.99112** | |
| SO2 | | 3.1 | **3.1** | |
| VOC | | 0.021108 | **0.021108** | |
| PM | | 33.201 | **33.201** | |
| PM10 | | 33.201 | **33.201** | |

Unit 4D - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 147.7 | **147.7** | **6937** |
| CO | | 5.02933 | **6.02933** | |
| SO2 | | 3.5883 | **3.5883** | |
| VOC | | 0.020811 | **0.020811** | |
| PM | | 32.4522 | **32.4522** | |
| PM10 | | 32.4522 | **32.4522** | |

Unit 4D - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 178.225 | **178.225** | **7448** |
| CO | | 20.7054 | **20.7054** | |
| SO2 | | 3.3 | **3.3** | |
| VOC | | 0.022344 | **0.022344** | |
| PM | | 35.643 | **35.643** | |
| PM10 | | 35.643 | **35.643** | |

Unit 4D - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 185.764 | **185.764** | **7783** |
| CO | | 19.224 | **19.224** | |
| SO2 | | 3.5 | **3.5** | |
| VOC | | 0.023349 | **0.023349** | |
| PM | | 38.313 | **38.313** | |
| PM10 | | 38.313 | **38.313** | |

**Appendix A**
**Sanford Power Plant**
**Summary of AOR Data for Unit 4 (EU IDs 005, 006, 007, 008)**

| | 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 4A - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 4A - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 4A - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 10278 | 2010 | 136 1000 | 2010 0 | 10278000 | 10278000 |
| 2009 | 0 | 9203 | 2009 | 136 1000 | 2009 0 | 9203000 | 9203000 |
| 2008 | 0 | 10123 | 2008 | 136 1000 | 2008 0 | 10123000 | 10123000 |
| 2007 | 0 | 10966 | 2007 | 136 1000 | 2007 0 | 10966000 | 10966000 |
| 2006 | 0 | 11596 | 2006 | 136 1000 | 2006 0 | 11596000 | 11596000 |
| Unit 4B - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 4B - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 4B - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 10401 | 2010 | 136 1000 | 2010 0 | 10401000 | 10401000 |
| 2009 | 0 | 9920 | 2009 | 136 1000 | 2009 0 | 9920000 | 9920000 |
| 2008 | 0 | 11163 | 2008 | 136 1000 | 2008 0 | 11163000 | 11163000 |
| 2007 | 0 | 10798 | 2007 | 136 1000 | 2007 0 | 10798000 | 10798000 |
| 2006 | 0 | 10251 | 2006 | 136 1000 | 2006 0 | 10251000 | 10251000 |
| Unit 4C - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 4C - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 4C - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 9867 | 2010 | 136 1000 | 2010 0 | 9867000 | 9867000 |
| 2009 | 0 | 10135 | 2009 | 136 1000 | 2009 0 | 10135000 | 10135000 |
| 2008 | 0 | 9788 | 2008 | 136 1000 | 2008 0 | 9788000 | 9788000 |
| 2007 | 0 | 11095 | 2007 | 136 1000 | 2007 0 | 11095000 | 11095000 |
| 2006 | 0 | 11949 | 2006 | 136 1000 | 2006 0 | 11949000 | 11949000 |
| Unit 4D - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 4D - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 4D - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 9586 | 2010 | 136 1000 | 2010 0 | 9586000 | 9586000 |
| 2009 | 0 | 10061 | 2009 | 136 1000 | 2009 0 | 10061000 | 10061000 |
| 2008 | 0 | 9834 | 2008 | 136 1000 | 2008 0 | 9834000 | 9834000 |
| 2007 | 0 | 10801 | 2007 | 136 1000 | 2007 0 | 10801000 | 10801000 |
| 2006 | 0 | 11610 | 2006 | 136 1000 | 2006 0 | 11610000 | 11610000 |

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

Emission Unit 009
Unit 5A - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 159.4 | 159.40 | 7535 |
| CO | | 8.8913 | 8.89 | |
| SO2 | | 3.2 | 3.20 | |
| VOC | | 0.01507 | 0.02 | |
| PM | | 35.3364 | 35.34 | |
| PM10 | | 35.3364 | 35.34 | |

Unit 5A - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 176.2 | 176.20 | 8004 |
| CO | | 8.04402 | 8.04 | |
| SO2 | | 3.5 | 3.50 | |
| VOC | | 0.016008 | 0.02 | |
| PM | | 37.927 | 37.93 | |
| PM10 | | 37.927 | 37.93 | |

Unit 5A - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 128.9 | 128.90 | 6002 |
| CO | | 3.66122 | 3.66 | |
| SO2 | | 2.6 | 2.60 | |
| VOC | | 0.012004 | 0.01 | |
| PM | | 27.7299 | 27.73 | |
| PM10 | | 27.7299 | 27.73 | |

Unit 5A - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 171.398 | 171.40 | 7559 |
| CO | | 20.7873 | 20.79 | |
| SO2 | | 3.3 | 3.30 | |
| VOC | | 0.015118 | 0.02 | |
| PM | | 36.491 | 36.49 | |
| PM10 | | 36.491 | 36.49 | |

Unit 5A - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 194.192 | 194.19 | 7956 |
| CO | | 21.521 | 21.52 | |
| SO2 | | 3.6 | 3.60 | |
| VOC | | 0.015912 | 0.02 | |
| PM | | 38.8377 | 38.84 | |
| PM10 | | 38.8377 | 38.84 | |

Emission Unit 010
Unit 5B - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 151 | 151.00 | 6933 |
| CO | | 7.45298 | 7.45 | |
| SO2 | | 3 | 3.00 | |
| VOC | | 0.017333 | 0.02 | |
| PM | | 32.1651 | 32.17 | |
| PM10 | | 32.1651 | 32.17 | |

Unit 5B - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 158.2 | 158.20 | 7129 |
| CO | | 6.48739 | 6.49 | |
| SO2 | | 3.1 | 3.10 | |
| VOC | | 0.017823 | 0.02 | |
| PM | | 33.267 | 33.27 | |
| PM10 | | 33.267 | 33.27 | |

Unit 5B - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 162.8 | 162.80 | 7494 |
| CO | | 6.33243 | 6.33 | |
| SO2 | | 3.2 | 3.20 | |
| VOC | | 0.018735 | 0.02 | |
| PM | | 34.716 | 34.72 | |
| PM10 | | 34.716 | 34.72 | |

Unit 5B - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 169.386 | 169.39 | 7703 |
| CO | | 22.6468 | 22.65 | |
| SO2 | | 3.4 | 3.40 | |
| VOC | | 0.019258 | 0.02 | |
| PM | | 37.264 | 37.26 | |
| PM10 | | 37.264 | 37.26 | |

Unit 5B - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 138.529 | 138.53 | 6050 |
| CO | | 17.7265 | 17.73 | |
| SO2 | | 2.7 | 2.70 | |
| VOC | | 0.015125 | 0.02 | |
| PM | | 29.4921 | 29.49 | |
| PM10 | | 29.4921 | 29.49 | |

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

Emission Unit 011
Unit 5C - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 159.4 | 159.40 | 7348 |
| CO | | 7.23778 | 7.24 | |
| SO2 | | 3.2 | 3.20 | |
| VOC | | 0.014696 | 0.01 | |
| PM | | 34.2441 | 34.24 | |
| PM10 | | 34.2441 | 34.24 | |

Unit 5C - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 156.1 | 156.10 | 6924 |
| CO | | 7.68564 | 7.69 | |
| SO2 | | 3 | 3.00 | |
| VOC | | 0.013848 | 0.01 | |
| PM | | 32.413 | 32.41 | |
| PM10 | | 32.413 | 32.41 | |

Unit 5C - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 144.9 | 144.90 | 6424 |
| CO | | 6.00644 | 6.01 | |
| SO2 | | 2.7 | 2.70 | |
| VOC | | 0.012848 | 0.01 | |
| PM | | 29.5383 | 29.54 | |
| PM10 | | 29.5383 | 29.54 | |

Unit 5C - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 167.503 | 167.50 | 7883 |
| CO | | 22.703 | 22.70 | |
| SO2 | | 3.5 | 3.50 | |
| VOC | | 0.015766 | 0.02 | |
| PM | | 38.122 | 38.12 | |
| PM10 | | 38.122 | 38.12 | |

Unit 5C - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 142.352 | 142.35 | 6436 |
| CO | | 17.0607 | 17.06 | |
| SO2 | | 2.9 | 2.90 | |
| VOC | | 0.012876 | 0.01 | |
| PM | | 31.317 | 31.32 | |
| PM10 | | 31.317 | 31.32 | |

Emission Unit 012
Unit 5D - Combined Cycle CT with unfired HRSG (250 MW)

| 2010 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 130.2 | 130.20 | 5830 |
| CO | | 5.80085 | 5.80 | |
| SO2 | | 2.5 | 2.50 | |
| VOC | | 0.01166 | 0.01 | |
| PM | | 26.8026 | 26.80 | |
| PM10 | | 26.8026 | 26.80 | |

Unit 5D - Combined Cycle CT with unfired HRSG (250 MW)

| 2009 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 153 | 153.00 | 7116 |
| CO | | 6.4044 | 6.40 | |
| SO2 | | 3.1 | 3.10 | |
| VOC | | 0.014232 | 0.01 | |
| PM | | 33.238 | 33.24 | |
| PM10 | | 33.238 | 33.24 | |

Unit 5D - Combined Cycle CT with unfired HRSG (250 MW)

| 2008 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 155.4 | 155.40 | 7135 |
| CO | | 3.4248 | 3.42 | |
| SO2 | | 3 | 3.00 | |
| VOC | | 0.01427 | 0.01 | |
| PM | | 32.9241 | 32.92 | |
| PM10 | | 32.9241 | 32.92 | |

Unit 5D - Combined Cycle CT with unfired HRSG (250 MW)

| 2007 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 136.113 | 136.11 | 6640 |
| CO | | 19.4552 | 19.46 | |
| SO2 | | 3.1 | 3.10 | |
| VOC | | 0.01328 | 0.01 | |
| PM | | 32.083 | 32.08 | |
| PM10 | | 32.083 | 32.08 | |

Unit 5D - Combined Cycle CT with unfired HRSG (250 MW)

| 2006 | Diesel TPY | Natural Gas TPY | Total TPY | Hours |
|---|---|---|---|---|
| NOx | | 161.616 | 161.62 | 7525 |
| CO | | 19.866 | 19.87 | |
| SO2 | | 3.4 | 3.40 | |
| VOC | | 0.01505 | 0.02 | |
| PM | | 36.7818 | 36.78 | |
| PM10 | | 36.7818 | 36.78 | |

**Appendix A**
**Sanford 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 1000 gal/yr | Natural Gas MMft3/yr | Diesel MMBtu/1000 gal | Natural Gas MMBtu/MMft3 | Diesel MMBtu/yr | Natural Gas MMBtu/yr | Total MMBtu/yr |
| Unit 5A - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 5A - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 5A - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 10708 | 2010 136 | 1000 | 2010 0 | 10708000 | 10708000 |
| 2009 | 0 | 11493 | 2009 136 | 1000 | 2009 0 | 11493000 | 11493000 |
| 2008 | 0 | 8403 | 2008 136 | 1000 | 2008 0 | 8403000 | 8403000 |
| 2007 | 0 | 11058 | 2007 136 | 1000 | 2007 0 | 11058000 | 11058000 |
| 2006 | 0 | 11769 | 2006 136 | 1000 | 2006 0 | 11769000 | 11769000 |
| Unit 5B - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 5B - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 5B - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 9747 | 2010 136 | 1000 | 2010 0 | 9747000 | 9747000 |
| 2009 | 0 | 10081 | 2009 136 | 1000 | 2009 0 | 10081000 | 10081000 |
| 2008 | 0 | 10520 | 2008 136 | 1000 | 2008 0 | 10520000 | 10520000 |
| 2007 | 0 | 11292 | 2007 136 | 1000 | 2007 0 | 11292000 | 11292000 |
| 2006 | 0 | 8937 | 2006 136 | 1000 | 2006 0 | 8937000 | 8937000 |
| Unit 5C - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 5C - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 5C - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 10377 | 2010 136 | 1000 | 2010 0 | 10377000 | 10377000 |
| 2009 | 0 | 9822 | 2009 136 | 1000 | 2009 0 | 9822000 | 9822000 |
| 2008 | 0 | 8951 | 2008 136 | 1000 | 2008 0 | 8951000 | 8951000 |
| 2007 | 0 | 11552 | 2007 136 | 1000 | 2007 0 | 11552000 | 11552000 |
| 2006 | 0 | 9490 | 2006 136 | 1000 | 2006 0 | 9490000 | 9490000 |
| Unit 5D - Combined Cycle CT with unfired HRSG (250 MW) | | | Unit 5D - Combined Cycle CT with unfired HRSG (250 MW) | | Unit 5D - Combined Cycle CT with unfired HRSG (250 MW) | | |
| 2010 | 0 | 8122 | 2010 136 | 1000 | 2010 0 | 8122000 | 8122000 |
| 2009 | 0 | 10072 | 2009 136 | 1000 | 2009 0 | 10072000 | 10072000 |
| 2008 | 0 | 9977 | 2008 136 | 1000 | 2008 0 | 9977000 | 9977000 |
| 2007 | 0 | 9722 | 2007 136 | 1000 | 2007 0 | 9722000 | 9722000 |
| 2006 | 0 | 11146 | 2006 136 | 1000 | 2006 0 | 11146000 | 11146000 |

# 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_OP_TIME | 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 | Sanford | 620 | SNCT4A | 2006 | | ARP | 7846.23 | 12 | 1070463.3 | 3.57 | 0.0301 | 176.081 | 707205.57 | 11900133 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4B | 2006 | | ARP | 6880.82 | 12 | 936594.08 | 3.135 | 0.0313 | 160.399 | 620923.799 | 10448328.9 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4C | 2006 | | ARP | 7997.81 | 12 | 1094719.65 | 3.637 | 0.0305 | 182.613 | 720454.959 | 12123089.4 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4D | 2006 | | ARP | 7754.46 | 12 | 1054512.19 | 3.504 | 0.0313 | 178.835 | 694044.48 | 11678554.4 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 30479.32 | | 4156289.22 | | | 697.928 | | | | | | |
| FL | Sanford | 620 | SNCT5A | 2006 | | ARP | 7998.6 | 12 | 1084996.92 | 3.644 | 0.0303 | 179.156 | 721820.078 | 12146012.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5B | 2006 | | ARP | 5952.01 | 12 | 791952.57 | 2.677 | 0.0308 | 133.27 | 530281.045 | 8922994.88 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5C | 2006 | | ARP | 6403.26 | 12 | 853617.57 | 2.886 | 0.0317 | 144.799 | 571682.895 | 9619715.31 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5D | 2006 | | ARP | 7433.25 | 12 | 999136.57 | 3.361 | 0.0312 | 170.262 | 665715.583 | 11201893.8 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 27787.12 | | 3729703.63 | | | 627.487 | | | | | | |
| FL | Sanford | 620 | SNCT4A | 2007 | | ARP | 7465.63 | 12 | 976847.69 | 3.287 | 0.0305 | 162.959 | 651051.793 | 10955233.3 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4B | 2007 | | ARP | 7349.35 | 12 | 959488.12 | 3.272 | 0.0311 | 164.997 | 648224.602 | 10907583 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4C | 2007 | | ARP | 7570.93 | 12 | 981294.1 | 3.312 | 0.0311 | 165.926 | 656150.773 | 11040898.7 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4D | 2007 | | ARP | 7353.11 | 12 | 961153.3 | 3.214 | 0.0313 | 164.235 | 636649.703 | 10712835 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 29739.02 | | 3878783.21 | | | 658.117 | | | | | | |
| FL | Sanford | 620 | SNCT5A | 2007 | | ARP | 7443.82 | 12 | 974671.51 | 3.294 | 0.03 | 159.94 | 652435.338 | 10978486.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5B | 2007 | | ARP | 7670.7 | 12 | 983746.88 | 3.352 | 0.0308 | 169.408 | 663979.394 | 11172731.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5C | 2007 | | ARP | 7769.43 | 12 | 1054629.39 | 3.515 | 0.0312 | 176.755 | 696238.255 | 11715469.3 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5D | 2007 | | ARP | 6605.09 | 12 | 884983.08 | 2.987 | 0.0313 | 147.33 | 591622.916 | 9955180.24 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 29489.04 | | 3898030.86 | | | 653.433 | | | | | | |
| FL | Sanford | 620 | SNCT4A | 2008 | | ARP | 7091.53 | 12 | 906071.94 | 3.085 | 0.0294 | 143.218 | 611095.309 | 10282910.4 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4B | 2008 | | ARP | 7810.68 | 12 | 998213.96 | 3.418 | 0.031 | 173.949 | 677165.529 | 11394658.7 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4C | 2008 | | ARP | 6854.4 | 12 | 858802.95 | 2.928 | 0.0312 | 145.842 | 580004.187 | 9759668.07 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4D | 2008 | | ARP | 6884.18 | 12 | 870962.3 | 2.938 | 0.0315 | 147.723 | 581998.826 | 9793271.18 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 28640.79 | | 3634051.15 | | | 610.732 | | | | | | |
| FL | Sanford | 620 | SNCT5A | 2008 | | ARP | 5956.34 | 12 | 741132.3 | 2.552 | 0.0318 | 128.868 | 505467.362 | 8505448.44 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5B | 2008 | | ARP | 7453.47 | 12 | 910209.89 | 3.166 | 0.0314 | 162.81 | 627111.541 | 10552359.3 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5C | 2008 | | ARP | 6382.97 | 12 | 801061.51 | 2.742 | 0.033 | 144.897 | 543117.92 | 9138989.36 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5D | 2008 | | ARP | 7072.12 | 12 | 866485.72 | 3.015 | 0.0326 | 155.399 | 597176.802 | 10048656.9 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 26864.9 | | 3318889.42 | | | 591.974 | | | | | | |
| FL | Sanford | 620 | SNCT4A | 2009 | | ARP | 6386.05 | 12 | 822245.1 | 2.782 | 0.0309 | 135.497 | 551117.211 | 9273676.91 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4B | 2009 | | ARP | 6880.29 | 12 | 884920.37 | 2.996 | 0.0321 | 150.3 | 593423.4 | 9985445.8 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4C | 2009 | | ARP | 7026.7 | 12 | 895613.83 | 3.052 | 0.0311 | 150.572 | 604529.619 | 10172370.1 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4D | 2009 | | ARP | 6974.2 | 12 | 888007.24 | 3.014 | 0.0316 | 151.875 | 596984.64 | 10045455.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 27267.24 | | 3490786.54 | | | 588.244 | | | | | | |
| FL | Sanford | 620 | SNCT5A | 2009 | | ARP | 7977.74 | 12 | 1027096.28 | 3.461 | 0.0309 | 176.127 | 685666.662 | 11537632.7 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5B | 2009 | | ARP | 7013.46 | 12 | 882156.28 | 3.025 | 0.0339 | 158.32 | 599196.916 | 10082672.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5C | 2009 | | ARP | 6826.75 | 12 | 882174.48 | 2.978 | 0.0334 | 156.069 | 589903.098 | 9926224.84 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5D | 2009 | | ARP | 7000.16 | 12 | 896078.17 | 3.043 | 0.0327 | 153.027 | 602803.141 | 10143286.1 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 28818.11 | | 3687505.21 | | | 643.543 | | | | | | |
| FL | Sanford | 620 | SNCT4A | 2010 | | ARP | 7174.9 | 12 | 909057.52 | 3.096 | 0.0307 | 150.218 | 613261.563 | 10319359.3 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4B | 2010 | | ARP | 7261.15 | 12 | 923046.53 | 3.132 | 0.0309 | 153.906 | 620409.506 | 10439647 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4C | 2010 | | ARP | 6894.23 | 12 | 871841.81 | 2.98 | 0.0325 | 150.814 | 590324.698 | 9933364.28 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT4D | 2010 | | ARP | 6706.76 | 12 | 856670.55 | 2.887 | 0.0342 | 151.776 | 571873.648 | 9622866.33 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 28037.04 | | 3560616.41 | | | 606.714 | | | | | | |
| FL | Sanford | 620 | SNCT5A | 2010 | | ARP | 7438.51 | 12 | 966267.7 | 3.273 | 0.0311 | 159.404 | 648390.076 | 10910348.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5B | 2010 | | ARP | 6783.97 | 12 | 869754.99 | 3.003 | 0.0329 | 151.086 | 594791.612 | 10008505.6 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5C | 2010 | | ARP | 7216.2 | 12 | 929855.36 | 3.146 | 0.0336 | 159.471 | 623134.371 | 10485437 | Combined cycle | Pipeline Natural Gas | | 1910 |
| FL | Sanford | 620 | SNCT5D | 2010 | | ARP | 5656.34 | 12 | 724010.61 | 2.452 | 0.0361 | 130.09 | 485777.221 | 8174157.46 | Combined cycle | Pipeline Natural Gas | | 1910 |
| | | | | | | | 27095.02 | | 3489888.66 | | | 600.051 | | | | | | |

# APPENDIX C

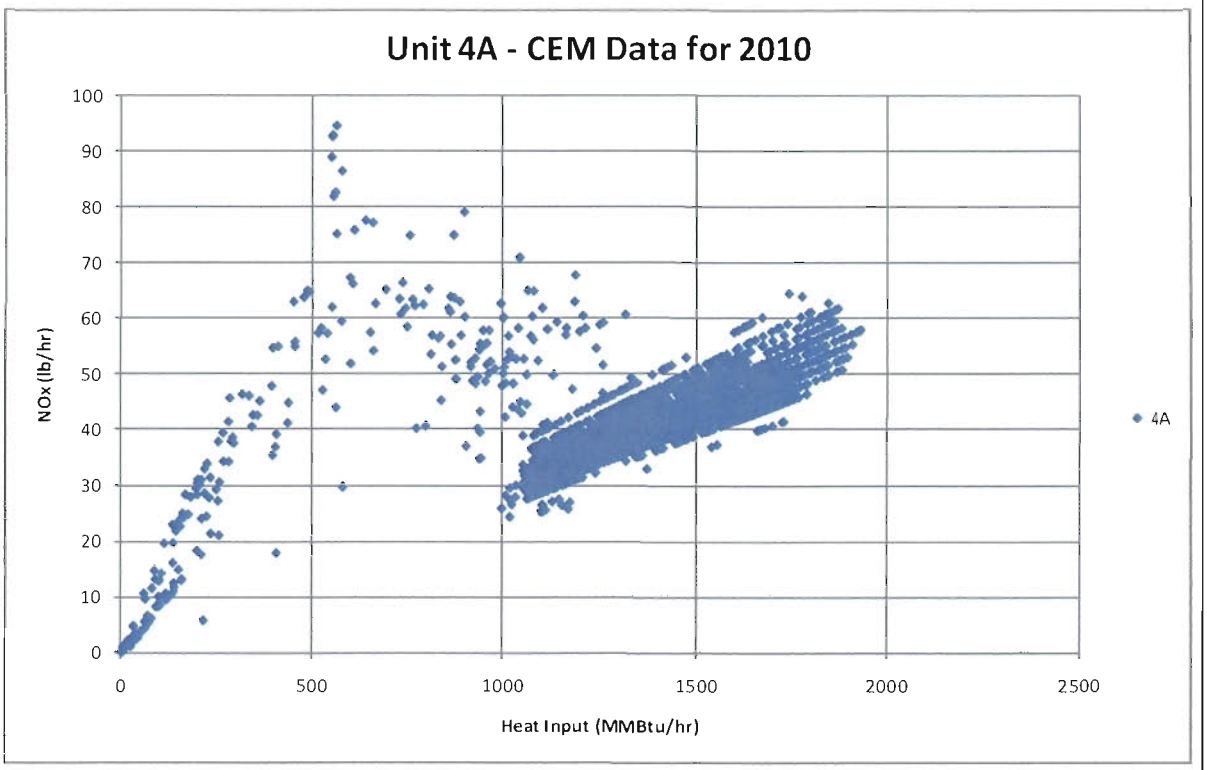
**Appendix C**
**FPL Sanford**
**Estimated Performance 7FA.03**

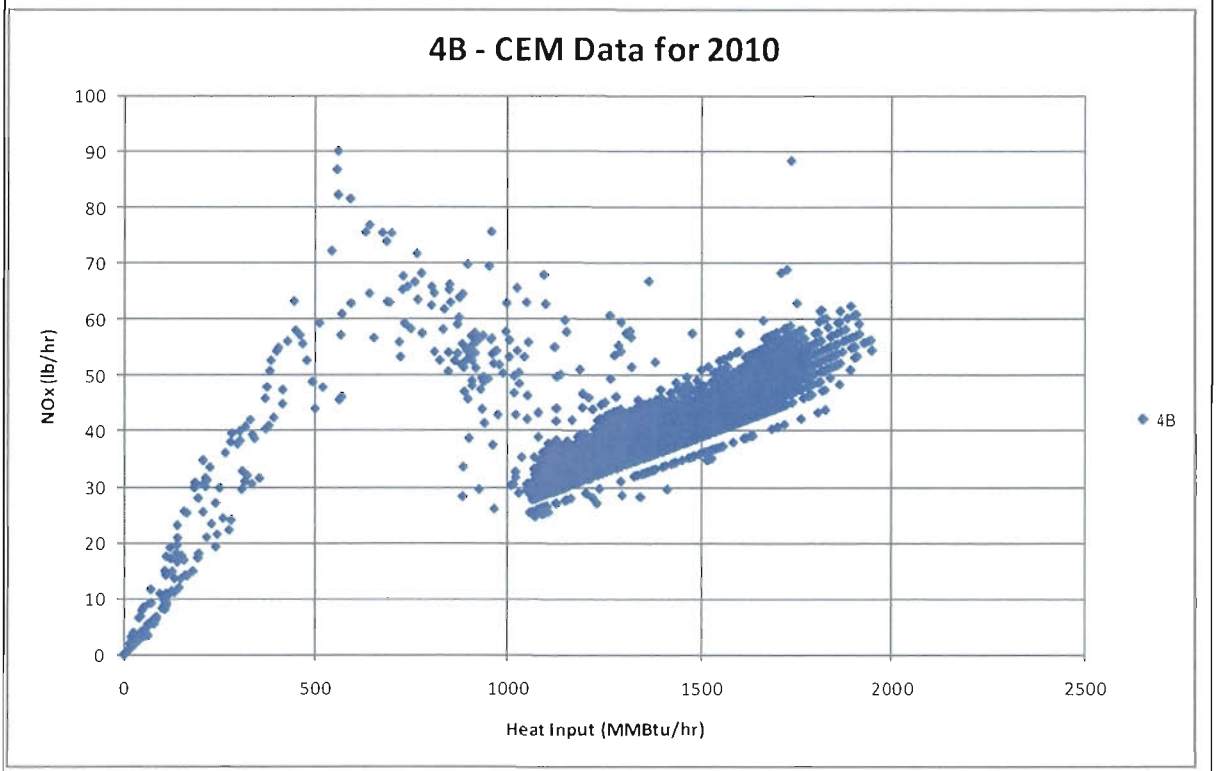
| Load Condition | | BASE | BASE | BASE | BASE | Peaking | BASE |
|---|---|---|---|---|---|---|---|
| Inlet Loss | in H2O | 3.04 | 3.04 | 3.04 | 3.04 | 3.04 | 3.04 |
| Exhaust Pressure Loss | in H2O | 12.36 | 11.45 | 10.62 | 9.49 | 11.56 | 12.42 |
| Ambient Temperature | °F | 35 | 59 | 75 | 95 | 59 | 59 |
| Ambient Relative Humidity | % | 60 | 60 | 60 | 60 | 60 | 60 |
| Evap. Cooler Status | | None | None | None | None | None | None |
| Evap. Cooler Effectiveness | % | | | | | | |
| Fuel Type | | Cust Gas | Cust Gas | Cust Gas | Cust Gas | Cust Gas | Liquid |
| Fuel LHV | BTU/lb | 20,835 | 20835 | 20,835 | 20835 | 20835 | 18387 |
| Fuel Temperature | °F | 365 | 365.00 | 365 | 365.00 | 365.00 | 59.00 |
| Output | kW | 185,386.00 | 175,988.00 | 166,529.00 | 152,343.00 | 180,631.00 | 188,491.00 |
| Heat Rate (LHV) | BTU/kWh | 9,093.00 | 9,202.00 | 9,326.00 | 9,567.00 | 9,176.00 | 9,978.00 |
| Heat Cons. (LHV) | MMBTU/hr | 1,685.70 | 1619.4 | 1,553.00 | 1457.4 | 1657.5 | 1880.8 |
| Exhaust Flow | x10^3 lb/hr | 3,794.00 | 3,629.00 | 3,483.00 | 3,278.00 | 3,630.00 | 3,799.00 |
| Exhaust Temperature | °F | 1,086.00 | 1,114.00 | 1,131.00 | 1,151.00 | 1,134.00 | 1,090.00 |
| Exhaust MolWt | lb/lbmol | 28.47 | 28.41 | 28.33 | 28.17 | 28.4 | 28.24 |
| Exhaust Energy | MMBTU/hr | 1025.9 | 991.4 | 957.6 | 910.9 | 1013.2 | 1034.2 |
| Water / Steam Flow | lb/hr | | | | | | 152,895 |
| **EMISSIONS** | | | | | | | |
| NOx | ppmvd | 9.00 | 9.00 | 9.00 | 9.00 | 14.00 | 42.00 |
| NOx Correction O2 Value | % O2 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 |
| NOx as NO2 | lb/hr | 61.02 | 58.63 | 56.21 | 52.77 | 93.28 | 326.75 |
| CO | ppmvd | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 20.00 |
| CO | lb/hr | 31.04 | 29.56 | 28.23 | 26.30 | 29.53 | 66.36 |
| UHC | ppmvw | 7.00 | 7.00 | 7.00 | 7.00 | 7.00 | 7.00 |
| UHC | lb/hr | 15.21 | 14.49 | 13.84 | 12.89 | 14.47 | 14.63 |
| VOC | ppmvw | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 3.50 |
| VOC | lb/hr | 3.00 | 2.90 | 2.80 | 2.60 | 2.90 | 7.50 |
| SO2 | ppmvw | | | | | | 11.29 |
| SO2 | lb/hr | | | | | | 97.18 |
| SO3 | ppmvw | | | | | | 0.59 |
| SO3 | lb/hr | | | | | | 5.11 |
| Sulfur Mist | lb/hr | | | | | | 10.23 |
| Fuel Sulfur | Wt% | | | | | | 0.05 Wt% |
| Particulates | lb/hr | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 17.00 |
| Particulate Basis | | Front | Front | Front | Front | Front | Front |
| **EXHAUST ANALYSIS** | | | | | | | |
| Argon | %VOL | 0.89 | 0.89 | 0.88 | 0.87 | 0.89 | 0.84 |
| Nitrogen | %VOL | 74.94 | 74.49 | 73.94 | 72.77 | 74.42 | 70.72 |
| Oxygen | %VOL | 12.77 | 12.63 | 12.51 | 12.26 | 12.45 | 10.96 |
| Carbon Dioxide | %VOL | 3.78 | 3.78 | 3.77 | 3.74 | 3.87 | 5.53 |
| Water | %VOL | 7.62 | 8.21 | 8.91 | 10.36 | 8.38 | 11.95 |
| CO2 | lb/hr | 221705.74 | 212498.68 | 203988.18 | 191560.95 | 217740.58 | 327409.96 |
| **SITE CONDITIONS** | | | | | | | |
| Elevation | Feet | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Site Pressure | psia | 14.70 | 14.70 | 14.70 | 14.70 | 14.70 | 14.70 |
| Exhaust Loss | in H2O | 11.30 | 11.30 | 11.30 | 11.30 | 11.30 | 11.30 |
| Relative Humidity | % | 60.00 | 60.00 | 60.00 | 60.00 | 60.00 | 60.00 |
| Application | | H2Gen | H2Gen | H2Gen | H2Gen | H2Gen | H2Gen |
| Power Factor (lag) | | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Combustion System | | DLN9 | DLN9 | DLN9 | DLN9 | DLN9 | DLN9 |

**Appendix C**
**FPL Sanford**
**Estimated Performance 7FA.04**

| Load Condition | | BASE | BASE | BASE | BASE | Peaking | BASE |
|---|---|---|---|---|---|---|---|
| Inlet Loss | in H2O | 3.04 | 3.04 | 3.04 | 3.04 | 3.04 | 3.04 |
| Exhaust Pressure Loss | in H2O | 12.54 | 11.58 | 10.72 | 9.59 | 11.66 | 12.25 |
| Ambient Temperature | °F | 35 | 59 | 75 | 95 | 59 | 59 |
| Ambient Relative Humidity | % | 60 | 60 | 60 | 60 | 60 | 60 |
| Evap. Cooler Status | | None | None | None | None | None | None |
| Evap. Cooler Effectiveness | % | | | | | | |
| Fuel Type | | Cust Gas | Cust Gas | Cust Gas | Cust Gas | Cust Gas | Liquid |
| Fuel LHV | BTU/lb | 20,835 | 20835 | 20,835 | 20835 | 20835 | 18387 |
| Fuel Temperature | °F | 365 | 365.00 | 365 | 365.00 | 365.00 | 80.00 |
| Output | kW | 194,537.00 | 184,510.00 | 173,970.00 | 160,194.00 | 187,731.00 | 194,010.00 |
| Heat Rate (LHV) | BTU/kWh | 8,913.00 | 8,993.00 | 9,112.00 | 9,318.00 | 8,981.00 | 9,716.00 |
| Heat Cons. (LHV) | MMBTU/hr | 1,733.90 | 1659.4 | 1,585.20 | 1492.7 | 1686.1 | 1885 |
| Exhaust Flow | x10^3 lb/hr | 3,780.00 | 3,614.00 | 3,469.00 | 3,266.00 | 3,616.00 | 3,737.00 |
| Exhaust Temperature | °F | 1,105.00 | 1,128.00 | 1,141.00 | 1,163.00 | 1,143.00 | 1,104.00 |
| Exhaust MolWt | lb/lbmol | 28.46 | 28.39 | 28.32 | 28.15 | 28.39 | 28.27 |
| Exhaust Energy | MMBTU/hr | 1043.4 | 1002.9 | 965 | 920.1 | 1018.4 | 1031.6 |
| Water / Steam Flow | lb/hr | | | | | | 144530 |
| **EMISSIONS** | | | | | | | |
| NOx | ppmvd | 9.00 | 9.00 | 9.00 | 9.00 | 15.00 | 42.00 |
| NOx Correction O2 Value | % O2 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 | 15.00 |
| NOx as NO2 | lb/hr | 62.92 | 60.23 | 57.53 | 54.17 | 101.99 | 330.26 |
| CO | ppmvd | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 20.00 |
| CO | lb/hr | 30.85 | 29.39 | 28.07 | 26.15 | 29.36 | 65.19 |
| UHC | ppmvw | 7.00 | 7.00 | 7.00 | 7.00 | 7.00 | 7.00 |
| UHC | lb/hr | 15.29 | 14.57 | 13.91 | 12.96 | 14.55 | 14.54 |
| VOC | ppmvw | 1.40 | 1.40 | 1.40 | 1.40 | 1.40 | 3.50 |
| VOC | lb/hr | 3.00 | 2.90 | 2.70 | 2.60 | 2.90 | 7.40 |
| SO2 | ppmvw | | | | | | 11.51 |
| SO2 | lb/hr | | | | | | 97.39 |
| SO3 | ppmvw | | | | | | 0.61 |
| SO3 | lb/hr | | | | | | 5.13 |
| Sulfur Mist | lb/hr | | | | | | 10.25 |
| Fuel Sulfur | Wt% | | | | | | 0.05 |
| Particulates | lb/hr | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 17.00 |
| Particulate Basis | | Front | Front | Front | Front | Front | Front |
| **EXHAUST ANALYSIS** | | | | | | | |
| Argon | %VOL | 0.89 | 0.89 | 0.88 | 0.87 | 0.89 | 0.84 |
| Nitrogen | %VOL | 74.85 | 74.40 | 73.86 | 72.69 | 74.36 | 70.89 |
| Oxygen | %VOL | 12.49 | 12.38 | 12.29 | 12.02 | 12.25 | 10.83 |
| Carbon Dioxide | %VOL | 3.90 | 3.90 | 3.87 | 3.85 | 3.96 | 5.65 |
| Water | %VOL | 7.87 | 8.43 | 9.10 | 10.57 | 8.55 | 11.79 |
| CO2 | lb/hr | 227985.15 | 218501.84 | 208636.79 | 196534.35 | 221993.27 | 330492.55 |
| **SITE CONDITIONS** | | | | | | | |
| Elevation | Feet | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Site Pressure | psia | 14.70 | 14.70 | 14.70 | 14.70 | 14.70 | 14.70 |
| Exhaust Loss | in H2O | 11.30 | 11.30 | 11.30 | 11.30 | 11.30 | 11.30 |
| Relative Humidity | % | 60.00 | 60.00 | 60.00 | 60.00 | 60.00 | 60.00 |
| Application | | H2Gen | H2Gen | H2Gen | H2Gen | H2Gen | H2Gen |
| Power Factor (lag) | | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Combustion System | | DLN9 | DLN9 | DLN9 | DLN9 | DLN9 | DLN9 |

# APPENDIX D




Appendix D
Hourly Acid Rain

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Source: Golder, 2011.

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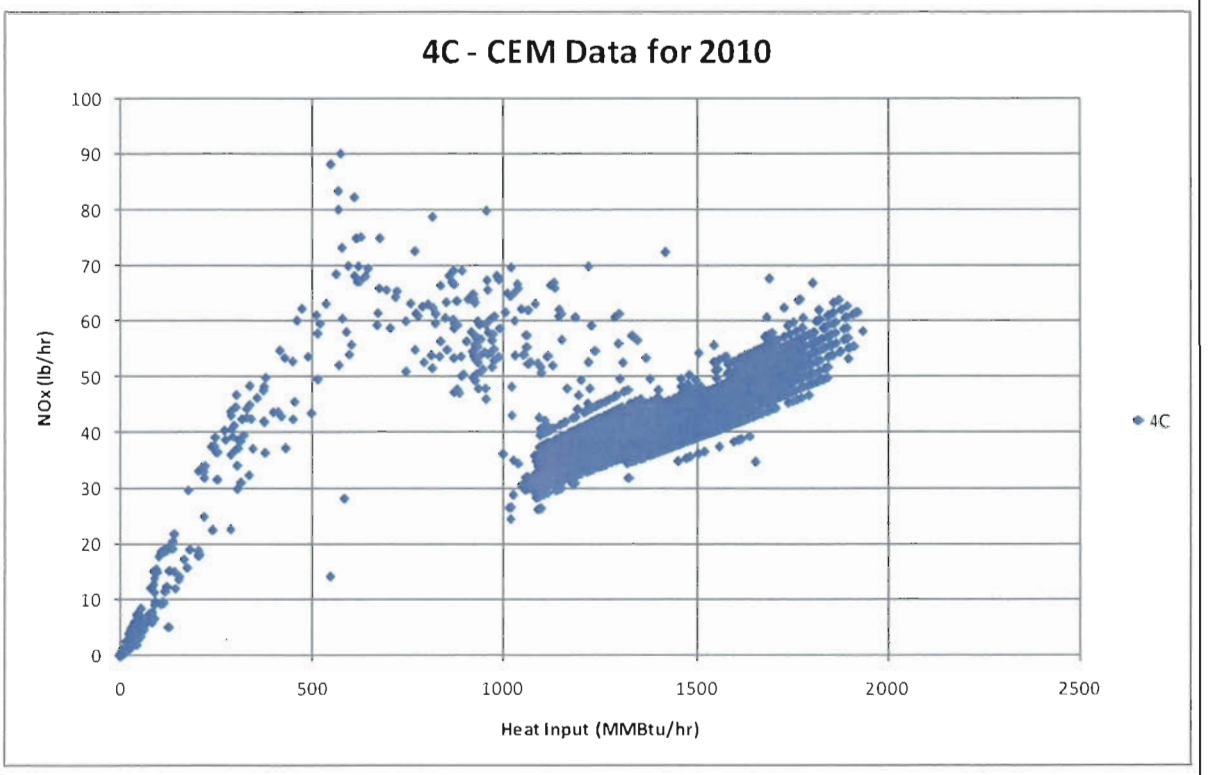


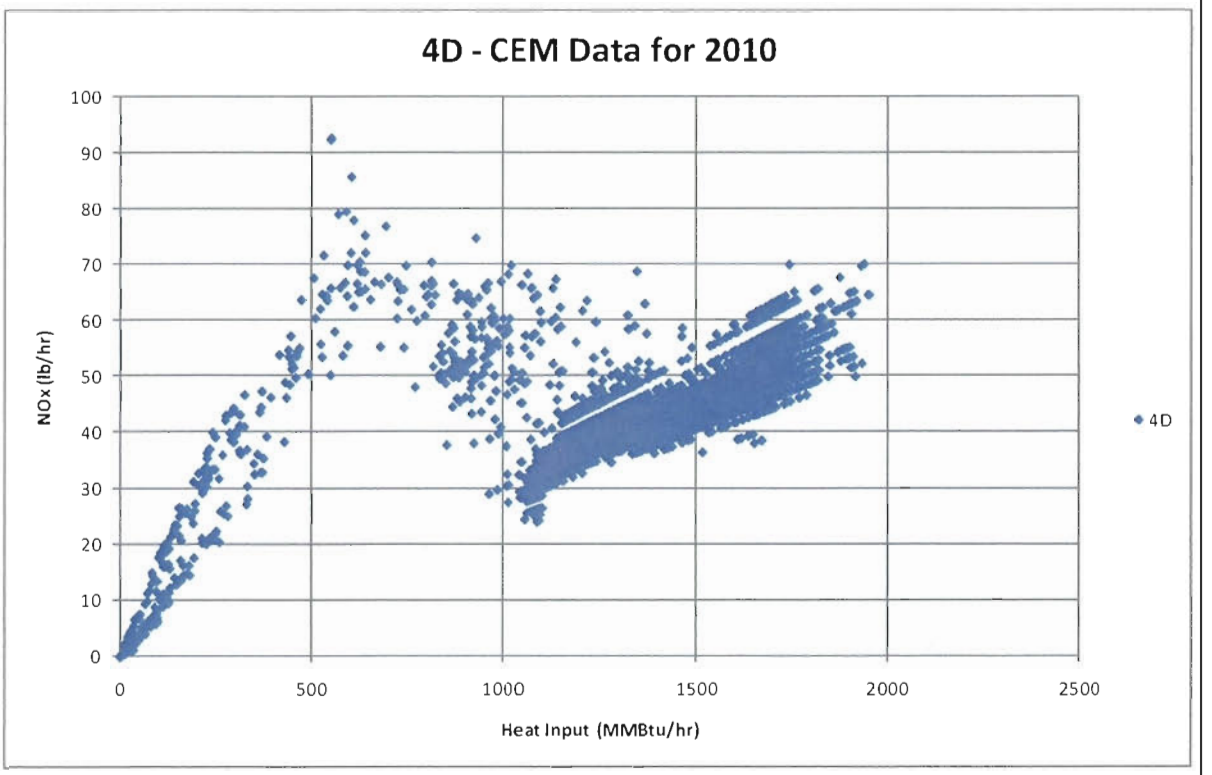


Appendix D
Hourly Acid Rain

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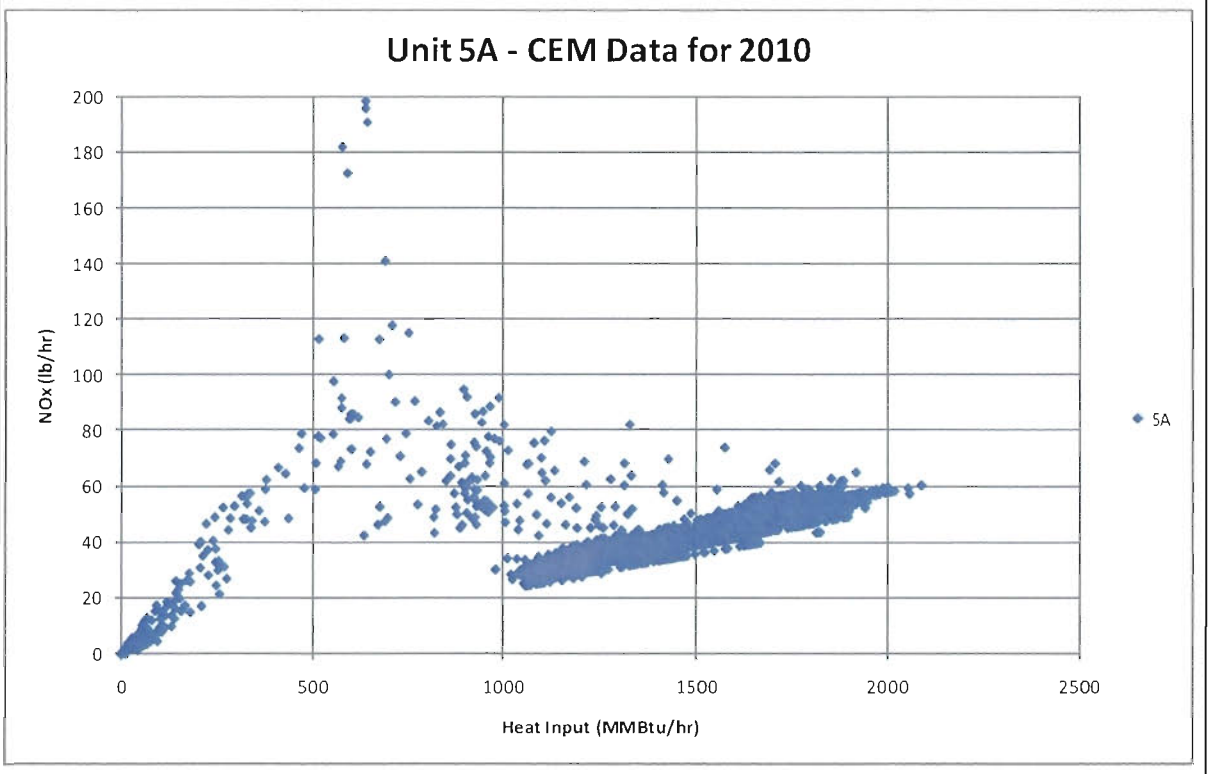
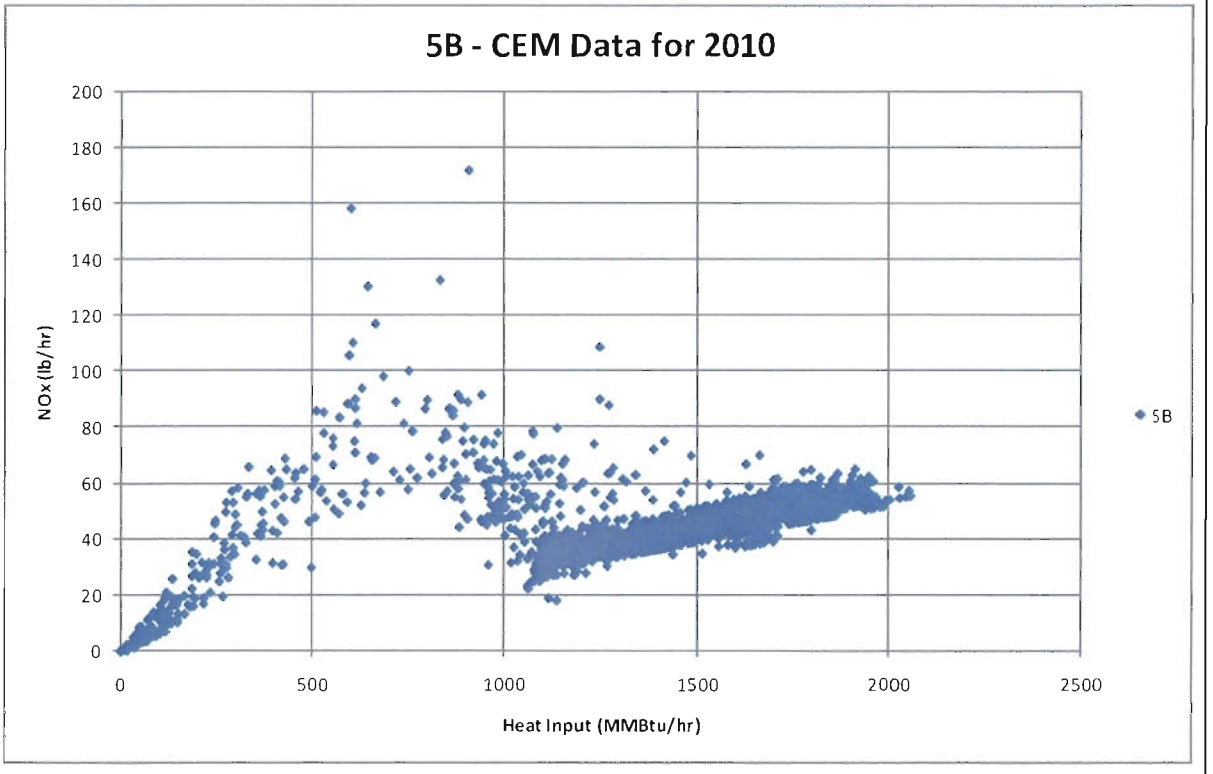
Source: Golder, 2011.

Golder Associates




Appendix D
Hourly Acid Rain

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Source: Golder, 2011.

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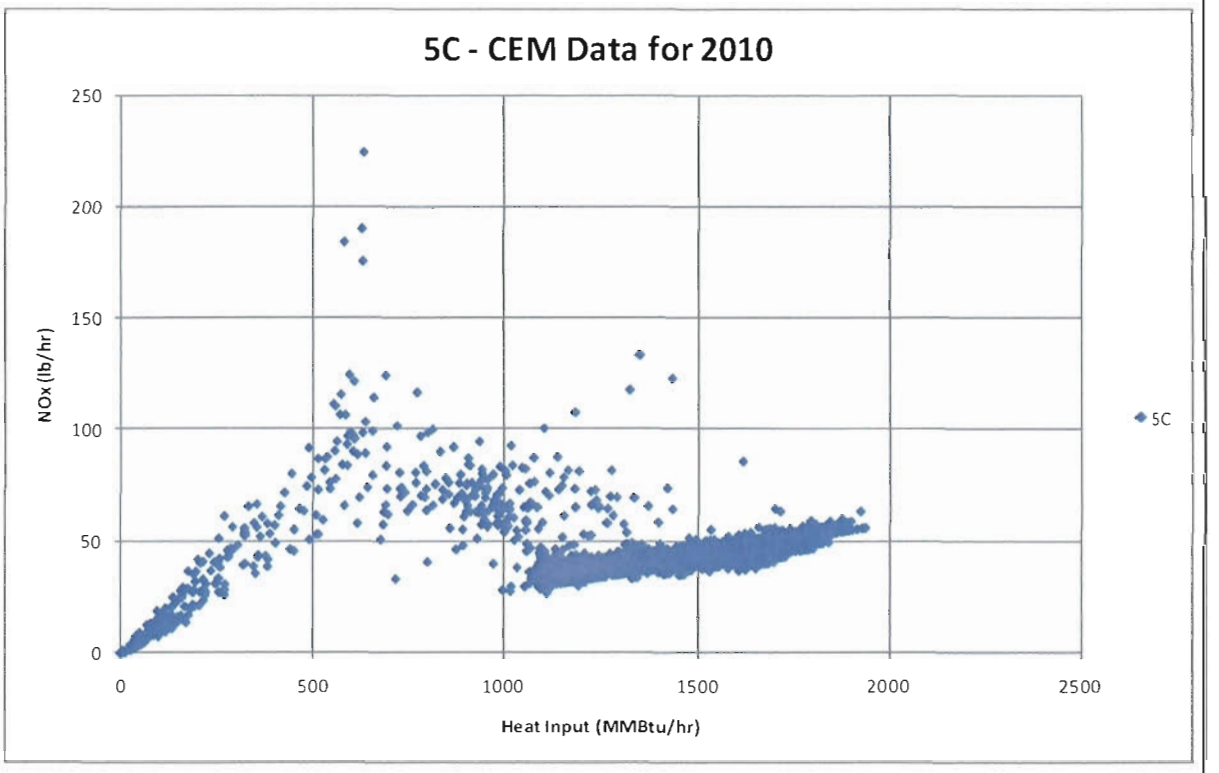


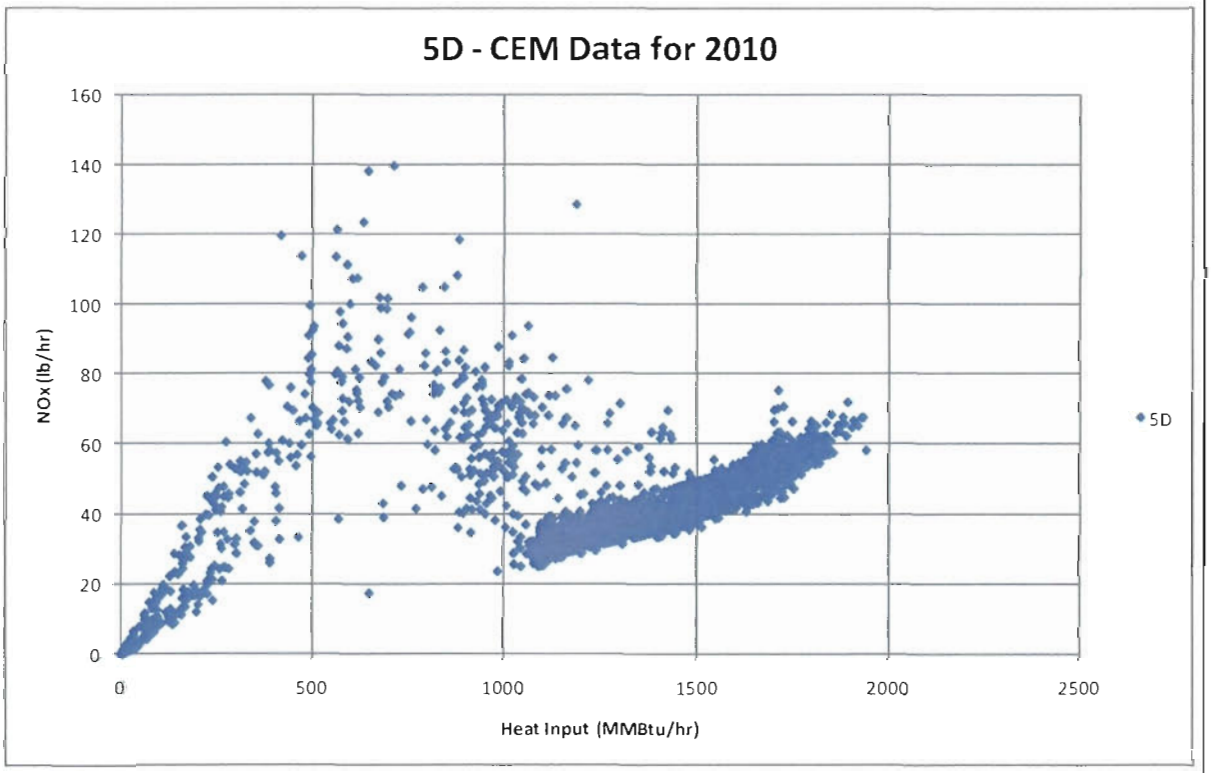


Appendix D
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Source: Golder, 2011.

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