



REPORT

MINOR SOURCE AIR CONSTRUCTION PERMIT APPLICATION FOR THE FLORIDA POWER & LIGHT COMPANY FORT MYERS UNIT 2 COMBUSTION TURBINE UPGRADE PROJECT LEE COUNTY, FLORIDA

Submitted To: Florida Power & Light Company
700 Universe Boulevard
Juno Beach, FL 33408

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

Distribution: FDEP – 4 copies
FPL – 2 copies
Golder – 2 copies

December 2014

14-14282

**A world of
capabilities
delivered locally**



PART I

APPLICATION FOR AIR PERMIT – LONG FORM



Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

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

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

Air Operation Permit – Use this form to apply for:

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

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: Florida Power & Light Company (FPL)	
2. Site Name: Fort Myers Power Plant	
3. Facility Identification Number: 0710002	
4. Facility Location... Street Address or Other Locator: 10650 State Road 80	
City: Fort Myers	County: Lee
Zip Code: 33905	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: John Hampp, Environmental Manager	
2. Application Contact Mailing Address... Organization/Firm: Florida Power & Light Company – FPL Environmental Services Street Address: 700 Universe Blvd.	
City: Juno Beach	State: FL
Zip Code: 33408	
3. Application Contact Telephone Numbers... Telephone: (561) 691-2894 ext. Fax: (561) 691-7049	
4. Application Contact E-mail Address:	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s):	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 existing General Electric (GE) Model PG7241(7FA.03) CTs associated with Units 2A, 2B, 2C, 2D, 2E and 2F at the Fort Myers Power Plant with GE 7FA.04 / 7FA.05 components.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
018	Unit 2A - 250 MW Combined-Cycle Combustion Turbine (CT) with Non-fired HRSG	AC1B	N/A
019	Unit 2B - 250 MW Combined-Cycle Unit (CT) with Non-fired HRSG	AC1B	N/A
020	Unit 2C - 250 MW Combined-Cycle Unit (CT) with Non-fired HRSG	AC1B	N/A
021	Unit 2D - 250 MW Combined-Cycle Unit (CT) with Non-fired HRSG	AC1B	N/A
022	Unit 2E - 250 MW Combined-Cycle Unit (CT) with Non-fired HRSG	AC1B	N/A
023	Unit 2F - 250 MW Combined-Cycle Unit (CT) with Non-fired HRSG	AC1B	N/A

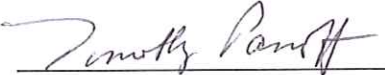

Application Processing Fee

Check one: Attached - Amount: _____ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name : Timothy Panoff, Plant General Manager
2. Owner/Authorized Representative Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: 10650 State Road 80 City: Fort Myers State: FL Zip Code: 33905
3. Owner/Authorized Representative Telephone Numbers... Telephone: (239) 693-4252 ext. Fax: (239) 693-4333
4. Owner/Authorized Representative E-mail Address: timothy.panoff@fpl.com
5. Owner/Authorized Representative Statement: <i>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.</i>  Signature  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): <input type="checkbox"/> 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. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> 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: <p>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.</p> <p>_____ Signature</p> <p>_____ Date</p>

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>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> (1) <i>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</i> (2) <i>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.</i> (3) <i>If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, 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.</i> (4) <i>If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/>, 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 <input type="checkbox"/>, 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.</i> (5) <i>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 <input type="checkbox"/>, 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.</i> Signature: <u><i>Kennard F. Kosky</i></u> Date: <u>12/19/14</u> (seal) 

* Attach any exception to certification statement.

** Board of Professional Engineers Certificate of Authorization # 00001670

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 East (km) 422.3 North (km) 2952.9		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) 26° 41' 49" Longitude (DD/MM/SS) 81° 46' 55"	
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 49	6. Facility SIC(s): 4911
7. Facility Comment :			

Facility Contact

1. Facility Contact Name: Brenda Bays, PGD Environmental Specialist
2. Facility Contact Mailing Address... Organization/Firm: Florida Power & Light Company Street Address: P.O. Box 430 City: Fort Myers State: FL Zip Code: 33902-0430
3. Facility Contact Telephone Numbers: Telephone: (239)-693-4390 ext. Fax: ()
4. Facility Contact E-mail Address: brenda_bays@fpl.com

Facility Primary Responsible Official

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

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

Facility Regulatory Classifications

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

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

List of Pollutants Emitted by Facility

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

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

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

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

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

<p>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)</p> <p><input checked="" type="checkbox"/> Attached, Document ID: Figure 2-1 <input type="checkbox"/> Previously Submitted, Date: _____</p>
<p>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)</p> <p><input checked="" type="checkbox"/> Attached, Document ID: Figure 2-2 <input type="checkbox"/> Previously Submitted, Date: _____</p>
<p>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)</p> <p><input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: May 2012</p>

Additional Requirements for Air Construction Permit Applications

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications -- NA

- | |
|--|
| 1. List of Exempt Emissions Units:
<input type="checkbox"/> Attached, Document ID:_____ <input type="checkbox"/> 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)
<input type="checkbox"/> Attached, Document ID:_____ <input type="checkbox"/> 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)
<input type="checkbox"/> Attached, Document ID:_____ <input type="checkbox"/> Not Applicable (revision application with no change in applicable requirements) |
|---|

- | |
|---|
| 3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
<input type="checkbox"/> 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)
<input type="checkbox"/> Attached, Document ID:_____
<input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed
<input type="checkbox"/> Not Applicable |
|---|

- | |
|--|
| 5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
<input type="checkbox"/> Attached, Document ID:_____ <input type="checkbox"/> Not Applicable |
|--|

- | |
|---|
| 6. Requested Changes to Current Title V Air Operation Permit:
<input type="checkbox"/> Attached, Document ID:_____ <input type="checkbox"/> Not Applicable |
|---|

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

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

1. Acid Rain Program Forms:

Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):

Attached, Document ID: _____ Previously Submitted, Date: **May 2012** _____

Not Applicable (not an Acid Rain source)

Phase II NO_x Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):

Attached, Document ID: _____ Previously Submitted, Date: _____

Not Applicable

New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):

Attached, Document ID: _____ Previously Submitted, Date: _____

Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):

Attached, Document ID: _____ Previously Submitted, Date: **May 2008** _____

Not Applicable (not a CAIR source)

Additional Requirements Comment

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

III. EMISSIONS UNIT INFORMATION

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

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

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

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

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.
2. Description of Emissions Unit Addressed in this Section:
Units 2A – 2F: Six identical combined-cycle combustion turbines with unfired heat recovery steam generators
3. Emissions Unit Identification Number:
EU 018 (Unit 2A), EU 019 (Unit 2B), EU 020 (Unit 2C), EU 021 (Unit 2D), EU 022 (Unit 2E), EU 023 (Unit 2F)
- | | | | |
|--|--------------------------------|--------------------------|---|
| 4. Emissions Unit Status Code:
A | 5. Commence Construction Date: | 6. Initial Startup Date: | 7. Emissions Unit Major Group SIC Code: 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 / 7FA.05**
10. Generator Nameplate Rating:
11. Emissions Unit Comment:
6-on-1 combined cycle system consisting of six nominal 170 MW GE 7FA.04 / 7FA.05 combustion turbine-electrical generator sets with each unfired HRSG that produces sufficient steam to generate additional 80 MW.
- Initial startup dates: 26-Oct-00 (Unit 2A), 22-Nov-00 (Unit 2B), 22-Dec-00 (Unit 2C), 31-Dec-02 (Unit 2D), 31-Dec-02 (Unit 2E) and 31-Dec-02 (Units 2F).**

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Emissions Unit Control Equipment/Method: Control 1 of 1

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

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:

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

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: Nominal power output for the combined-cycle unit – 1,500 MW				
3. Maximum Heat Input Rate: 10,560 MMBtu/hr (LHV)				
4. Maximum Incineration Rate: pounds/hr tons/day				
5. Requested Maximum Operating Schedule: <table><tr><td>24 hours/day</td><td>7 days/week</td></tr><tr><td>52 weeks/year</td><td>8,760 hours/year</td></tr></table>	24 hours/day	7 days/week	52 weeks/year	8,760 hours/year
24 hours/day	7 days/week			
52 weeks/year	8,760 hours/year			
6. Operating Capacity/Schedule Comment: Maximum heat input and power outputs based on compressor inlet conditions of 59 °F ambient temperature, 60% relative humidity, 100% load, and 14.7 psia. Maximum heat input rate for each turbine: 1,760 MMBtu/hr/ (LHV) Maximum heat input rate for each turbine in peak mode operation: 1,838 MMBtu/hr (HHV) (see Conditions B.2.a and B.6 of Permit No. 0710002-018-AV)				

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

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: 2A-2F HRSG STACK		2. Emission Point Type Code: 3	
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: 1,119,162 acfm	10. Water Vapor: 7.6 %	
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: Stack parameters based on Title V permit renewal application dated May 2012. See Table 2-1 in Part II for estimated stack parameters for project.			

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

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: 11.11	5. Maximum Annual Rate: 97,374	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: 950 (LHV)
10. Segment Comment: <p>Hourly rate = 1,760 MMBtu/hr / 950 MMBtu/ MMft³ x 6 turbines = 11.11 MMft³/hr (Condition B.2.a of Permit No. 0710002-018-AV) Annual rate = 11.11 x 10⁶ ft³/hr x 8,760 hrs/yr = 97,374 MMft³/yr</p>		

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:		

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

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		EL
CO			EL
PM/PM₁₀			WP
VOC			EL
SO₂			WP
CO_{2e}			EL

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [1] of [6]
Nitrogen Oxide – NO_x

**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: NO_x	2. Total Percent Efficiency of Control:		
3. Potential Emissions lb/hour	tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> 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): 904.6 tons/year		8.b. Baseline 24-month Period: From: 1/1/2009 To: 12/31/2010	
9.a. Projected Actual Emissions (if required): 929.9 tons/year		9.b. Projected Monitoring Period: <input checked="" type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 3-8 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [1] of [6]
Nitrogen Oxide – NO_x

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

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

Allowable Emissions Allowable Emissions 1 of 3

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 9 ppmvd @ 15% O₂	4. Equivalent Allowable Emissions: 65 lb/hour tons/year
5. Method of Compliance: CEMS (30-day rolling average)	
6. Allowable Emissions Comment (Description of Operating Method): Based on ISO conditions and Permit Nos. 0710002-004-AC and 0710002-018-AV. Equivalent emissions rates are for each turbine.	

Allowable Emissions Allowable Emissions 2 of 3

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 15 ppmvd @ 15% O₂	4. Equivalent Allowable Emissions: 102 lb/hour tons/year
5. Method of Compliance: CEMS (24-hr Block Average)	
6. Allowable Emissions Comment (Description of Operating Method): Based on peaking mode of operation at ISO conditions. Equivalent emissions rates are for each turbine. Based on Permit Nos. 0710002-014-AC and 0710002-018-AV.	

Allowable Emissions Allowable Emissions 3 of 3

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 75/110 ppmvd @ 15% O₂	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Initial compliance test only	
6. Allowable Emissions Comment (Description of Operating Method): Limit based on for a total of 90 day period/turbine at the end of construction. Based on 40 CFR 60 Subpart GG [60.32(a)(1)] and Permit No. 0710002-018-AV.	

EMISSIONS UNIT INFORMATION**POLLUTANT DETAIL INFORMATION**Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion TurbinesPage [2] of [6]
Carbon Monoxide – CO**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? <input type="checkbox"/> Yes <input type="checkbox"/> 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): 49.6 tons/year		8.b. Baseline 24-month Period: From: 1/1/2012 To: 12/31/2013	
9.a. Projected Actual Emissions (if required): 47.3 tons/year		9.b. Projected Monitoring Period: <input checked="" type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 3-8 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [2] of [6]
Carbon Monoxide – CO

**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 2

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 12.0 ppmvd @ 15% O₂	4. Equivalent Allowable Emissions: 43 lb/hour tons/year
5. Method of Compliance: Stack test (3-hr average) using EPA Method 10	
6. Allowable Emissions Comment (Description of Operating Method): Based on ISO conditions and Permit Nos. 0710002-004-AC and 0710002-018-AV. Equivalent emissions rates are for each turbine.	

Allowable Emissions Allowable Emissions 2 of 2

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: 29 lb/hour tons/year
5. Method of Compliance: None	
6. Allowable Emissions Comment (Description of Operating Method): Based on peaking mode of operation at ISO conditions. Equivalent emissions rates are for each turbine. Based on Permit Nos. 0710002-014-AC and 0710002-018-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):	

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [3] of [6]
VOC

**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		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> 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): 0.07 tons/year		8.b. Baseline 24-month Period: From: 1/1/2009 To: 12/31/2010	
9.a. Projected Actual Emissions (if required): 0.07 tons/year		9.b. Projected Monitoring Period: <input checked="" type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 3-8 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

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

Allowable Emissions Allowable Emissions 1 of 2

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: Initial compliance test required	
6. Allowable Emissions Comment (Description of Operating Method): CO limit to be used as a surrogate to demonstrate annual compliance. Based on ISO conditions and Permit Nos. 0710002-004-AC and 0710002-018-AV. Equivalent emissions rates are for each turbine.	

Allowable Emissions Allowable Emissions 2 of 2

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: 3 lb/hour tons/year
5. Method of Compliance: None	
6. Allowable Emissions Comment (Description of Operating Method): Based on peaking mode of operation at ISO conditions. Equivalent emissions rates are for each turbine. Hours of operation limited to 400 hr/yr. Based on Permit Nos. 0710002-014-AC and 0710002-018-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):	

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [4] of [6]
PM/PM10

**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		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> 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): 212.3 tons/year		8.b. Baseline 24-month Period: From: 1/1/2008 To: 12/31/2009	
9.a. Projected Actual Emissions (if required): 200.4 tons/year		9.b. Projected Monitoring Period: <input checked="" type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 3-8 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [4] of [6]
PM/PM10

**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 to demonstrate annual compliance. Based on normal and peaking mode of operation at ISO conditions and Permit Nos. 0710002-014-AC and 0710002-018-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		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
		tons/year	
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): 19.1 tons/year		8.b. Baseline 24-month Period: From: 1/1/2009 To: 12/31/2010	
9.a. Projected Actual Emissions (if required): 18.5 tons/year		9.b. Projected Monitoring Period: <input checked="" type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 3-8 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

POLLUTANT DETAIL INFORMATION

Section [1]
Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

Page [5] of [6]
Sulfur Dioxide – SO2

**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 2

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.8 percent S	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Use of Natural gas assures compliance with NSPS limit.	
6. Allowable Emissions Comment (Description of Operating Method): Based on 40 CFR 60.333.	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: Other	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: Natural gas	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Use of pipeline natural gas	
6. Allowable Emissions Comment (Description of Operating Method): Permit Nos. 0710002-004-AC and 0710002-018-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):	

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

POLLUTANT DETAIL INFORMATION

Page [1] of [2]

Equivalent carbon dioxide - CO_{2e}

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL 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: Equivalent carbon dioxide - CO_{2e}		2. Total Percent Efficiency of Control:	
3. Potential Emissions: lb/hour	tons/year	4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="checked" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: See Part II. Reference:		7. Emissions Method Code:	
8.a. Baseline Actual Emissions (if required): 3,813,002 tons/year		8.b. Baseline 24-month Period: From: 1/1/2009 To: 12/31/2010	
9.a. Projected Actual Emissions (if required): 3,613,333 tons/year		9.b. Projected Monitoring Period: <input checked="checked" type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: See Table 3-8 of Part II.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS**

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

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code:	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):	

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):	

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

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: <input type="checkbox"/> Rule <input checked="" type="checkbox"/> 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: Based on Permit Nos. 0710002-004-AC and 0710002-018-AV.	

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

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

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor 1 of 2

1. Parameter Code: O2 - Oxygen	2. Pollutant(s):
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: SERVOMEX Model Number: 1440C Serial Number: 2A:01420C/1302, 2B: 01420C/1304, 2C: 01420C/1402, 2D: 01420C/1403 2E: 01420C/1466 2F: 01420C/1444	
5. Installation Date: 2A:01-Sep-00 2B:01-Nov-00 2C:01-Dec-00 2D: 12-Apr-01 2E:03-Apr-01 2F:01-Mar-01	6. Performance Specification Test Date: 2A:11-Oct-00 2B:08-Nov-00 2C:12-Dec-00 2D: 12-Apr-01 2E:03-Apr-01 2F:31-May-01
7. Continuous Monitor Comment: CEM required pursuant to 40 CFR 75.	

Continuous Monitoring System: Continuous Monitor 2 of 2

1. Parameter Code: EM - EMISSION	2. Pollutant(s): NOx
3. CMS Requirement:	<input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
4. Monitor Information... Manufacturer: TEI Model Number: 42CHL Serial Number: 2A:66125-351/ 2B:66427-352/ 2C:66490-352 2D:66131-351/ 2E:65868-650/ 2F:69215-362	
5. Installation Date: 2A: 01-Oct-00/ 2B: 01-Nov-00/ 2C: 01-Dec-00/ 2D: 01-Jan-01/ 2E:01-Feb-01/ 2F:01-Mar-01	6. Performance Specification Test Date: 2A: 11-Oct-00/ 2B: 08-Nov-00/ 2C: 12-Dec-00/ 2D: 12-Apr-01/ 2E: 03-Apr-01/ 2F: 31-May-01
7. Continuous Monitor Comment: CEM required pursuant to 40 CFR 75.	

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date May 2012
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date May 2012
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) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date May 2012
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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> 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) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

EMISSIONS UNIT INFORMATION

Section [1]

Units 2A, 2B, 2C, 2D, 2E and 2F Combustion Turbines

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)): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable

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

1. Identification of Applicable Requirements: <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
2. Compliance Assurance Monitoring: <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
3. Alternative Methods of Operation: <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable
4. Alternative Modes of Operation (Emissions Trading): <input type="checkbox"/> Attached, Document ID: _____ <input checked="checked" type="checkbox"/> Not Applicable

Additional Requirements Comment

PART II



Table of Contents

PART II

- 1.0 INTRODUCTION..... 1
- 2.0 PROJECT DESCRIPTION..... 3
 - 2.1 Facility Description 3
 - 2.2 7FA.04/7FA.05 Gas Turbine Upgrade (“the Project”) 3
 - 2.3 Source Emission Units and Stack Parameters 4
- 3.0 AIR QUALITY REVIEW REQUIREMENTS AND PROJECT APPLICABILITY 5
 - 3.1 Applicable FDEP PSD Regulations 5
 - 3.2 Baseline Actual to Projected Actual Emissions for the Project 5
 - 3.3 New Source Performance Standards 7
 - 3.4 Proposed Permit Conditions 9

List of Tables

- Table 2-1 Stack, Operating, and Emission Data for Combustion Turbines - Natural Gas Combustion, GE 7FA.05
- Table 3-1 Fort Myers Unit 2 Annual Heat Inputs and Operating Hours, 2009 – 2013
- Table 3-2 Annual Emissions Reported in 2009 – 2013 Annual Operating Reports and Acid Rain Database for Unit 2
- Table 3-3 Actual Annual Emissions of N₂O and CH₄ for the Period 2009 – 2013, Unit 2 Upgrade Project
- Table 3-4 Annual Average Emissions for Fort Myers Unit 2 for Each Consecutive Two-Year Period, 2009-2013
- Table 3-5 Actual Hourly Emission Rates, FPL Fort Myers Units 2A, 2B, 2C, 2D, 2E, and 2F
- Table 3-6 Fort Myers Unit 2 Actual Emissions as a Function of Heat Input, 2009 - 2013
- Table 3-7 Projected Utilization of Unit 2 with the Upgrade Project
- Table 3-8 PSD Applicability – Fort Myers Unit 2 Upgrade Project





List of Figures

- Figure 1-1 Location Map
- Figure 2-1 Facility Plot Plan
- Figure 2-2 Process Flow Diagram for Each CT Base Load Operation, Turbine Inlet Temperature of 75°F

List of Appendices

- Appendix A Baseline Actual Emissions Information and for GE 7FA.05 CT Emission Rates and Stack Parameters



1.0 INTRODUCTION

Florida Power & Light Company's (FPL's) existing Fort Myers Plant is located at 10650 State Road 80, in Lee County Florida (see Figure 1-1) and consists of a six-on-two natural gas combined cycle unit (Unit 2) (EUs 018 to 024), two simple cycle combustion turbines (CTs) (Units 3A and 3B) (EUs 027 and 028) and one block of 12 simple cycle gas turbines (GT1 through GT12) (EUs 003 to 014). The facility is currently operating under Title V Permit No. 0710002-018-AV. The facility also operates eight natural gas pre-heaters for simple cycle operation.

Unit 2 consists six of General Electric (GE) Model MS7241 CTs associated with six heat recovery steam generators (HRSGs) referred to as Units 2A through 2F (EU IDs 018, 019, 020, 021, 022, and 023). The GE CT version installed in Unit 2 is referred to as the 7FA.03. On March 13, 2014 FDEP issued Air Construction Permit No. 0710002-020-AC that authorized the installation of GE 7FA.04 components. The installation of the GE 7FA.04 components would substitute for replacement of GE 7FA.03 components that are necessary as routine maintenance, repair, and replacement scheduled for 2015 to 2016. The 7FA.04 components would increase the power output by approximately 5 percent (base load at 75°F). As a result of the greater output, mass emission rates of all criteria pollutants will decrease on a per megawatt hour (MW-hr) basis. The expiration date of the permit is December 31, 2016 which would allow sufficient time for installation of the 7FA.04 components.

In further discussions with GE, FPL identified an additional upgrade that consisted of installing 7FA.05 components along with 7FA.04 components to provide even greater benefits than installing only the 7FA.04 components. At a turbine inlet temperature of 75 °F, the gas turbine power increases about 18.6 percent (new and clean) with 7FA.04/7FA.05 components. The improvements by installing 7FA.05 components along with the 7FA.04 components are even greater when compared to the existing conditions of the CTs since the 7FA.04 components will be new and clean compared to the existing CTs that have been in operation for some time and are scheduled for routine maintenance, repair, and replacement. FPL estimates that there will be an overall increase of 14.6 percent in combined cycle power output over the 7FA.03 new and clean condition, with a decrease in heat rate of about 1.7 percent. Improvements over the existing condition of the 7FA.03 turbines are projected to be 17.6 percent in power output and a 2.4 percent decrease in heat rate. The improvements with only like-kind replacement parts that are scheduled would only achieve 3 percent increase in power output and only a 0.7 percent decrease in heat rate. After recognizing the benefits of 7FA.04/7FA.05 improvements over those of just replacing components parts of the 7FA.03, FPL has requested Golder Associates Inc. to prepare this Air Construction/Prevention of Significant Deterioration (PSD) Permit Application to allow the option of installing 7FA.05 components along with the 7FA.04 components as previously authorized (the Project).

Based on information provided by GE, the Project will result in no increases in emission rates of regulated air pollutants compared to the existing units. The increased power will result in higher emission rates for



the same turbine inlet temperature (new and clean). An evaluation of Unit's 2 projected utilization after the upgrades to determine the projected actual emission after the change does not result in a significant net emission increases above the baseline actual emissions of any regulated PSD air pollutant. Therefore, pursuant to FDEP Rule 62-212.400, F.A.C., the Project is not subject to PSD review.

This Application is being filed for the purpose of obtaining a minor source air construction permit for the Project in accordance with FDEP's federally approved minor source air construction permit program under Florida's federally-approved State Implementation Plan. This Air Construction Permit Application Report is divided into three sections.

- Section 1.0 presents an introduction to the Project
- Section 2.0 presents a description of the Project, including air emissions and stack parameters
- Section 3.0 provides a review of the regulatory analysis conducted, including proposed permit conditions for the Project
- Appendices which include historical operation
- FDEP Form No. 62-210.900(1): Application for Air Permit – Long Form (Part I)



2.0 PROJECT DESCRIPTION

2.1 Facility Description

The existing FPL Fort Myers Plant is located within unincorporated Lee County, Florida. The existing plant is situated within approximately 460 acres of land owned by FPL. The facility is located on Palm Beach Boulevard (State Road 80), Fort Myers, Florida. Figure 2-1 presents the facility plot plan for the facility.

2.2 7FA.04/7FA.05 Gas Turbine Upgrade (“the Project”)

Fort Myers Unit 2’s six gas turbines are permitted to fire only natural gas. The current maximum design heat input rate for the turbines are 1,760 million British thermal units per hour (MMBtu/hr) [59 degrees Fahrenheit (°F) ambient temperature, lower heating value (LHV)]. The design heat input rate for natural gas-firing will increase by about 12 percent) based on GE data with the upgraded 7FA.04/7FA.05 components at 75°F ambient temperature (new and clean). Data from the National Climatic Data Center (NCDC) indicate the 30-year (1983 to 2012) average temperature for Fort Myers is 74°F (median 75°F). The increased heat input rate will not exceed the currently permitted maximum heat input rate.

The current permitted emissions limits for the Unit 2 gas turbines are listed in Condition Nos. B.9 through B.16 of Title V Permit No. 0710002-018-AV. GE will guarantee the same concentration-based emissions limits for NO_x, CO, and VOC with the improved 7FA.04/7FA.05 hybrid turbine. Based on GE performance data for the 7FA.03, the potential hourly mass emission rate of NO_x will theoretically increase from 55.1 to 62.2 pound per hour (lb/hr) (at 75°F). However, the increased rate is less than the current permitted emissions rate of 65 lb/hr.

There are currently no mass-based emissions limits for SO₂, SAM, or PM/PM₁₀/PM_{2.5}. Since emissions of these pollutants are directly proportional to fuel flow and the Project would increase the design fuel flow capacity of the turbines, the potential hourly mass emission rates of these pollutants would also theoretically increase. Due to the 7FA.04/7FA.05 component installation, potential emissions of all pollutants will decrease on a per megawatt-hour (MW-hr) basis for all regulated pollutants including NO_x.

Unit 2 currently has no post-combustion control technologies for emissions of CO, VOC, SO₂, SAM, or PM/PM₁₀/PM_{2.5}. Emissions of NO_x are controlled by Dry Low-NO_x (DLN) combustion technology. The upgrade Project will rely on the same existing control technologies.

The currently-permitted 7FA.04 upgrade includes 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. The 7FA.05 upgrade involves improvements to the compressor that are applied to the 7FA.04 hot gas path and incorporate



3-dimensional airfoil aerodynamics and a 4 stage variable stator vane system to improve performance and efficiency of the hybrid combustion turbine. The 14-stage compressor adds 25% more mass flow to produce an 18 to 1 pressure ratio in 4 fewer compressor stages. The rotor compressor blades are field replaceable for easier maintenance, saving turn time during outages. The design has incorporated lessons learned from 7FA.03 and 7FA.04 experience resulting in a more robust blade profile adding to improved reliability of the unit.

2.3 Source Emission Units and Stack Parameters

Performance, estimated maximum hourly emissions, and exhaust information representative of both CT operating options at base load conditions (100 percent load) in combined cycle mode are presented in Table 2-1. The performance and emissions data for the other CT operating conditions are given in Appendix A for turbine inlet temperatures of 35°F, 75°F, and 95°F and various operating load conditions. There are no changes in the emission rates from the GE 7FA.03 in terms of concentration or lb/MMBtu. While the mass flow increases, the amount of heat input required for amount of generation is reduced so that emissions of all air pollutants decrease on a lb/MW-hr basis.

A process flow diagram of the new CT configuration, operating at base load conditions with a compressor inlet temperature of 75°F, is presented in Figure 2-2.



3.0 AIR QUALITY REVIEW REQUIREMENTS AND PROJECT APPLICABILITY

3.1 Applicable FDEP PSD Regulations

The U.S. Environmental Protection Agency's (EPA's) PSD regulations are promulgated under Title 40, Part 51.166 of the Code of Federal Regulations (40 CFR 51.166). Florida's PSD regulations are codified in FDEP Rule 62-212.400, Florida Administrative Code (F.A.C.), and have been approved by EPA. The Florida PSD regulations incorporate the requirements of EPA's PSD regulations. Under these requirements, the existing Fort Myers Plant is classified as an existing major facility. A modification to an existing major facility that results in a significant net emissions increase equal to or exceeding the significant emissions rates (SERs) listed in the Florida regulations under Section 62-212.400, Table 62-212.400-2, F.A.C., is classified as a major modification and will be subject to the PSD preconstruction permitting program for those pollutants that exceed the PSD SERs.

The procedures for determining applicability of the PSD permitting program to the Project are specified in FDEP Rule 62-212.400(2), F.A.C. For each regulated pollutant, PSD is triggered as a result of a modification at an existing facility if the difference between the projected actual emissions and the baseline actual emissions equals or exceeds the SER for that pollutant, as defined at FDEP Rule 62-210.200 (243), F.A.C.

On June 3, 2010, EPA promulgated regulations related to PSD and Title V GHG Tailoring Rule [75 Federal Register (FR) 31514-31608]. This change in EPA's PSD regulations requires PSD review and approval for new major projects and modifications exceeding the PSD thresholds for review. This application includes information to address PSD review of GHGs under EPA's rules and the recent Supreme Court decision regarding the Tailoring Rule. Florida has obtained authority to issue PSD permits for GHGs that exceed the GHG significant emission levels and are included a PSD review of other air pollutants.

3.2 Baseline Actual to Projected Actual Emissions for the Project

The Fort Myers Power Plant is an existing major facility under PSD rules. 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.). For an existing major facility for which a modification is proposed, the project is subject to PSD review if the net increase in emissions due to the modification is greater than the PSD significant emission rates for any applicable pollutant. The comparison is based on the Baseline Actual-to-Projected Actual Applicability Test for Modifications at Existing Emission Units pursuant to FDEP Rule 62-212.400(2)(a)1., F.A.C.



The first step in determining PSD applicability is whether a potential increase in emissions from a particular change alone is significant by making an emissions comparison between baseline actual emissions and projected actual emissions. 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 tons per year, 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.

The Annual Operating Reports (AORs) for Unit 2 were used to determine baseline actual emissions for the Project. Table 3-1 presents the actual annual heat inputs reported in the Annual Operating Reports (AORs) for the period 2009 through 2013. This table also presents the total actual heat input for Units 2A through 2F, as well as the actual operating hours for each unit.

Table 3-2 summarizes the annual emissions reported in the AORs for each calendar year in the period 2009 through 2013. The carbon dioxide (CO₂) emission rates in Table 3-2 were obtained from EPA's Acid Rain database.

On June 3, 2010, EPA promulgated regulations related to PSD and Title V Greenhouse Gas Tailoring Rule (75 FR 31514-31608). In EPA's promulgation, GHGs are defined to include an aggregate group of six GHGs: CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Each of these GHGs has a specific Global Warming Potential that is calculated as "CO₂ equivalent emissions" or CO₂e that is equivalent to one ton of CO₂.

For the Project, the GHGs emitted are CO₂, CH₄, and N₂O with one ton of CH₄ equivalent to 25 tons of CO₂e and one ton of N₂O equivalent to 294 tons of CO₂e. Since emissions of nitrous oxide (N₂O) and methane (CH₄) were not reported in the AORs, they were calculated based on the actual annual heat input and emission factors from Title 40, Part 98 of the Code of Federal Regulations (40 CFR 98), Subpart C. These emissions are summarized in Table 3-3, which also shows the CO₂ equivalent (CO₂e) rates for these pollutants.

Table 3-4 presents the average emissions for each consecutive 2-year period based on the calendar year emissions in Tables 3-2 and 3-3. 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 Table 3-5.



The actual emission factors in pounds per million British thermal units heat input (lb/MMBtu) are shown in Table 3-6 for each calendar year in the period 2009 through 2013. The factors are calculated by dividing the total annual emissions by the total annual heat input for natural gas-firing. To conservatively estimate future emissions with the upgrade, the upper 90 percent confidence interval was used. Since 5 years of data are being evaluated, the Student “t” test probability function is the appropriate method. There is normal variability in emissions, so the upper 90 percent confidence intervals will envelope the small potential increases in emissions due to increased performance. For CO₂, the emission rates in lb/MMBtu based on the Part 75 monitoring was used since this data was the basis of the annual CO₂ emissions. For the N₂O and CH₄, the Part 98 emission factors are used.

To determine the projected actual emissions, FPL performed system forecast modeling of its system to evaluate the utilization of Unit 2 with the improvements resulting from the 7FA.04/7FA.05 upgrades. The result of the forecast modeling presented in Table 3-7 shows the projected generation of Unit 2 with the Project in FPL’s system, along with actual generation of Unit 2 from 2009 through 2013.

The generation projections in Table 3-7 are presented for the 5-years after the Project is complete. The 5-year time period is based on FDEP Rule 62-212.300(1)(e)1., F.A.C., that states in part “The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected, and using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change.” The 5-year period is appropriate since there is no increase in emission rates and Unit 2 is limited by its existing electric generators associated with the project (i.e., the 6 CT generators and 2 steam turbine/electric generators). No physical or operation changes are being made to the electric generators associated except for RMRR as required during normal outages. The maximum electric generating design capacity of Unit 2 is not changing, and the potential emissions will remain the same.

The PSD applicability analysis is presented in Table 3-8. The baseline actual emissions are obtained from Table 3-4, which are maximum 2-year average emissions for each pollutant. As shown, the Project will not result in net emission increase greater than the PSD significant emission rates for any regulated PSD air pollutant.

3.3 New Source Performance Standards

Fort Myers Units 2A through 2F 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 SO₂ 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 Unit 2 combustion turbines 2A through 2F 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 installation of the 7FA.04/7FA.05 components, 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% O₂) for natural gas-firing during normal combined-cycle operation and 15 ppmvd @15% O₂ for peak mode operation (limited to 400 hour/year operation).

NSPS Subpart KKKK limits NO_x emissions to 15 ppmvd @ 15% O₂ for natural gas-firing with heat input rate greater than 850 MMBtu/hr (high heating value). NSPS Subpart KKKK also has an alternative limit for NO_x emissions that is 0.43 pound per megawatt-hour (lb/MWh) for natural gas-firing. The improved combined-cycle units will comply with the emissions standard.

The 7FA.04/7FA.05 improvement increases the exhaust mass flow of the combustion turbine. However, the NO_x emissions on a per MWh basis will decrease due to improved efficiency. In addition, 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 these reasons, it is believed an increase in kg/hr NO_x emissions may not occur from the project. It is proposed that the CEMs data post the upgrades be reviewed to determine if an increase has occurred. In any event, the 7FA.04/7FA.05 project will comply with, and be much less than, the emission limiting standards of Subpart KKKK for NO_x.

NSPS Subpart KKKK limits SO₂ 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 2009 – 2013, the current actual maximum SO₂ emission rate is 0.00061 lb/MMBtu. SO₂ 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 only slightly. As a result, the projected minor increase in heat input will not increase emissions based on the normal variability of sulfur in natural gas. Future sulfur content data post upgrades will be reviewed to determine if an increase in kg/hr SO₂ emissions has



occurred. In any event, the 7FA.04/7FA.05 project will comply with the emission limiting standards of Subpart KKKK for SO₂, if applicable.

3.4 Proposed Permit Conditions

The 7FA.04/7FA.05 Upgrade Project does not result in a significant net increase in emissions of any PSD pollutant and is therefore similar in regulatory applicability to the 7FA.04 Upgrade Project authorized under FDEP Permit No. 0710002-020-AC. As a result, the relevant conditions included in that Permit are proposed for consideration in the permit for the 7FA.04/7FA.05 Upgrade Project with appropriate revisions. These conditions are provided below.

REPORTING REQUIREMENTS AND NSPS APPLICABILITY TESTS (FROM FDEP PERMIT NO. 0710002-020-AC)

This permit requires actual emissions reporting for Unit 2 pursuant to Rule 62-212.300(1)(e), F.A.C.; and, tests data to demonstrate NSPS applicability/non-applicability of 40 CFR 60, Subpart KKKK as follows:

3. Actual Emissions Reporting: This permit is based on an analysis that compared baseline actual emissions with projected actual emissions and avoided the requirements of subsection 62-212.400(4) through (12), F.A.C. for several pollutants. Therefore, pursuant to Rule 62-212.300(1)(e), F.A.C., the permittee is subject to the following monitoring, reporting and recordkeeping provisions.

a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C., which are provided in Appendix C of this permit.

b. The permittee shall report to the Department within 60 days after the end of each calendar year during the 5-year period setting out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

- (1) The name, address and telephone number of the owner or operator of the major stationary source;
- (2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;
- (3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and



(4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

d. For this project, the permittee estimated the following baseline actual emissions: 49.6 tons/year of CO; 904.6 tons/year of NO_x; 19.1 tons/year of SO₂; 0.07 tons/year of VOC; 212.3 tons/year of PM/PM₁₀; and 2.92 tons/year of sulfuric acid mist (SAM).

e. The Department has identified NO_x as the only PSD-pollutant that could reasonably increase as a result of this modification. For the purpose of comparisons with baseline actual emissions, the permittee shall use the installed CEMS to determine and report the actual annual emissions of NO_x.

f. Heat input rates will vary depending upon gas turbine characteristics, ambient conditions, alternate methods of operation, and evaporative cooling. The permittee shall provide manufacturer's performance curves (or equations) that correct for site conditions to the Permitting and Compliance Authorities within 45 days of completing the initial compliance testing. Operating data may be adjusted for the appropriate site conditions in accordance with the performance curves and/or equations on file with the Department. [Rule 62-210.200(PTE), F.A.C.]

[Application 0710002-020-AC; and Rules 62-212.300(1)(e) & 62-210.370, F.A.C.]

4. NSPS, KKKK Applicability Determination: The permittee shall conduct tests in accordance with 40 CFR 60, Appendix C - Determination of Emission Rate Change. The permittee shall submit the data with the Title V Permit application required by Section 2, Condition 9 above. The submittal shall include a preliminary inference whether the short-term NOX emission rates (in pounds per hour), while operating in the normal combined cycle mode and burning natural gas, after the change are greater than before the change with 95% confidence and an analysis regarding the applicability of 40 CFR 60, Subpart KKKK – Standards of Performance for Stationary Combustion Turbines. The tests shall be conducted using the installed NOX CEMS with the units operated as if a manual test were being performed. Valid data using the averaging time which would be required if a manual emission test were being conducted shall be used. The number (n) of runs shall be between 20 and 29. If test data shows NOX emissions for any combustion turbine increases, the permittee will become subject to 40 CFR 60, Subpart KKKK, and shall immediately begin complying with all of the provisions applicable to the unit. In such case, the applicable provisions of 40 CFR 60, Subpart KKKK will be incorporated into the Title V air operation permit during the next revision or renewal. [Rule 62-4.070, F.A.C., Application 0710002-020-AC]

TABLES

**Table 2-1. Stack, Operating, and Emission Data for Combustion Turbines (CT)—Natural Gas Combustion
GE 7FA.05**

Parameter	Units	Base Load Turbine Inlet Temperature			75% Load Turbine Inlet Temperature			50% Load Turbine Inlet Temperature			Peak Load at
		35° F	75° F	95° F	35° F	75° F	95° F	35° F	75° F	95° F	95° F
<u>CT - HRSG Stack Data</u>											
Height	ft	125	125	125	125	125	125	125	125	125	125
Diameter	ft	19	19	19	19	19	19	19	19	19	19
Temperature	°F	220	220	220	220	220	220	220	220	220	220
Velocity	ft/sec	66.4	65.7	58.6	53.2	51.7	47.6	42.0	42.1	43.0	58.2
<u>CT - Bypass Stack Data</u>											
Height	ft	98	98	98	98	98	98	98	98	98	98
Diameter	ft	22	22	22	22	22	22	22	22	22	22
Temperature	°F	1,092	1,109	1,144	1,132	1,161	1,201	1,215	1,215	1,215	1,165
Velocity	ft/sec	113.0	113.1	103.0	92.8	91.8	86.7	77.2	77.4	79.1	103.8
<u>Maximum Hourly Emissions per Unit</u>											
SO ₂	gr/100 cf	2	2	2	2	2	2	2	2	2	2
	lb/hr	11.0	10.6	9.5	8.8	8.5	7.8	6.9	6.7	6.5	9.7
PM ₁₀ /PM _{2.5}	lb/hr	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
NO _x	ppmvd @15% O ₂	9	9	9	9	9	9	9	9	9	15
	lb/hr	64.6	62.3	55.6	51.7	49.7	45.5	40.7	39.3	38.2	94.3
CO	ppmvd @15% O ₂	7.25	7.36	7.26	7.25	7.23	7.20	7.30	7.49	7.80	7.08
	lb/hr	31.9	31.2	27.5	25.5	24.5	22.3	20.2	20.0	20.3	27.3
VOC (as methane)	ppmvw	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
	lb/hr	2.8	2.8	2.4	2.3	2.2	2.0	1.8	1.8	1.8	2.4
Sulfuric Acid Mist	lb/hr	1.1	1.1	0.9	0.9	0.8	0.8	0.7	0.7	0.7	1.0

Source: General Electric Company, 2014 (CT Performance Data); Golder, 2014.

Table 3-1. Fort Myers Unit 2 Annual Heat Inputs and Operating Hours, 2009 - 2014**UNIT 2**

Year	Actual Heat Input from Natural gas (MMBtu/yr)						Total
	Unit 2A	Unit 2B	Unit 2C	Unit 2D	Unit 2E	Unit 2F	
2013	9,972,000	8,458,000	8,177,000	9,199,000	8,515,000	9,089,000	53,410,000
2012	10,359,000	10,976,000	10,956,000	10,632,000	10,970,000	10,440,000	64,333,000
2011	8,475,000	9,407,468	7,158,622	9,177,539	8,923,028	9,139,000	52,280,657
2010	10,276,000	10,285,000	10,376,000	10,332,000	11,280,000	10,993,000	63,542,000
2009	10,757,000	11,165,000	10,436,000	10,894,000	10,991,000	10,863,000	65,106,000

UNIT 2

Year	Operating Hours (hr/yr)						Total
	Unit 2A	Unit 2B	Unit 2C	Unit 2D	Unit 2E	Unit 2F	
2013	7,301	6,289	6,015	6,802	6,314	6,884	39,605
2012	7,427	7,779	7,774	7,542	7,780	7,556	45,858
2011	5,956	6,570	6,372	6,244	6,410	4,163	35,715
2010	7,172	7,161	7,216	7,184	7,814	7,617	44,164
2009	7,525	7,781	7,326	7,625	7,666	7,606	45,529

Note: All values are based on annual operating reports for the period 2009 - 2013.

Table 3-2. Annual Emissions Reported in 2009-2013 Annual Operating Reports and Acid Rain Database for Fort Myers Unit 2

Year	Pollutant	Unit 2A (tons)	Unit 2B (tons)	Unit 2C (tons)	Unit 2D (tons)	Unit 2E (tons)	Unit 2F (tons)	Total (tons)
2013	NO _x	215.7	138.5	111.0	126.6	135.0	134.4	861.1
	CO	10.3	5.9	7.2	6.2	7.6	8.8	46.1
	SO ₂	3.0	2.6	2.5	2.8	2.6	2.8	16.3
	VOC	0.011	0.009	0.009	0.010	0.009	0.010	0.059
	PM	32.9	27.9	27.0	30.4	28.1	30.0	176.3
	PM ₁₀	32.9	27.9	27.0	30.4	28.1	30.0	176.3
	SAM ^a	--	--	--	--	--	--	2.5
	CO ₂	602,702.2	511,149.5	498,667.3	560,128.0	514,597.1	549,362.8	3,236,606.9
2012	NO _x	133.9	149.8	161.9	141.0	147.1	139.6	873.2
	CO	10.5	7.4	9.3	6.9	9.4	9.6	53.1
	SO ₂	3.2	3.3	3.3	3.2	3.3	3.2	19.6
	VOC	0.011	0.012	0.012	0.011	0.012	0.011	0.069
	PM	34.2	36.2	36.2	35.1	36.2	34.5	212.3
	PM ₁₀	34.2	36.2	36.2	35.1	36.2	34.5	212.3
	SAM ^a	--	--	--	--	--	--	3.0
	CO ₂	625,365.1	662,596.8	661,366.1	641,793.9	662,227.6	630,236.2	3,883,585.7
2011	NO _x	130.3	153.1	106.0	125.4	140.9	137.7	793.4
	CO	2.8	4.0	4.6	5.9	5.8	2.9	26.0
	SO ₂	2.6	2.8	2.2	2.8	2.8	2.7	15.9
	VOC	0.009	0.010	0.007	0.010	0.009	0.010	0.055
	PM	27.97	31.04	23.62	30.29	29.4	30.2	172.5
	PM ₁₀	27.97	31.04	23.62	30.29	29.4	30.2	172.5
	SAM ^a	--	--	--	--	--	--	2.4
	CO ₂	503,635.1	559,072.3	425,427.1	545,405.3	530,284.2	543,116.9	3,106,940.9
2010	NO _x	149.7	152.0	149.4	137.6	148.9	153.1	890.7
	CO	5.5	4.4	6.1	7.4	6.3	5.0	34.6
	SO ₂	3.1	3.1	3.1	3.1	3.3	3.3	19.0
	VOC	0.011	0.011	0.011	0.011	0.012	0.011	0.066
	PM	33.9	33.9	34.2	34.1	37.2	36.3	209.7
	PM ₁₀	33.9	33.9	34.2	34.1	37.2	36.3	209.7
	SAM ^a	--	--	--	--	--	--	2.9
	CO ₂	604,805.0	606,658.6	610,736.1	611,177.0	665,799.9	655,706.3	3,754,882.9
2009	NO _x	159.8	154.0	148.7	145.4	154.6	155.9	918.4
	CO	5.1	6.7	7.2	5.5	7.4	6.5	38.4
	SO ₂	3.2	3.3	3.1	3.2	3.3	3.1	19.2
	VOC	0.011	0.012	0.011	0.011	0.011	0.011	0.068
	PM ^b	35.50	36.84	34.44	35.95	36.3	35.8	214.8
	PM ₁₀	35.50	36.84	34.44	35.95	36.3	35.8	214.8
	SAM ^a	--	--	--	--	--	--	2.9
	CO ₂	641,893.1	663,942.5	618,333.8	642,406.0	649,491.6	647,286.1	3,863,353.0

^a Not reported in AORs - based on assuming 10% of SO₂ converts to SO₃, all of which converts to SAM.

Source: Annual Operating Report (AOR) for Fort Myers Unit 2 2009 - 2013; EPA's Acid Rain database (ORIS Code 0612).

Table 3-3. Actual Annual Emissions of N₂O and CH₄ for the Period 2009 - 2013; Fort Myers Unit 2

Year	Actual Annual Heat Input ^a (MMBtu/yr)	N ₂ O Emissions				CH ₄ Emissions			
		Emission Factor ^b (lb/MMBtu)	Annual Emissions		CO ₂ e ^c Rate (TPY)	Emission Factor ^b (lb/MMBtu)	Annual Emissions		CO ₂ e ^c Rate (TPY)
			(lb/yr)	(TPY)			(lb/yr)	(TPY)	
2013	53,410,000	2.20E-04	11,771.6	5.9	1,754.0	2.2E-03	117,715.6	58.9	1,471.4
2012	64,333,000	2.20E-04	14,179.0	7.1	2,112.7	2.2E-03	141,789.9	70.9	1,772.4
2011	52,280,657	2.20E-04	11,522.7	5.8	1,716.9	2.2E-03	115,226.6	57.6	1,440.3
2010	63,542,000	2.20E-04	14,004.7	7.0	2,086.7	2.2E-03	140,046.6	70.0	1,750.6
2009	65,106,000	2.20E-04	14,349.4	7.2	2,138.1	2.2E-03	143,493.6	71.7	1,793.7

^a Based on AOR data - see Table 3-1.

^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 N₂O and CH₄ are multiplied by a factor of 294 and 25, respectively, to determine CO₂ equivalence.

Table 3-4. Annual Average Emissions for Fort Myers Unit 2 for Each Consecutive Two-Year Period, 2009-2013

Pollutant	Annual Emissions for Unit 2					Two-Year Average Emissions			
	2013	2012	2011	2010	2009	2013-2012 (tons)	2012-2011 (tons)	2011-2010 (tons)	2010-2009 (tons)
NO _x	861.1	873.2	793.4	890.7	918.4	867.2	833.3	842.1	904.6
CO	46.1	53.1	26.0	34.6	38.4	49.6	39.5	30.3	36.5
SO ₂	16.3	19.6	15.9	19.0	19.2	18.0	17.8	17.5	19.1
VOC	0.059	0.069	0.055	0.066	0.068	0.064	0.062	0.061	0.067
PM	176.3	212.3	172.5	209.7	214.8	194.3	192.4	191.1	212.3
PM ₁₀	176.3	212.3	172.5	209.7	214.8	194.3	192.4	191.1	212.3
PM _{2.5} ^a	176.3	212.3	172.5	209.7	214.8	194.3	192.4	191.1	212.3
SAM ^b	2.5	3.0	2.4	2.9	2.9	2.8	2.7	2.7	2.9
CO ₂	3,236,606.9	3,883,585.7	3,106,940.9	3,754,882.9	3,863,353.0	3,560,096.3	3,495,263.3	3,430,911.9	3,809,118.0
N ₂ O ^c (CO ₂ e)	1,754.0	2,112.7	1,716.9	2,086.7	2,138.1	1,933.32	1,914.8	1,901.8	2,112.4
CH ₄ ^c (CO ₂ e)	1,471.4	1,772.4	1,440.3	1,750.6	1,793.7	1,621.91	1,606.4	1,595.5	1,772.1

^a Assuming equal to PM₁₀ emissions.

^b Not reported in AORs - based on assuming 10% of SO₂ converts to SO₃, all of which converts to SAM.

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

Source: Annual Operating Report (AOR) for Fort Myers, 2009 - 2013; EPA's Acid Rain database (ORIS Code 0612).

Table 3-5. Actual Hourly Emission Rates, FPL Fort Myers Unit 2

Pollutant	Year	Annual Emissions ^a (tons)						Operating Hours ^a						Hourly Emission Rates (lb/hr)						Maximum Rate (lb/hr)
		Unit 2A	Unit 2B	Unit 2C	Unit 2D	Unit 2E	Unit 2F	Unit 2A	Unit 2B	Unit 2C	Unit 2D	Unit 2E	Unit 2F	Unit 2A	Unit 2B	Unit 2C	Unit 2D	Unit 2E	Unit 2F	
NO _x	2013	215.7	138.5	111.0	126.6	135.0	134.4	7,301	6,289	6,015	6,802	6,314	6,884	59.1	44.0	36.9	37.2	42.7	39.0	66.15
	2012	133.9	149.8	161.9	141.0	147.1	139.6	7,427	7,779	7,774	7,542	7,780	7,556	36.1	38.5	41.7	37.4	37.8	37.0	
	2011	130.3	153.1	106.0	125.4	140.9	137.7	5,956	6,570	6,372	6,244	6,410	4,163	43.8	46.6	33.3	40.2	44.0	66.2	
	2010	149.7	152.0	149.4	137.6	148.9	153.1	7,172	7,161	7,216	7,184	7,814	7,617	41.7	42.5	41.4	38.3	38.1	40.2	
	2009	159.8	154.0	148.7	145.4	154.6	155.9	7,525	7,781	7,326	7,625	7,666	7,606	42.5	39.6	40.6	38.1	40.3	41.0	
	Maximum =													59.1	46.6	41.7	40.2	44.0	66.2	
CO	2013	10.3	5.9	7.2	6.2	7.6	8.8	7,301	6,289	6,015	6,802	6,314	6,884	2.8	1.9	2.4	1.8	2.4	2.6	2.82
	2012	10.5	7.4	9.3	6.9	9.4	9.6	7,427	7,779	7,774	7,542	7,780	7,556	2.8	1.9	2.4	1.8	2.4	2.6	
	2011	2.8	4.0	4.6	5.9	5.8	2.9	5,956	6,570	6,372	6,244	6,410	4,163	0.9	1.2	1.4	1.9	1.8	1.4	
	2010	5.5	4.4	6.1	7.4	6.3	5.0	7,172	7,161	7,216	7,184	7,814	7,617	1.5	1.2	1.7	2.1	1.6	1.3	
	2009	5.1	6.7	7.2	5.5	7.4	6.5	7,525	7,781	7,326	7,625	7,666	7,606	1.4	1.7	2.0	1.5	1.9	1.7	
	Maximum =													2.8	1.9	2.4	2.1	2.4	2.6	
VOC	2013	0.011	0.009	0.009	0.010	0.009	0.010	7,301	6,289	6,015	6,802	6,314	6,884	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	0.0046
	2012	0.011	0.012	0.012	0.011	0.012	0.011	7,427	7,779	7,774	7,542	7,780	7,556	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	
	2011	0.009	0.010	0.007	0.010	0.009	0.010	5,956	6,570	6,372	6,244	6,410	4,163	0.0030	0.0030	0.0024	0.0031	0.0029	0.0046	
	2010	0.011	0.011	0.011	0.011	0.012	0.011	7,172	7,161	7,216	7,184	7,814	7,617	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	
	2009	0.011	0.012	0.011	0.011	0.011	0.011	7,525	7,781	7,326	7,625	7,666	7,606	0.0030	0.0030	0.0030	0.0030	0.0030	0.0030	
	Maximum =													0.0030	0.0030	0.0030	0.0031	0.0030	0.0046	
SO ₂	2013	3.0	2.6	2.5	2.8	2.6	2.8	7,301	6,289	6,015	6,802	6,314	6,884	0.8	0.8	0.8	0.8	0.8	0.8	1.30
	2012	3.2	3.3	3.3	3.2	3.3	3.2	7,427	7,779	7,774	7,542	7,780	7,556	0.9	0.9	0.9	0.9	0.9	0.8	
	2011	2.6	2.8	2.2	2.8	2.8	2.7	5,956	6,570	6,372	6,244	6,410	4,163	0.9	0.9	0.7	0.9	0.9	1.3	
	2010	3.1	3.1	3.1	3.1	3.3	3.3	7,172	7,161	7,216	7,184	7,814	7,617	0.9	0.9	0.9	0.9	0.8	0.9	
	2009	3.2	3.3	3.1	3.2	3.3	3.1	7,525	7,781	7,326	7,625	7,666	7,606	0.9	0.8	0.8	0.8	0.9	0.8	
	Maximum =													0.9	0.9	0.9	0.9	0.9	1.3	
PM/PM ₁₀ /PM _{2.5}	2013	32.9	27.9	27.0	30.4	28.1	30.0	7,301	6,289	6,015	6,802	6,314	6,884	9.0	8.9	9.0	8.9	8.9	8.7	14.49
	2012	34.2	36.2	36.2	35.1	36.2	34.5	7,427	7,779	7,774	7,542	7,780	7,556	9.2	9.3	9.3	9.3	9.3	9.1	
	2011	27.97	31.04	23.62	30.29	29.45	30.16	5,956	6,570	6,372	6,244	6,410	4,163	9.4	9.5	7.4	9.7	9.2	14.5	
	2010	33.9	33.9	34.2	34.1	37.2	36.3	7,172	7,161	7,216	7,184	7,814	7,617	9.5	9.5	9.5	9.5	9.5	9.5	
	2009	35.50	36.84	34.44	35.95	36.27	35.85	7,525	7,781	7,326	7,625	7,666	7,606	9.4	9.5	9.4	9.4	9.5	9.4	
	Maximum =													9.5	9.5	9.5	9.7	9.5	14.5	

^a Reported in AORs for the period 2009 - 2013.

Table 3-6. Fort Myers Unit 2 Actual Emissions as a Function of Heat Input, 2009 - 2013

Year	Actual Annual Heat Input (MMBtu/yr) ^a	Units 2A, 2B, 2C, 2D, 2E & 2F Total Actual Emissions (TPY) ^b							Emissions per Unit Heat Input ^c (lb/MMBtu)							
		NO _x	CO	VOC	SO ₂	PM/PM ₁₀	SAM	CO ₂	NO _x	CO	VOC	SO ₂	PM/PM ₁₀	SAM	CO ₂	
2013	53,410,000	861.1	46.1	0.06	16.3	176.3	2.5	3,236,606.9	0.0322	0.0017	2.22E-06	0.00061	0.00660	9.37E-05	118.9	
2012	64,333,000	873.2	53.1	0.07	19.6	212.3	3.0	3,883,585.7	0.0271	0.0016	2.14E-06	0.00061	0.00660	9.33E-05	118.9	
2011	52,280,657	793.4	26.0	0.05	15.9	172.5	2.4	3,106,940.9	0.0304	0.0010	2.10E-06	0.00061	0.00660	9.31E-05	118.9	
2010	63,542,000	890.7	34.6	0.07	19.0	209.7	2.9	3,754,882.9	0.0280	0.0011	2.09E-06	0.00060	0.00660	9.16E-05	118.9	
2009	65,106,000	918.4	38.4	0.07	19.2	214.8	2.9	3,863,353.0	0.0282	0.0012	2.10E-06	0.00059	0.00660	9.03E-05	118.9	
								Average	=	0.0292	0.0013	2.13E-06	0.0006	0.0066	9.24E-05	118.8600
								Std. Deviation	=	0.0021	0.0003	5.73E-08	9.27E-06	5.46E-10	1.42E-06	1.59E-14
								t	=	1.533	1.533	1.533	1.533	1.533	1.533	1.533
								n	=	5	5	5	5	5	5	5
								Upper 90% C.I.	=	0.0306	0.0016	2.17E-06	6.10E-04	0.0066	9.34E-05	118.86

Notes: Confidence Interval (C.I), n= number of values
 Student 't' test Upper 90% C.I = Average + "t" x (Std. Deviation/(√n))

^a Based on AOR data, see Table 3-1.

^b Based on AOR data, see Table 3-2.

^c Total actual emissions divided by total heat input for all pollutant except CO₂. For CO₂, the emission rates are based on the Part CEMs lb/MMBtu emission rates since annual CO₂ emissions are based on Part 75 data.

Table 3-7. Projected Utilization of Unit 2 with the Upgrade Project

YEAR	Actual (MW-hr)	Actual Annual Heat Input (MMBtu)
2009	8,981,377	65,106,000
2010	8,637,392	63,542,000
2011	6,924,517	52,280,657
2012	9,027,151	64,333,000
2013	7,180,964	53,410,000
	Upgrade Project (MW-hr)	Projected Actual Heat Input (MMBtu) *
2016	8,686,730	60,739,614
2017	7,485,980	52,343,694
2018	6,894,150	48,205,482
2019	5,570,730	38,951,825
2020	5,330,480	37,271,942

* Based on:
Heat Rate = 6,992 Btu/kW-hr

Table 3-8. PSD Applicability - Fort Myers Unit 2 Upgrade Project

Pollutant	Baseline Actual Emissions ^a (TPY)	Projected Emission Factor ^b (lb/MMBtu)	Projected Actual Annual Heat Input ^c (MMBtu)	Projected Maximum Actual Annual Emissions ^d (TPY)	Increase/Decrease in Annual Emissions ^e (TPY)	PSD Significant Emission Rates (TPY)
NO _x	904.55	0.0306	60,739,614	929.85	25.30	40
CO	49.56	0.0016	60,739,614	47.31	-2.25	100
SO ₂	19.10	0.00061	60,739,614	18.52	-0.58	40
VOC	0.07	2.17E-06	60,739,614	0.0658	0.00	40
PM	212.27	0.0066	60,739,614	200.441	-11.83	25
PM ₁₀	212.27	0.0066	60,739,614	200.44	-11.83	15
PM _{2.5}	212.27	0.0066	60,739,614	200.44	-11.83	10
SAM	2.92	0.0001	60,739,614	2.84	-0.089	7
GHGs						
CO ₂	3,809,117.99	118.86	60,739,614	3,609,664	-199,454	
N ₂ O (CO ₂ e)	2,112.37	6.57E-02	60,739,614	1,995.21	-117.2	
CH ₄ (CO ₂ e)	1,772.13	5.51E-02	60,739,614	1,673.83	-98.3	
Total GHGs (CO ₂ e)	3,813,002			3,613,333	-199,669	75,000

^a Maximum 2-Year average emissions - see Table 3-5.

^b Based on 90th percentile over 5-years; see Table 3-6. CO₂ based on 40 CFR Part 75; N₂O and CH₄ based on 40 CFR Part 98.

^c Maximum Projected Heat Input - see Table 3-7.

^d Projected actual emissions = Emission factor x Projected actual heat input x (1 ton/2000 lb)

^e Projected actual emissions minus baseline actual emissions.

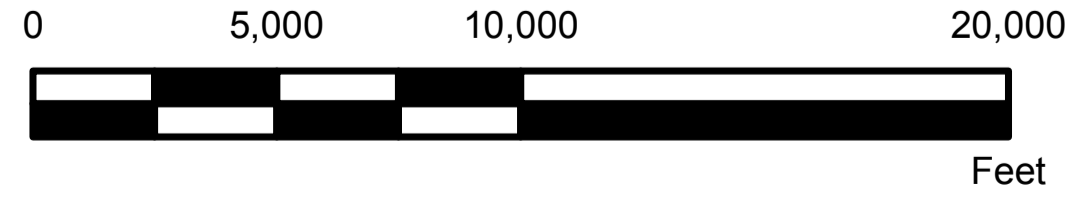
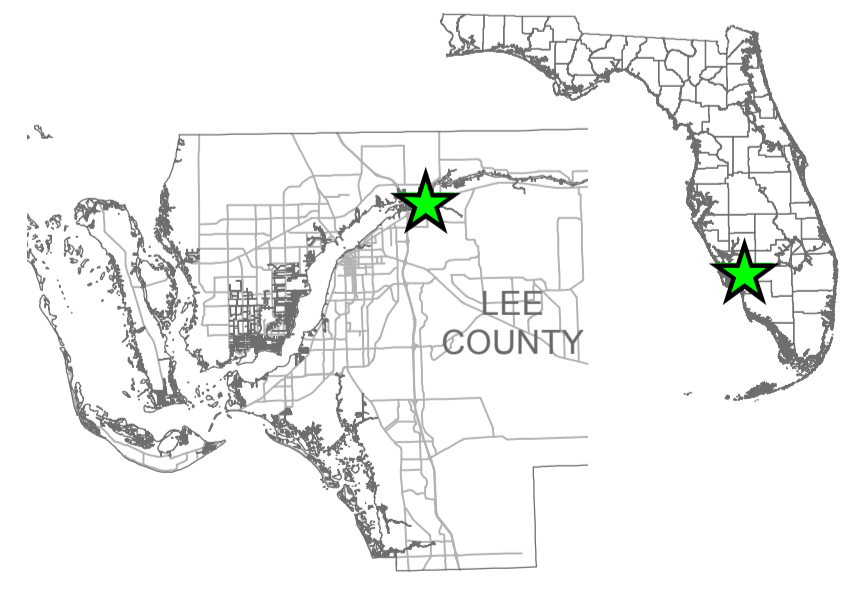
FIGURES



Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

LEGEND

★ Project Location



REFERENCE(S)
PROJECT LOCATION, GOLDER ASSOCIATES INC., 2014

CLIENT
**FPL
FORT MYERS PLANT**

PROJECT
**AIR CONSTRUCTION
PERMIT APPLICATION**

TITLE
LOCATION MAP

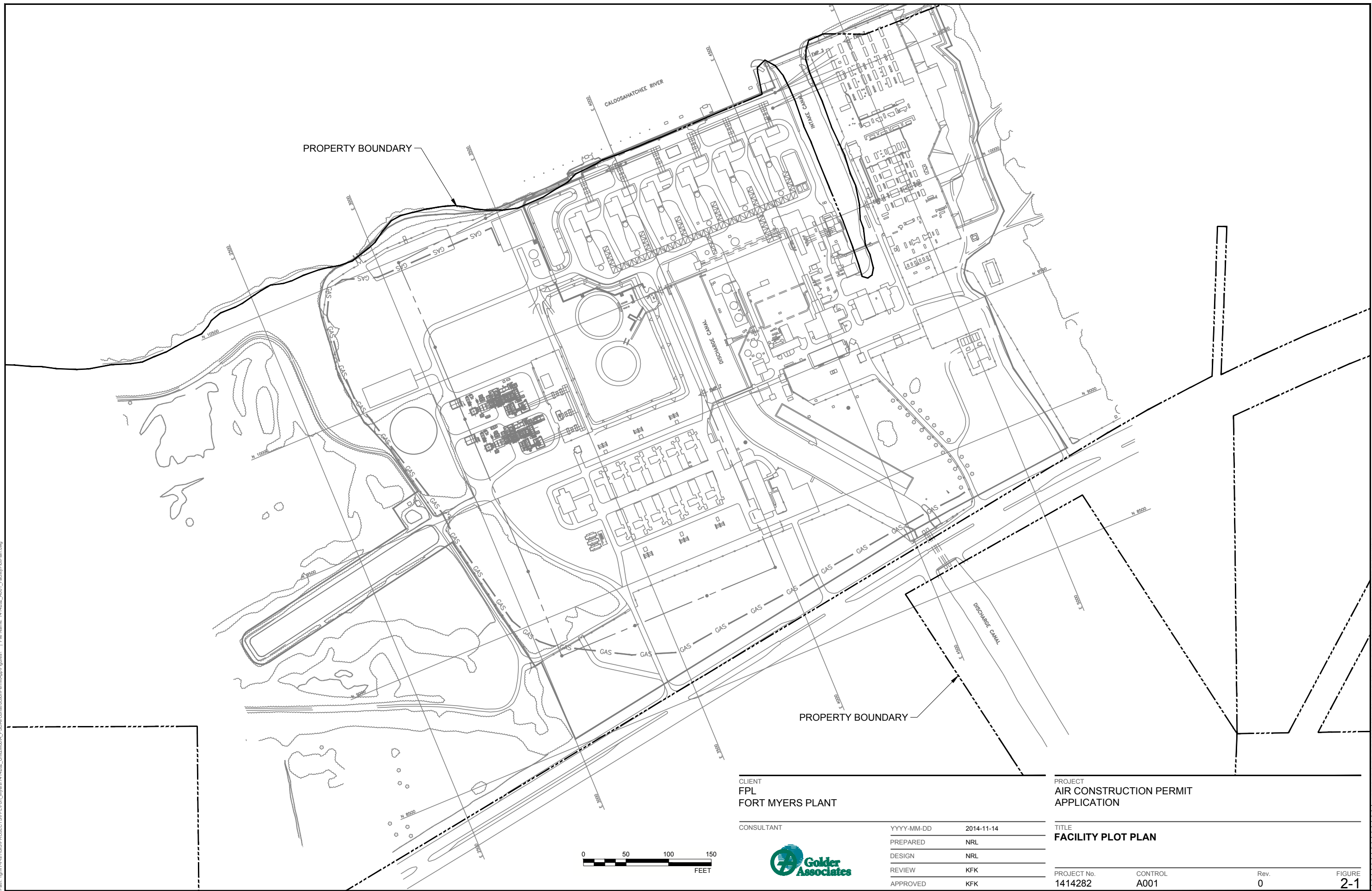
CONSULTANT	YYYY-MM-DD	2014-11-14
	DESIGNED	NRL
	PREPARED	NRL
	REVIEWED	KFK
	APPROVED	KFK



PROJECT NO. 1414282	CONTROL A002	REV. 0	FIGURE 1-1
------------------------	-----------------	-----------	----------------------

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A 11 in

Path: \\gpm1-1r-41\GIS\PROJECTS\FPL\Fort_Myers\1414282_Units\MapA_PSDA\ConstructionPermit\Figures\1 | File Name: 1414282_A001_FacilityPlotPlan.dwg



CLIENT
FPL
FORT MYERS PLANT

CONSULTANT



YYYY-MM-DD 2014-11-14
PREPARED NRL
DESIGN NRL
REVIEW KFK
APPROVED KFK

PROJECT
AIR CONSTRUCTION PERMIT
APPLICATION

TITLE
FACILITY PLOT PLAN

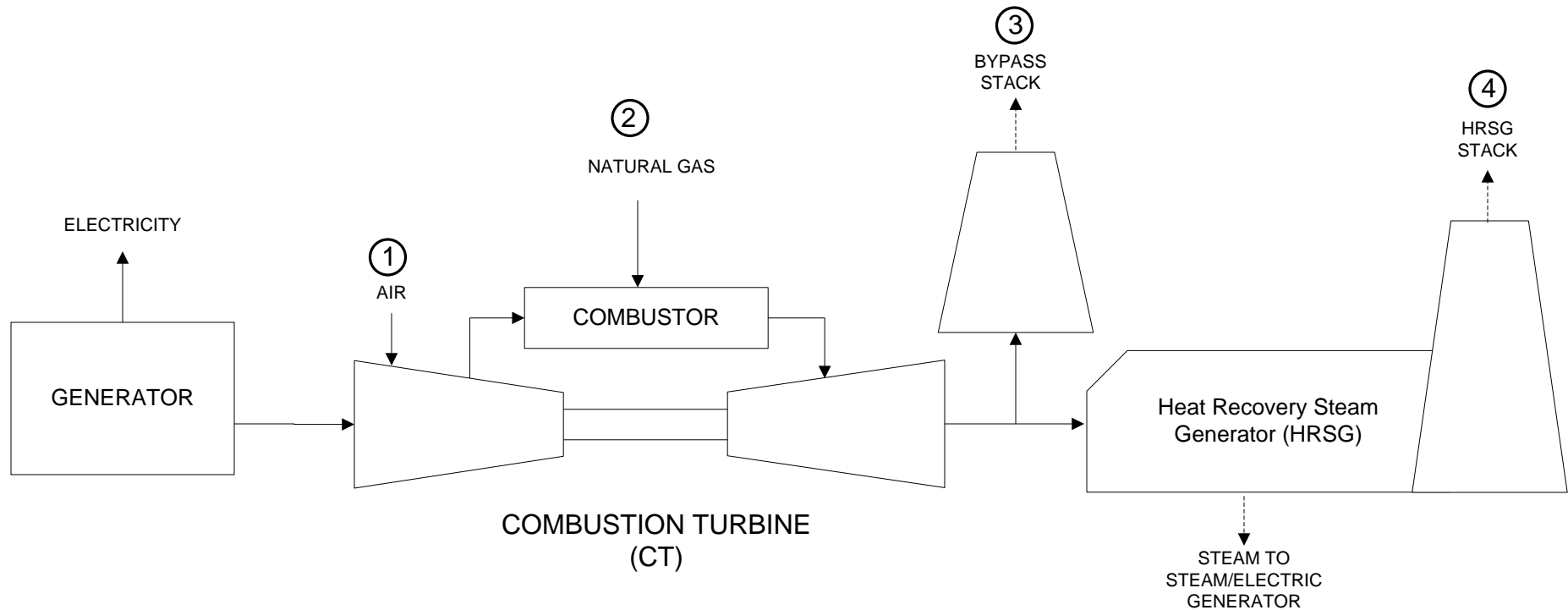
PROJECT No.
1414282

CONTROL
A001

Rev.
0

FIGURE
2-1

1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



	Parameters	Units	Fuel	③ By-Pass Stack	④ HRSG Stack
①	Inlet Air	lb/hr	Gas	3,733,953	3,733,953
②	CT Heat Input	MMBtu/hr (HHV)	Gas	1,902.4	1,902.4
	Stack Velocity	ft/sec	Gas	113.1	65.7
	Stack Temperature	°F	Gas	1109	220
	Stack Height	feet	Gas	98	125
	Stack Diameter	feet	Gas	22	19

Figure 2-2. Process Flow Diagram for Each CT/HRSG Train
 Baseload Operation, Turbine Inlet Temperature of 75°F
 FPL Fort Myers Plant Unit 2, Lee County, Florida

Source: GE, 2014; Golder, 2014.

Process Flow Legend

- Solid/Liquid
- Gas
- Steam



APPENDIX A

**BASELINE ACTUAL EMISSIONS INFORMATION AND GE 7FA.05 CT
EMISSION RATES AND STACK PARAMETERS**

AOR & CO₂ HISTORICAL DATA

Appendix A-1
Fort Myers Point Power Plant
Summary of AOR Data for Unit 2 (EU IDs 018, 019, 020, 021, 022, 023)

Emission Unit 018
 Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)

2013	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		215.74	215.74	7301
CO		10.2944	10.29	
SO2		3.04	3.04	
VOC		0.010952	0.01	
PM		32.9076	32.91	
PM10		32.9076	32.91	

Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)

2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		133.91	133.91	7427
CO		10.4721	10.47	
SO2		3.16	3.16	
VOC		0.011141	0.01	
PM		34.1847	34.18	
PM10		34.1847	34.18	

Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)

2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		130.3	130.30	5956
CO		2.76954	2.77	
SO2		2.6	2.60	
VOC		0.008934	0.0089	
PM		27.9675	27.97	
PM10		27.9675	27.97	

Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)

2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		149.7	149.70	7172
CO		5.48658	5.49	
SO2		3.1	3.10	
VOC		0.010758	0.01	
PM		33.9108	33.91	
PM10		33.9108	33.91	

Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)

2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		159.8	159.80	7525
CO		5.07938	5.08	
SO2		3.2	3.20	
VOC		0.011288	0.01	
PM		35.4981	35.50	
PM10		35.4981	35.50	

Emission Unit 019
 Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)

2013	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		138.46	138.46	6289
CO		5.94311	5.94	
SO2		2.58	2.58	
VOC		0.009434	0.01	
PM		27.9114	27.91	
PM10		27.9114	27.91	

Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)

2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		149.75	149.75	7779
CO		7.35116	7.35	
SO2		3.34	3.34	
VOC		0.011669	0.01	
PM		36.2208	36.22	
PM10		36.2208	36.22	

Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)

2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		153.1	153.10	6570
CO		4.0077	4.01	
SO2		2.8	2.80	
VOC		0.009855	0.010	
PM		31.0446	31.04	
PM10		31.0446	31.04	

Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)

2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		152	152.00	7161
CO		4.40402	4.40	
SO2		3.1	3.10	
VOC		0.010742	0.01	
PM		33.9405	33.94	
PM10		33.9405	33.94	

Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)

2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		154	154.00	7781
CO		6.69166	6.69	
SO2		3.3	3.30	
VOC		0.011672	0.01	
PM		36.8445	36.84	
PM10		36.8445	36.84	

Appendix A-1
Fort Myers Point Power Plant
Summary of AOR Data for Unit 2 (EU IDs 018, 019, 020, 021, 022, 023)

Emission Unit 020					Emission Unit 021				
<u>Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
	Diesel	Natural	Total	Hours		Diesel	Natural Gas	Total	Hours
2013	TPY	Gas	TPY		2013	TPY	TPY	TPY	
NOx		110.96	110.96	6015	NOx		126.64	126.64	6802
CO		7.218	7.22		CO		6.18982	6.19	
SO2		2.52	2.52		SO2		2.83	2.83	
VOC		0.009023	0.01		VOC		0.010203	0.01	
PM		26.9841	26.98		PM		30.3567	30.36	
PM10		26.9841	26.98		PM10		30.3567	30.36	
<u>Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
	Diesel	Natural	Total	Hours		Diesel	Natural Gas	Total	Hours
2012	TPY	Gas	TPY		2012	TPY	TPY	TPY	
NOx		161.9	161.90	7774	NOx		140.97	140.97	7542
CO		9.3288	9.33		CO		6.86322	6.86	
SO2		3.34	3.34		SO2		3.24	3.24	
VOC		0.011661	0.01		VOC		0.011313	0.01	
PM		36.1548	36.15		PM		35.0856	35.09	
PM10		36.1548	36.15		PM10		35.0856	35.09	
<u>Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
	Diesel	Natural	Total	Hours		Diesel	Natural Gas	Total	Hours
2011	TPY	Gas	TPY		2011	TPY	TPY	TPY	
NOx		106	106.00	6372	NOx		125.4	125.40	6244
CO		4.6176	4.62		CO		5.8941	5.89	
SO2		2.2	2.20		SO2		2.8	2.80	
VOC		0.007488	0.01		VOC		0.009558	0.01	
PM		23.6235	23.62		PM		30.2859	30.29	
PM10		23.6235	23.62		PM10		30.2859	30.29	
<u>Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
	Diesel	Natural	Total	Hours		Diesel	Natural Gas	Total	Hours
2010	TPY	Gas	TPY		2010	TPY	TPY	TPY	
NOx		149.4	149.40	7216	NOx		137.6	137.60	7184
CO		6.06144	6.06		CO		7.39952	7.40	
SO2		3.1	3.10		SO2		3.1	3.10	
VOC		0.010824	0.01		VOC		0.010776	0.01	
PM		34.2408	34.24		PM		34.0956	34.10	
PM10		34.2408	34.24		PM10		34.0956	34.10	
<u>Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
	Diesel	Natural	Total	Hours		Diesel	Natural Gas	Total	Hours
2009	TPY	Gas	TPY		2009	TPY	TPY	TPY	
NOx		148.7	148.70	7326	NOx		145.4	145.40	7625
CO		7.17948	7.18		CO		5.52813	5.53	
SO2		3.1	3.10		SO2		3.2	3.20	
VOC		0.010989	0.01		VOC		0.011438	0.01	
PM		34.4388	34.44		PM		35.9502	35.95	
PM10		34.4388	34.44		PM10		35.9502	35.95	

Appendix A-1
Fort Myers Point Power Plant
Summary of AOR Data for Unit 2 (EU IDs 018, 019, 020, 021, 022, 023)

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 2A - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2A - Combined Cycle CT with Non-fired HRSG (170 MW)		
2013	9972	2013	1000	2013	0	9972000
2012	10359	2012	1000	2012	0	10359000
2011	8475	2011	1000	2011	0	8475000
2010	10276	2010	1000	2010	0	10276000
2009	10757	2009	1000	2009	0	10757000
Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2B - Combined Cycle CT with Non-fired HRSG (170 MW)		
2013	8458	2013	1000	2013	0	8458000
2012	10976	2012	1000	2012	0	10976000
2011	9407	2011	1000	2011	0	9407468
2010	10285	2010	1000	2010	0	10285000
2009	11165	2009	1000	2009	0	11165000
Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2C - Combined Cycle CT with Non-fired HRSG (170 MW)		
2013	8177	2013	1000	2013	0	8177000
2012	10956	2012	1000	2012	0	10956000
2011	7159	2011	1000	2011	0	7158622
2010	10376	2010	1000	2010	0	10376000
2009	10436	2009	1000	2009	0	10436000
Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2D - Combined Cycle CT with Non-fired HRSG (170 MW)		
2013	9199	2013	1000	2013	0	9199000
2012	10632	2012	1000	2012	0	10632000
2011	9178	2011	1000	2011	0	9177539
2010	10332	2010	1000	2010	0	10332000
2009	10894	2009	1000	2009	0	10894000
Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)		
2013	8515	2013	1000	2013	0	8515000
2012	10970	2012	1000	2012	0	10970000
2011	8923	2011	1000	2011	0	8923028
2010	11280	2010	1000	2010	0	11280000
2009	10991	2009	1000	2009	0	10991000
Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)		Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)		
2013	9089	2013	1000	2013	0	9089000
2012	10440	2012	1000	2012	0	10440000
2011	9139	2011	1000	2011	0	9139000
2010	10993	2010	1000	2010	0	10993000
2009	10863	2009	1000	2009	0	10863000

Appendix A-1
Fort Myers Point Power Plant
Summary of AOR Data for Unit 2 (EU IDs 018, 019, 020, 021, 022, 023)

Emission Unit 022					Emission Unit 023				
<u>Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
2013	Diesel TPY	Natural Gas TPY	Total TPY	Hours	2013	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		134.95	134.95	6314	NOx		134.35	134.35	6884
CO		7.63994	7.64		CO		8.7771	8.78	
SO2		2.6	2.60		SO2		2.77	2.77	
VOC		0.009471	0.01		VOC		0.010326	0.01	
PM		28.0995	28.10		PM		29.9937	29.99	
PM10		28.0995	28.10		PM10		29.9937	29.99	
<u>Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours	2012	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		147.11	147.11	7780	NOx		139.6	139.60	7556
CO		9.4138	9.41		CO		9.6339	9.63	
SO2		3.34	3.34		SO2		3.18	3.18	
VOC		0.01167	0.01		VOC		0.011334	0.01	
PM		36.201	36.20		PM		34.452	34.45	
PM10		36.201	36.20		PM10		34.452	34.45	
<u>Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours	2011	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		140.9	140.90	6410	NOx		137.7	137.70	4163
CO		5.83814	5.84		CO		2.85245	2.85	
SO2		2.8	2.80		SO2		2.7	2.70	
VOC		0.009366	0.01		VOC		0.009615	0.01	
PM		29.446	29.45		PM		30.1587	30.16	
PM10		29.446	29.45		PM10		30.1587	30.16	
<u>Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours	2010	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		148.9	148.90	7814	NOx		153.1	153.10	7617
CO		6.2512	6.25		CO		4.95105	4.95	
SO2		3.3	3.30		SO2		3.3	3.30	
VOC		0.011721	0.01		VOC		0.011426	0.01	
PM		37.224	37.22		PM		36.2769	36.28	
PM10		37.224	37.22		PM10		36.2769	36.28	
<u>Unit 2E - Combined Cycle CT with Non-fired HRSG (170 MW)</u>					<u>Unit 2F - Combined Cycle CT with Non-fired HRSG (170 MW)</u>				
2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours	2009	Diesel TPY	Natural Gas TPY	Total TPY	Hours
NOx		154.6	154.60	7666	NOx		155.9	155.90	7606
CO		7.39769	7.40		CO		6.54116	6.54	
SO2		3.3	3.30		SO2		3.1	3.10	
VOC		0.011499	0.01		VOC		0.011409	0.01	
PM		36.2703	36.27		PM		35.8479	35.85	
PM10		36.2703	36.27		PM10		35.8479	35.85	

Appendix A-2.
CEM Reports from Acid Rain Database
Annual Reports

STATE	FACILITY_ NAME	ORISPL_ CODE	UNITID	ASSOC_ OP_YEAR	STACKS	PRG_CODE	SUM_OP _TIME	NUM_ MONTHS_ REPORTE D	GLOAD	SO2_MASS	NOX_RATE	NOX_MASS	CO2_MASS
FL	Fort Myers Power Plant	612	FMCT2A	2009	ARP		7473.2	12	973985.1	3.24	0.032	159.73	641893.05
FL	Fort Myers Power Plant	612	FMCT2B	2009	ARP		7752.7	12	1014755.9	3.352	0.0289	153.99	663942.469
FL	Fort Myers Power Plant	612	FMCT2C	2009	ARP		7253.2	12	933207.7	3.122	0.0312	148.69	618333.778
FL	Fort Myers Power Plant	612	FMCT2D	2009	ARP		7567.0	12	976755.3	3.243	0.0295	145.40	642406.033
FL	Fort Myers Power Plant	612	FMCT2E	2009	ARP		7632.0	12	985226.6	3.279	0.03	154.60	649491.643
FL	Fort Myers Power Plant	612	FMCT2F	2009	ARP		7547.8	12	980063.0	3.268	0.0309	155.89	647286.065
							<u>45226.0</u>		<u>5863993.6</u>			<u>918.30</u>	
FL	Fort Myers Power Plant	612	FMCT2A	2010	ARP		7075.2	12	923551.2	3.053	0.0334	149.82	604805.018
FL	Fort Myers Power Plant	612	FMCT2B	2010	ARP		7079.8	12	932924.9	3.063	0.0333	152.00	606658.648
FL	Fort Myers Power Plant	612	FMCT2C	2010	ARP		7141.4	12	928107.3	3.083	0.0317	149.43	610736.12
FL	Fort Myers Power Plant	612	FMCT2D	2010	ARP		7112.6	12	931689.1	3.085	0.0295	137.54	611176.991
FL	Fort Myers Power Plant	612	FMCT2E	2010	ARP		7761.6	12	1019471.6	3.361	0.0286	148.85	665799.852
FL	Fort Myers Power Plant	612	FMCT2F	2010	ARP		7566.6	12	999942.8	3.31	0.03	153.20	655706.305
							<u>43737.2</u>		<u>5735686.9</u>			<u>890.84</u>	
FL	Fort Myers Power Plant	612	FMCT2A	2011	ARP		5833.2	12	773274.2	2.543	0.0417	130.29	503635.083
FL	Fort Myers Power Plant	612	FMCT2B	2011	ARP		6470.7	12	860275.4	3.193	0.0411	153.13	559072.254
FL	Fort Myers Power Plant	612	FMCT2C	2011	ARP		4936.2	12	644213.9	2.148	0.0325	106.00	425427.143
FL	Fort Myers Power Plant	612	FMCT2D	2011	ARP		6275.4	12	830532.6	2.753	0.0312	125.35	545405.299
FL	Fort Myers Power Plant	612	FMCT2E	2011	ARP		6132.7	12	808212.9	2.677	0.0408	140.94	530284.183
FL	Fort Myers Power Plant	612	FMCT2F	2011	ARP		6311.6	12	839837.5	2.742	0.0392	137.79	543116.889
							<u>35959.8</u>		<u>4756346.6</u>			<u>793.50</u>	
FL	Fort Myers Power Plant	612	FMCT2A	2012	ARP		7327.5	12	954011.4	3.157	0.029	133.91	625365.116
FL	Fort Myers Power Plant	612	FMCT2B	2012	ARP		7728.4	12	1010151.5	3.584	0.0288	149.75	662596.781
FL	Fort Myers Power Plant	612	FMCT2C	2012	ARP		7730.0	12	993207.5	3.339	0.0305	161.90	661366.108
FL	Fort Myers Power Plant	612	FMCT2D	2012	ARP		7483.1	12	971515.9	3.24	0.0281	140.97	641793.91
FL	Fort Myers Power Plant	612	FMCT2E	2012	ARP		7721.3	12	998563.9	3.343	0.0286	147.11	662227.646
FL	Fort Myers Power Plant	612	FMCT2F	2012	ARP		7497.4	12	977740.4	3.182	0.029	139.60	630236.156
							<u>45487.7</u>		<u>5905190.7</u>			<u>873.23</u>	
FL	Fort Myers Power Plant	612	FMCT2A	2013	ARP		7222.7	12	905338.5	3.043	0.0448	215.74	602702.213
FL	Fort Myers Power Plant	612	FMCT2B	2013	ARP		6148.0	12	767258.9	2.58	0.0435	138.46	511149.496
FL	Fort Myers Power Plant	612	FMCT2C	2013	ARP		5966.4	12	733831.9	2.517	0.028	110.96	498667.349
FL	Fort Myers Power Plant	612	FMCT2D	2013	ARP		6729.6	12	835144.5	2.828	0.0292	126.64	560128.029
FL	Fort Myers Power Plant	612	FMCT2E	2013	ARP		6178.9	12	762782.1	2.598	0.0421	134.95	514597.053
FL	Fort Myers Power Plant	612	FMCT2F	2013	ARP		6775.2	12	840075.2	2.773	0.0364	134.35	549362.792
							<u>39020.7</u>		<u>4844431.0</u>			<u>861.10</u>	

GENERAL ELECTRIC (GE) INFORMATION

Table GE-A-1: Design Information and Stack Parameters- Simple & Combined Cycle Operation (GE 7FA.05) Dry Low NO_x Combustor, Natural Gas

Parameter	CT Only									Peak Load at 95° F
	Base Load Turbine Inlet Temperature			75% Load Turbine Inlet Temperature			50% Load Turbine Inlet Temperature			
	35° F	75° F	95° F	35° F	75° F	95° F	35° F	75° F	95° F	
Combustion Turbine Performance										
Heat Input (MMBtu/hr, LHV)	1,782.0	1,717.2	1,532.8	1,426.6	1,371.0	1,255.7	1,121.2	1,082.4	1,053.9	1,559.8
Heat Input (MMBtu/hr, HHV)	1,978.1	1,906.1	1,701.4	1,583.6	1,521.8	1,393.9	1,244.5	1,201.5	1,169.9	1,731.4
Relative Humidity (%)	50%	60%	50%	50%	60%	50%	50%	60%	50%	50%
Fuel heating value (Btu/lb, LHV)	20,792	20,792	20,792	20,792	20,792	20,792	20,792	20,792	20,792	20,792
Fuel heating value (Btu/lb, HHV)	23,079	23,079	23,079	23,079	23,079	23,079	23,079	23,079	23,079	23,079
Ratio of fuel heating values (HHV/LHV)	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
CT Exhaust Flow										
Volume flow (acfm) = [Mass flow (lb/hr) x 1545.4 x Temp (°F + 460 K)] / [2116.8 x 60 min/hr x MW] (see note below for constants)										
Mass Flow (lb/hr)	3,882,884	3,827,277	3,396,772	3,110,125	3,006,588	2,760,282	2,458,814	2,454,454	2,498,991	3,376,027
Temperature (°F)	1,092	1,109	1,144	1,132	1,161	1,201	1,215	1,215	1,215	1,165
Moisture (% Vol.)	7.84	9.00	10.00	7.84	9.12	10.06	7.80	8.88	9.53	10.17
Oxygen (% Vol.)	12.51	12.45	12.23	12.51	12.32	12.16	12.56	12.59	12.75	12.04
Molecular Weight	28.45	28.32	28.21	28.45	28.31	28.21	28.46	28.33	28.24	28.20
Volume flow (acfm)	2,577,209	2,579,908	2,349,816	2,116,945	2,094,632	1,977,740	1,760,921	1,765,965	1,803,546	2,367,499
Fuel Usage										
Fuel usage (lb/hr) = Heat Input (MMBtu/hr) x 1,000,000 Btu/MMBtu [Fuel Heat Content, Btu/lb (LHV)]										
Heat Input (MMBtu/hr, LHV)	1,782.0	1,717.2	1,532.8	1,426.6	1,371.0	1,255.7	1,121.2	1,082.4	1,053.9	1,559.8
Heat Content (Btu/lb, LHV)	20,792	20,792	20,792	20,792	20,792	20,792	20,792	20,792	20,792	20,792
Fuel Usage (lb/hr)	85,707	82,589	73,721	68,613	65,939	60,394	53,924	52,059	50,689	75,019
Heat Content (Btu/cf, LHV)	924	924	924	924	924	924	924	924	924	924
Fuel Density (lb/ft ³)	0.0444	0.0444	0.0444	0.0444	0.0444	0.0444	0.0444	0.0444	0.0444	0.0444
Fuel Usage (cf/hr)	1,929,663	1,859,466	1,659,808	1,544,800	1,484,593	1,359,749	1,214,086	1,172,090	1,141,247	1,689,030
CT -HRSG Stack Parameters										
Stack Height (feet)	125	125	125	125	125	125	125	125	125	125
Stack Diameter (feet)	19	19	19	19	19	19	19	19	19	19
CT - Bypass Stack Parameters										
Stack Height (feet)	98	98	98	98	98	98	98	98	98	98
Stack Diameter (feet)	22	22	22	22	22	22	22	22	22	22
CT Stack Flow Conditions - Simple-Cycle										
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² / 4) x 3.14159] / 60 sec/min										
Stack Temperature (°F)	1,092	1,109	1,144	1,132	1,161	1,201	1,215	1,215	1,215	1,165
Volume flow (acfm)	2,577,209	2,579,908	2,349,816	2,116,945	2,094,632	1,977,740	1,760,921	1,765,965	1,803,546	2,367,499
Diameter (feet)	22	22	22	22	22	22	22	22	22	22
Velocity (ft/sec)- calculated	113.0	113.1	103.0	92.8	91.8	86.7	77.2	77.4	79.1	103.8
CT Stack Flow Conditions - Combined-Cycle										
Velocity (ft/sec) = Volume flow (acfm) / [((diameter) ² / 4) x 3.14159] / 60 sec/min										
Stack Temperature (°F)	220	220	220	220	220	220	220	220	220	220
Volume flow (acfm)	1,129,037	1,118,223	996,254	904,332	878,667	809,678	714,881	716,929	732,186	990,541
Diameter (feet)	19	19	19	19	19	19	19	19	19	19
Velocity (ft/sec)- calculated	66.4	65.7	58.6	53.2	51.7	47.6	42.0	42.1	43.0	58.2

Note: Based on information provided by General Electric Company, 2014



Table GE-A-2: Maximum Emissions for Criteria Pollutants - Simple Cycle Operation (GE 7FA.05) Dry Low NO_x Combustor, Natural Gas

Parameter	CT Only									Peak Load at 95° F
	Base Load Turbine Inlet Temperature			75% Load Turbine Inlet Temperature			50% Load Turbine Inlet Temperature			
	35° F	75° F	95° F	35° F	75° F	95° F	35° F	75° F	95° F	
Particulate Matter (PM10/PM2.5)										
<i>Basis: GE Data</i>										
PM ₁₀ /PM _{2.5} Emission Rate (lb/hr) - Filterable	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
PM ₁₀ /PM _{2.5} Emission Rate (lb/hr) - Condensable	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
PM ₁₀ /PM _{2.5} Emission Rate (lb/hr) - Total	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
Sulfur Dioxide (SO₂)										
<i>SO₂ (lb/hr) = Natural gas (scf/hr) x sulfur content (gr/100 scf) x 1 lb/7000 gr x (lb SO₂ /lb S) /100</i>										
Fuel Use (scf/hr)	1,929,663	1,859,466	1,659,808	1,544,800	1,484,593	1,359,749	1,214,086	1,172,090	1,141,247	1,689,030
Sulfur Content (grains/ 100 cf)	2	2	2	2	2	2	2	2	2	2
lb SO ₂ /lb S (64/32)	2	2	2	2	2	2	2	2	2	2
SO ₂ Emission Rate (lb/hr)	11.0	10.6	9.5	8.8	8.5	7.8	6.9	6.7	6.5	9.7
Nitrogen Oxides (NO_x)										
<i>NO_x (ppmv actual) = NO_x (ppmd @ 15%O₂) x [(20.9 - O₂ dry)/(20.9 - 15)] x [1- Moisture(%)/100]</i>										
<i>Oxygen (% dry)(O₂ dry) = Oxygen (%)/[1-Moisture (%)]</i>										
<i>NO_x (lb/hr) = NO_x (ppm actual) x Volume flow (acfm) x 46 (mole. wgt NO_x) x 2116.8 lb/ft² (pressure) / [1545.4 ft-lb (gas constant, R) x Actual Temp. (°R)] x 60 min/hr</i>										
Basis, ppmv actual	10.3	10.0	10.0	10.3	10.2	10.1	10.2	9.9	9.4	17.1
NO _x , ppmvd @ 15% O ₂ (15 ppmvd)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	15.0
Moisture (%)	7.84	9.00	10.00	7.84	9.12	10.06	7.80	8.88	9.53	10.17
Oxygen (%)	12.51	12.45	12.23	12.51	12.32	12.16	12.56	12.59	12.75	12.04
Oxygen (%) dry	13.57	13.68	13.59	13.58	13.55	13.52	13.62	13.81	14.10	13.40
Flow (acfm)	2,577,209	2,579,908	2,349,816	2,116,945	2,094,632	1,977,740	1,760,921	1,765,965	1,803,546	2,367,499
Flow (acfm), dry	2,375,044	2,347,647	2,114,874	1,950,969	1,903,619	1,778,858	1,623,625	1,609,137	1,631,620	2,126,774
Exhaust Temperature (°F) - Simple-Cycle	1,092	1,109	1,144	1,132	1,161	1,201	1,215	1,215	1,215	1,165
NO _x Emission Rate (lb/hr) - Simple-Cycle	64.7	62.3	55.6	51.8	49.7	45.6	40.7	39.3	38.2	94.3
Exhaust Temperature (°F) - Combined-Cycle	220	220	220	220	220	220	220	220	220	220
NO _x Emission Rate (lb/hr) - Combined-Cycle	64.7	62.3	55.6	51.8	49.7	45.6	40.7	39.3	38.2	94.3
NO _x Emission Rate (lb/hr) - GE Data	64.6	62.3	55.6	51.7	49.7	45.5	40.7	39.3	38.2	94.3

Table GE-A-2: Maximum Emissions for Criteria Pollutants - Simple Cycle Operation (GE 7FA.05) Dry Low NO_x Combustor, Natural Gas

Parameter	CT Only									Peak Load at 95° F
	Base Load Turbine Inlet Temperature			75% Load Turbine Inlet Temperature			50% Load Turbine Inlet Temperature			
	35° F	75° F	95° F	35° F	75° F	95° F	35° F	75° F	95° F	
<u>Carbon Monoxide (CO)</u>										
<i>CO (ppmv wet or actual) = CO (ppmvd @ 15%O₂) x [(20.9 - O₂ dry)/(20.9 - 15)] x [1 - Moisture(%)/100]</i>										
<i>Oxygen (% dry)(O₂ dry) = Oxygen (%)/[1-Moisture (%)]</i>										
<i>CO (lb/hr) = CO (ppm actual) x Volume flow (acfm) x 28 (mole. wgt CO) x 2116.8 lb/ft² (pressure) / [1545.4 ft-lb (gas constant, R) x Actual Temp. (°R)] x 60 min/hr</i>										
Basis, ppmv actual	8.29	8.19	8.10	8.29	8.18	8.09	8.30	8.20	8.14	8.08
Basis, ppmvd	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Basis, ppmvd @ 15% O ₂	7.25	7.36	7.26	7.25	7.23	7.20	7.30	7.49	7.80	7.08
Moisture (%)	7.84	9.00	10.00	7.84	9.12	10.06	7.80	8.88	9.53	10.17
Oxygen (%)	12.51	12.45	12.23	12.51	12.32	12.16	12.56	12.59	12.75	12.04
Oxygen (%) dry	13.57	13.68	13.59	13.58	13.55	13.52	13.62	13.81	14.10	13.40
Flow (acfm)	2,577,209	2,579,908	2,349,816	2,116,945	2,094,632	1,977,740	1,760,921	1,765,965	1,803,546	2,367,499
Flow (acfm), dry	2,375,044	2,347,647	2,114,874	1,950,969	1,903,619	1,778,858	1,623,625	1,609,137	1,631,620	2,126,774
Exhaust Temperature (°F) - Simple-Cycle	1,092	1,109	1,144	1,132	1,161	1,201	1,215	1,215	1,215	1,165
CO Emission Rate (lb/hr) - Simple-Cycle	31.7	31.0	27.3	25.4	24.3	22.2	20.1	19.9	20.2	27.1
Exhaust Temperature (°F) - Combined-Cycle	220	220	220	220	220	220	220	220	220	220
CO Emission Rate (lb/hr) - Combined-Cycle	31.7	31.0	27.3	25.4	24.3	22.2	20.1	19.9	20.2	27.1
CO Emission Rate (lb/hr) - GE Data	31.9	31.2	27.5	25.5	24.5	22.3	20.2	20.0	20.3	27.3
<u>Volatile Organic Compounds (VOC)</u>										
<i>VOC (ppmv wet or actual) = GE Data</i>										
<i>VOC (lb/hr) = VOC (ppm actual) x Volume flow (acfm) x 16 (mole. wgt CH₄) x 2116.8 lb/ft² (pressure) / [1545.4 ft-lb (gas constant, R) x Actual Temp. (°R)] x 60 min/hr</i>										
Basis, ppmv actual	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Flow (acfm)	2,577,209	2,579,908	2,349,816	2,116,945	2,094,632	1,977,740	1,760,921	1,765,965	1,803,546	2,367,499
Exhaust Temperature (°F) - Simple-Cycle	1,092	1,109	1,144	1,132	1,161	1,201	1,215	1,215	1,215	1,165
VOC Emission Rate (lb/hr) as methane - Simple-Cycle	3.06	3.03	2.70	2.45	2.38	2.19	1.94	1.94	1.98	2.68
Exhaust Temperature (°F) - Combined-Cycle	220	220	220	220	220	220	220	220	220	220
VOC Emission Rate (lb/hr) - Combined-Cycle	3.06	3.03	2.70	2.45	2.38	2.19	1.94	1.94	1.98	2.68
VOC Emission Rate (lb/hr) - GE Data	2.84	2.78	2.45	2.28	2.18	1.99	1.80	1.78	1.81	2.43
<u>Sulfuric Acid Mist (SAM)</u>										
<i>Sulfuric Acid Mist (lb/hr) = SO₂ Emission Rate (lb/hr) x Conversion to H₂SO₄ (% by weight)/100</i>										
SO ₂ Emission Rate (lb/hr)	11.0	10.6	9.5	8.8	8.5	7.8	6.9	6.7	6.5	9.7
Conversion to H ₂ SO ₄ (% by weight)	10	10	10	10	10	10	10	10	10	10
SAM Emission Rate (lb/hr)	1.1	1.1	0.9	0.9	0.8	0.8	0.7	0.7	0.7	1.0

Note: ppmvd= parts per million, volume dry; O₂= oxygen.

Source: General Electric Company, 2014

At Golder Associates we strive to be the most respected global group of companies specializing in ground engineering and environmental services. Employee owned since our formation in 1960, we have created a unique culture with pride in ownership, resulting in long-term organizational stability. Golder professionals take the time to build an understanding of client needs and of the specific environments in which they operate. We continue to expand our technical capabilities and have experienced steady growth with employees now operating from offices located throughout Africa, Asia, Australasia, Europe, North America and South America.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 55 21 3095 9500

solutions@golder.com
www.golder.com

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

